

# Pictures at an Exhibition

*Karl Sigmund*

**I**n 1965 Kurt Gödel wrote to his mother Marianne: “I am happy not to have to take part in the Viennese festivities, as I hate these things.” So we must concede: the Viennese festivities planned for April 2006, on the occasion of his centenary, would probably have made him wince.

In April 2006 a large scientific congress will be held at the University of Vienna, organized by the International Kurt Gödel Society and generously sponsored by the Templeton Foundation (see <http://www.logic.at/goedel2006/>). It will be attended by the few scientists who had close personal exchanges with Gödel, such as Georg Kreisel, Dana Scott, and Gaisi Takeuti. There will also be an exhibition on the life and times of Gödel, and this provides me, who rashly volunteered for the job, with a new set of experiences.

The University of Vienna is well-advised, of course, to celebrate Kurt Gödel as much as it can. The game theorist Oskar Morgenstern, one of Gödel’s few friends in later years, was surely right when he wrote: “Among all those who taught at the University of Vienna, there is probably nobody whose name outshines that of Gödel.” Gödel did most of his best work in Vienna. The university did not exactly pamper him, however. He remained a lowly *Privatdozent* (meaning he had the right to lecture, but no salary worth speaking of), and he eventually had to escape, under hair-raising circumstances, to the safety offered by Princeton. No

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place other than the Institute for Advanced Study (IAS) could have provided him with more peace and ease, or better intellectual companionship. Yet within a dozen years his productivity trickled off, although he certainly did not relax in either ambition or hard work.

The city of Vienna cannot boast about the way it treated Gödel, but his centenary is a good occasion for making amends. The same applies to Mozart. And as luck will have it, Mozart’s 250th anniversary also takes place in 2006. And Freud’s 150th. Some competition!

Exhibitions are costly. Aspiring to just one or two percent of the sum lavished by Berlin, for example, on its splendid Albert Einstein Exhibition 2005 is not a trivial matter. Fortunately, among officials in some ministries and magistrates I found several dedicated enthusiasts, true crypto-Gödelians who were ready to help. I also encountered some who had never heard of him: but as soon as I mentioned that *Time* magazine had listed Gödel among the hundred most important persons of the twentieth century, conversation flowed more easily. Whoever drew up that list deserves an accolade!

Exhibitions also need space. Eventually, the list of possible locations boiled down to three candidates. One was the main building of the University of Vienna. During the Congress, in the week of Gödel’s birthday (April 28), hundreds of experts from set theory and mathematical logic will stroll its neo-Renaissance arcades, in addition to the daily stream of students; but many other Viennese will be reticent to cross the university’s entrance stairs. The second location is Palais Pallfy, on the

Josefsplatz, the most beautiful piazza in town, just opposite the Hofburg of the Habsburgs. Since this will be the venue of many high-level conferences in the first half of 2006 (when Austria presides over the council of the European Union), one hopes that some visitors will take a look at Gödel. But people around the Josefsplatz are usually busy. Finally, there is the beautiful MuseumsQuarter, whose baroque halls are available during the summer months, when flocks of tourists throng between the Museum for the History of Art, the Leopold Museum with its collections of Klimt and Schiele, and a lively scene of bars and restaurants. No drawback here, except that Gödel's birthday does not fall in summer. It finally was decided that the exhibition will travel and visit all three spots in different incarnations, from the end of April to mid-August 2006.

What can one show in an exhibition on Kurt Gödel? His work was abstract and his life withdrawn. There is nothing equivalent to, say, the couch of Sigmund Freud, or the fiddle of Albert Einstein. Gödel's famous spectacles have not been preserved, so it seems, but his optometric prescription from 1925 has survived. For Gödel, who grew up as an avid stamp collector, was not one to throw things lightly away. He kept the bill for his wedding meal, for instance, as well as the testy reminder, signed by Helmut Hasse, that he had not paid his membership dues for the German Mathematical Society. Gödel also kept the receipt for the purchase of *Principia Mathematica*, acquired during his student days. The Gödel *Nachlass*, which belongs to the IAS and is kept at Princeton University's Firestone Library, is a gold mine of tidbits like these, but also of more serious information, and Gödel's biographer John Dawson, who knows that *Nachlass* like no one else, has kindly agreed to curate the exhibition. He writes, in this issue of the *Notices*, about his experiences cataloguing the boxes of *Nachlass* material (see also Dawson 1997).

The only other place with a sizeable amount of information on Kurt Gödel is Vienna (Köhler et al, 2002). There are the archives of the university, containing much on his brilliant Ph.D. thesis, on his epochal *Habilitation*, and on the sinister correspondence between academic officials and high-level Nazis after 1938. Gödel managed twice, after Hitler annexed Austria, to go on leave to visit the U.S., first at the height of the Munich crisis and again in the tense months of the "phony war". More than a year after Gödel had settled down for good in the U.S., the German ministry sent him (c/o University of Vienna) a lavishly emblazoned diploma with his promotion to "*Dozent Neuer Ordnung*" and the pompous guarantee of the Führer's special protection. The document was never collected, though, and the receipt still waits to be signed.

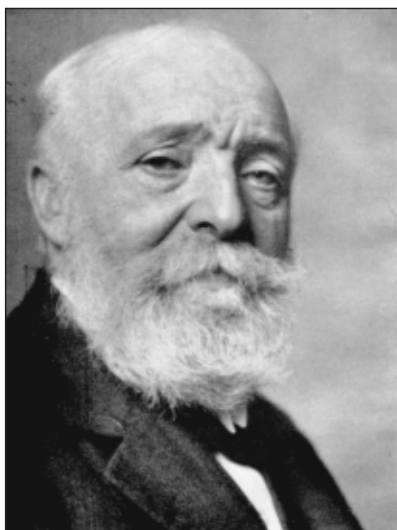
Next to the university, the richest source on Gödel is in City Hall: the municipality bought hundreds of letters which he wrote to his mother on every other Sunday evening, for the first twenty years after the war. They were bought, thanks to Werner Schimanovich and Peter Weibel (producers of a documentary on Gödel), from the heirs of Gödel's brother Rudolf. Unfortunately, there is no trace of the letters Gödel must have sent from Princeton during his visits there in the 1930s, and after Gödel's death his wife Adele destroyed all letters by her mother-in-law.

The gist of Gödel's major discoveries can be explained fairly easily to a large public: (a) incompleteness, (b) the consistency of the continuum hypothesis, and (c) time travel in rotating universes. But I do not believe that an exhibition can explain the finer points of "Gödel's proof" at the level of detail which several trade books have achieved. Visitors stroll from one spot to another. Exhibitions are meant for meandering around. This implies some superficiality. Anyone wanting greater depth should sit down to read or listen to a lecture. In contrast, the format of an exhibition seems well suited to giving an idea of Gödel's intellectual surroundings. That is the right topic for an easy stroll.

So let us take a stroll through Gödel's Vienna, even if that means walking in a Circle. Gödel was an unusually quiet and withdrawn person, but by no means a hermit in his Viennese years. He was a member of the Vienna Circle. This shaped him profoundly, but in an indirect, almost contrary way. In a questionnaire that Gödel filled out much later (but which he never sent off—Dawson excavated it from the *Nachlass*), he states that the most decisive influences on his intellectual development were the lectures by Heinrich Gomperz in philosophy and Philipp Furtwängler in mathematics. One would have expected the names of Moritz Schlick and Hans Hahn instead, the professors of philosophy and mathematics who had founded the Vienna



**STAMP OF APPROVAL.** "I replied very gently to the magistrate, saying that I owed my education to the University," wrote Gödel to his mother. He had experienced superb teachers but obnoxious administration. During his time as *Privatdozent*, he mostly was on leave, either in Princeton or in sanatoria, and lectured only for three semesters altogether.



**RIPE IDEALS.** Philipp Furtwängler, a cousin of the famous conductor, was a first-rate number theorist. He was partially paralyzed from the neck down and had to be carried into the lecture hall in his chair. His greatest achievement came in 1929 (the year of Gödel's completeness theorem), when he proved another conjecture of Hilbert, the *Hauptidealsatz* (principal ideal theorem) for class fields, at the respectable age of sixty.

Circle (and were certainly no mean lecturers). But no: Gomperz and Furtwängler, who held the introductory lectures for Gödel's cohort, imprinted him for life. There is little reason to doubt that Gödel was a Platonist by the age of nineteen and never wavered in this conviction (Feferman 1984).

Karl Menger, the professor of geometry who was just four years older than Kurt Gödel and who became his mentor for many years, described how Gödel usually refrained from speaking out, but when he disagreed with something he heard, showed his disagreement by a slight movement of his head (Menger 1994). The sessions of the Vienna Circle gave Gödel many opportunities to do so, during discussions on Wittgenstein or Russell. Most of the younger members of the Circle seem to have displayed a healthy but discreet skepticism towards their more outspoken seniors.

Gödel's correspondence indicates that his closest friends in those days were Marcel Natkin and Herbert Feigl, two students of philosophy and mathematics who both did their Ph.D. with Schlick. Both venerated their professor but were not above poking gentle fun at him. "For consolation, I'll send you Schlick's essay, an example that one can talk sensibly only about nonsense. Did you hear from Feigl," wrote Marcel Natkin to Kurt Gödel in the summer break of 1928, "how Wittgenstein and Schlick enjoyed speaking for hours about the unspeakable?"

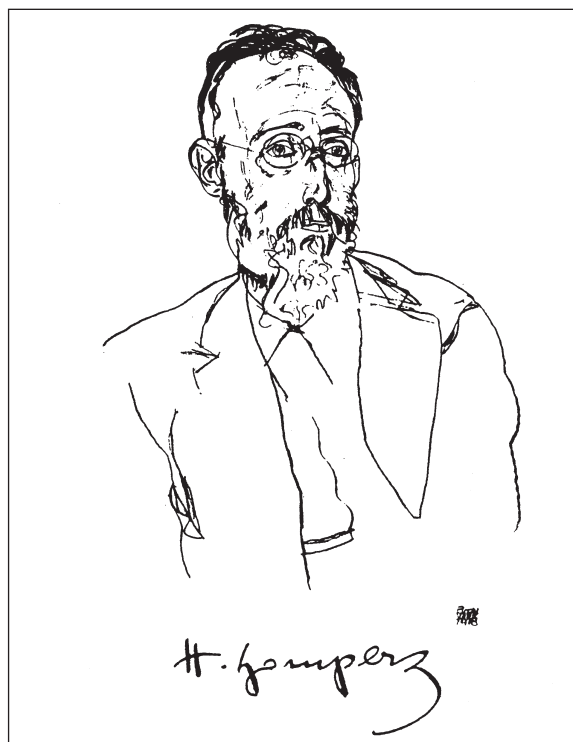
Hahn became Gödel's thesis adviser but did not have to do much. A careful analysis of the Ph.D. thesis (as found in the university archives, reprinted in the *Collected Works*) and of the version published in the *Monatshefte*, suggests that Gödel slightly adapted the latter to better fit the "party line" of Hahn (Feferman 1984). It was only twelve years later, after having solved two and a half of Hilbert's problems, that Gödel started to express his Platonism publicly. He then could argue that his success was due to the firmness of his conviction on the reality of abstract concepts.

In unison with Menger, Gödel drifted away from the Vienna Circle and became a member of another circle, this time of younger mathematicians,

including Georg Nöbeling, Franz Alt, and Abraham Wald. It was to this group that Gödel lectured first on incompleteness. "That's very interesting," said a voice in the awestruck silence ending Gödel's lecture. "You should publish that." (Alt, 1998) "I am consumed with unjustifiable pride," wrote Natkin from Paris. "So you have proved that Hilbert's system of axioms contains unsolvable problems—why, this is not a trifling matter."

The young prodigy was soon pointed out by Karl Menger and John von Neumann to Oswald Veblen, who toured Europe as talent scout for the IAS. The newly founded institute invited Gödel to be among the first group of visiting scholars. Feigl, who had been the first member of the Vienna Circle to emigrate to the U.S., wrote from Iowa: "So you too, my son, like Einstein and all other celebrities, could not help it and had to cross the great water. Well then, probably a permanent position will come out of it in the end, and the Germans and Austrians will again have lost a scientist (racially pure, this time)."

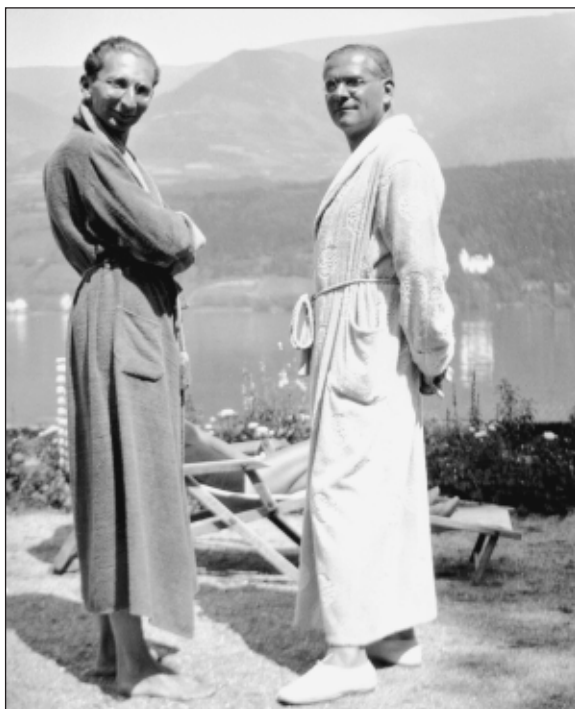
The words of Feigl were prophetic. The Circle of Vienna disbanded rapidly. Menger was one of those who left for the U.S. In 1937 he wrote to Alt, who was still in Vienna: "I believe you should get



**CLASSICAL TASTE.** Heinrich Gomperz, philosopher, in a drawing by Egon Schiele. An intriguing literary vignette of Gomperz can be found in the autobiography of Elias Canetti, who studied chemistry in the same building and at the same time as Gödel and who later won a Nobel Prize in literature.

together from time to time, and especially see that Gödel takes part in the *Kolloquium*. It would not only be of greatest benefit for all other participants, but also for himself, though he might not realize it. Heaven knows into what he could entangle himself if he does not talk to you and the other friends in Vienna from time to time. If necessary, be pushy, on my say-so." But by the time that letter reached him, Alt had to work urgently on his own escape.

Menger would later ruminate that Gödel needed to move within a sympathetic group, which would stimulate him to lecture frequently and gently remind him to write things down, and even push him a little to do so, if necessary (Menger 1994). This is what Vienna had been able to provide, for a few blessed years. Hahn and Schlick had managed to create a critical mass (as one says nowadays) of young people studying both philosophy and mathematics. But in those Viennese days the two topics were in the air. The writers Hermann Broch and Robert Musil, and the philosophers Ludwig Wittgenstein and Karl Popper had the same twin interests. Their opinions were widely divergent (as were opinions within the Circle); but that heterogeneity was also probably an advantage for Kurt Gödel. He



**PHILOSOPHICAL CONFIDENCE.** Herbert Feigl (with bare feet) and Moritz Schlick (without) on the shores of Lake Millstaedter. Feigl, a student friend of Gödel, later became professor of philosophy at the universities of Iowa and Minnesota, and president of the American Philosophical Association.



**SKEPTICAL ATTITUDE.** Marcel Natkin, a young philosopher and student friend of Gödel, eventually became one of the most eminent photographers in Paris. When Natkin, Feigl, and Gödel met in New York thirty years later, Gödel wrote to his mother: "The two have hardly changed. I do not know whether the same thing can be said of me."

could have found splendid teachers in Göttingen or Cambridge, but probably nowhere else a similar variety of views. For someone who was perfectly aware that his opinions were unfashionable to the extreme, and who wished to explore a completely new approach, this must have been encouraging.

The main contribution of the Vienna Circle, then, might have been to give everyone some clear statements to clearly disagree with. Karl Popper is a case in point. For the last sixty years of his life he kept repeating that he did not mind at all never having been invited to a meeting of the Vienna Circle. But his huge first book, *Die Logik der Forschung*, appeared in the series edited by Frank and Schlick, and Hahn had gently said "as kind words as I could have wished". (Popper 1995) Nevertheless, Popper took an almost oedipal pleasure in claiming, later, that the Vienna Circle was dead. "Who killed it? ... I am afraid I did it." (Stadler 1997)

Popper was as vehemently anti-Plato as Gödel was Platonist. The two met but never were close. "I recently met a Mr. Popper (philosopher)," wrote Gödel to Menger in 1934. "He has just finished a huge book in which, so he claims, all phil. problems are solved. —Do you think he is any good?" (Gödel, *Collected Works*, 1986–2002)

The novelist Hermann Broch also turned away from logical empiricism, but for entirely different reasons. In the 1920s, Broch was a minor celebrity in the Viennese coffee-house scene, the well-off heir to a textile firm and a womanizer of renown. He decided, at the age of forty, to study mathematics and philosophy and sat through many of the same



**STAIRS TO PERDITION.** Schlick's murder on the staircase of the university became a *cause célèbre* in the Vienna of 1936. The murderer was released from prison in the fall of 1938.

lectures as Kurt Gödel, his junior by twenty years. Thirty of Broch's notebooks covering these lectures are kept at Duke University. Broch was disappointed by the anti-metaphysical bent of the philosophers of the Vienna Circle, but acknowledged that they had one saving grace: *Krankheitsseinsicht* (meaning that they knew how sick they were). In the end, Broch became a major figure in German literature. His second novel, *The Unknown Quantity*, is about a young mathematician who dreams of finding "a logic without axioms". Musil's "Man without Qualities" is also a research mathematician, but Musil's attempt at a "crystal-clear mysticism" is literally worlds apart from the positivism of his friend Richard von Mises, another Viennese who combined mathematics with philosophy.

Hans Nelböck, the man who shot Schlick on the stairs of the university in 1936, and who thus really murdered the Vienna Circle, had studied mathematics and philosophy at the same time as Gödel and Broch and had written his Ph.D. thesis with Schlick, just as Natkin and Feigl had done. In the 1930s, both Nelböck and Gödel were confined for several periods in psychiatric institutions. Both had been living in the same street, the Lange Gasse. At that time, in 1929, Gödel's attention was taken up by another neighbor, who had just moved in, a young masseuse named Adele Nimbursky. He would marry her ten years later. It is not certain that Gödel ever met Schlick's murderer. But novelists with a sense for the bizarre will recognize the leitmotiv of the *Doppelgänger* (the double). Vienna's golden autumn, so full of radiance, was also filled with violence and hate.

Gödel had no wish to return to Vienna after the war. "I am so happy to have escaped from beautiful Europe," he would write to his mother. But if you happen, between May and August, to stop-over in beautiful Europe, do come and visit the Gödel exhibition. It is free!

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