Helmut Werner

22.3.1931–22.11.1985

Helmut Werner was born on March 22, 1931 in Zwenkau near Leipzig, Germany. His father, Kurt Werner, was a high–school teacher. Helmut Werner went to school in Zwenkau first, and after his graduation from Petri–Schule in Leipzig 1949, he was lucky to be allowed to study Mathematics and Physics at the University of Leipzig with Beckert, Hölder, and Kähler.

His family went to Lingen/Ems in the German Federal Republic in 1951, and Helmut Werner could enroll at the University of Göttingen. This was possible because the East German graduation was valid in the West after three terms of study. To earn his living in the early years of post–war Germany, he spent part of the time between terms to work in the oil fields near Lingen/Ems. Later on, he was hired as a tutor by the University.

His teachers in Göttingen were Deuring, Heinz, Kaluza, Rellich, and Siegel. Up to his "Staatsexamen" (required for high–school teachers) in 1954, he focused on theoretical mathematics. Then he specialized in partial differential equations and wrote his doctoral thesis on the problem of Douglas for surfaces with constant mean curvature under the supervision of Rellich, who unfortunately died of cancer before the thesis was finished. Carl-Ludwig Siegel and Erhard Heinz, the latter being assistant of Rellich at that time, accepted his work and Helmut Werner received his doctorate in 1956.

A few months later, Helmut Werner married Ingrid Bolz.

While working on his doctorate, he did a fair amount of numerical work for the nuclear reactor group in Heisenberg's Max–Planck Institute of Physics in Göttingen. This required the use of the first computers G1 and G2 available in Germany at that time [4]. Of course, these could be used by students only at night. The new possibilities offered by computers were very exciting for Helmut Werner, but there was no computer–oriented Numerical Analysis in German universities at that time. Therefore Helmut Werner preferred to go into industry instead of taking a postdoc position at some university. Consequently, he worked for the Max–Planck–Institute in Göttingen, the Nuclear Research Center in Karlsruhe, and for the AEG Research Institute in Frankfurt.

In 1958, Helmut Werner accepted an assistant professorship at the University of Southern California in Los Angeles. This allowed him to do research in Numerical Analysis, to use computers, and to teach at a university. He stayed in California for two years altogether. In Los Angeles, he met Lothar Collatz of the University of Hamburg, who suggested he go for a Habilitation there, partially using results that had already been obtained in Los Angeles. Thus Helmut Werner got his Habilitation in Hamburg in 1962 and started teaching there.

While on leave for half a year to Stanford University, Helmut Werner in 1964 accepted the call to a full professorship at the University of Münster, Germany. He founded the Institute for Numerical and Instrumental Mathematics and the Computation Center of the University. This was the time when German universities started to move towards computers and their applications in science. The subject "Computer Science" or "Informatik" was not established in Germany before 1969.

In Münster, Helmut Werner had to spend a lot of time getting the Computation Center up and running (see Figures 1 and 9), including the erection of the building. But he also enjoyed supporting all users of computers at that time, helping with mathematical problems and making sure that the newly hired staff of the Computation Center provided perfect technical support. Besides Natural Sciences, these collaborations included colleagues from Medicine, Theology, and the Humanities. For example, Helmut Werner became a member of the Center for Mediaeval Research. One of the tasks was to produce huge tables in a form ready for DIGISET optical pixel–oriented printing machines. More generally, he saw the necessity for sophisticated computer–based text editing and production systems that could, for instance, handle exotic fonts and provide a perfect page layout. This early experience turned later into his strong support for TEX and LATEX. Helmut Werner visited D. Knuth in Stanford in 1978 and made sure to implement the first PASCAL–based version of TEX in Germany, including a few modifications for texts in German. Much later, in his last years in Bonn, he asked two students to write a TEX extension that could typeset music scores.

Right from the beginning, Helmut Werner created an extremely stimulating scientific atmosphere in Münster. A new library for Applied Mathematics was built up, and there were regular visits from researchers all over the world. But research was strongly focused on applications and computing. There was no

distinction yet between Mathematics and Computer Science, and the students of Helmut Werner got a deep knowledge of computers enabling them to get good positions that later would have been exclusively offered to Computer Scientists. For several years, there were excursions to companies like Bayer (see Figure 3), to get students into contact with the real world outside. In the late seventies more than 50 people were working at the Computation Center in Münster, including 23 with an academic degree, and there were another 6 researchers at the Institute of Numerical Mathematics.

Besides some nightlife in the Computing Center, allowing students to have better turnaround times for their programs (see Figure 7), there was a yearly biking excursion for everybody, and a yearly "Fasching" party in Helmut Werner's home (see Figure 2).

Helmut Werner participated in Oberwolfach conferences at least from 1964 on, not only in those organized by Lothar Collatz, and he organized more than the list of proceedings shows. Between 1974 and 1981, the standard Oberwolfach conferences on Approximation Theory and Applications usually were organized by Lothar Collatz, Günter Meinardus, and Helmut Werner. See Figures 5 and 6 showing participants as far as they dared to join one of the legendary Collatz cross–country hikes.

In 1980, after rejecting several other offers, Helmut Werner went from Münster to Bonn, where he became Director of the Institute of Applied Mathematics and the Department of Functional Analysis and Numerical Mathematics. The move to Bonn relieved him of the increasing burden of running a large Computing Center alongside his mainly mathematical interests. He joined the Research Center for Applied Mathematics in Bonn and enjoyed the close contact with colleagues working in Real Analysis and Partial Differential Equations. His habit of biking to the institute did not change, though the route from Bonn–Röttgen to the institute was considerably more demanding now.

In every private or professional situation, he had an open mind for other people's problems, trying to help them with what he knew about mathematics and computer science. A private contact to a blind teacher inspired him to develop an automatic Braille program for computers. During the next 25 years he developed this project to become the reference standard in Germany, Switzerland and Austria for the production of Braille output from standard text input. He was awarded the Louis Braille prize (in 1984) and the Carl-Strehl medal (in 1985) for this work.

Another long–term cooperation concerned ophtalmology. Helmut Werner developed formulas for artificial lenses that could be corrected after surgery by contact lenses instead of standard glasses. He supplied nomograms that could be easily used by any ophtalmologist anywhere.

Helmut Werner was on the board of Evaluators (Fachgutachter) for mathematics for the Deutsche Forschungsgemeinschaft between 1972 and 1980. This was very stimulating for him, though it took a lot of time and energy. He also was a member of the Senate for the Research Centers of the Deutsche Forschungsgemeinschaft from 1974 until 1982. This kept him aware of the most important research projects in the full range of science.

Since he enjoyed giving lectures and advising students and PhD candidates, Helmut Werner never considered going back into industry or for a full–time research position. The Mathematics Genealogy project shows for him, as of fall 2012, a total of 27 doctoral students and 108 descendants.

Altogether, Helmut Werner published a great number of technical notes and scientific papers. He wrote 11 books, of which many were reprinted, and was editor of another 10. Details on Helmut Werner's scientific work are given in a separate place on this website.

In 1978, Helmut Werner was elected to the Akademie der Naturforscher Leopoldina in Halle (in Eastern Germany at that time). This renowned institution was turned in 2008 into the National Academy of Germany. Helmut Werner enjoyed to have a perfect platform to meet friends and colleagues from his home region this way, and to visit familiar places there with his wife (see Figure 4). German unification came 12 years later, four years too late for him, unfortunately.

In 1982 and 1983, Helmut Werner was elected Chairman of the Deutsche Mathematiker–Vereinigung (DMV). Among other things, he used this position to promote the synergy of pure and applied Mathematics with Computer Science, both in research and in German teaching curricula at all levels. Since the majority of teachers in the sixties and seventies usually had no idea about Numerical Analysis and Computing, Helmut Werner also organized courses for teachers, long before PCs came into general use at schools.

When travelling, Helmut Werner always tried to have some time for private additional excursions into the countryside, in particular for spectacular views. But he also made sure to save taxpayer's money by avoiding expensive locations the best he could. In cities, he took every opportunity to attend concerts or visit museums. In particular, he enjoyed modern painting, and he arranged his travel plans carefully to make sure that his wife could be with him as often as possible. Working at home, he always listened to music, mainly Bach, Mozart, Brahms, Mahler and Prokofiev. In his spare time he enjoyed reading books on modern history and art or do some handicraft, especially with wood. He collected books, maps, and tape recordings of music, lending the latter to whoever needed them. When he was exhausted from the stress of endless committee meetings with ongoing obstructions by the administration, he relaxed at home at the piano.

On Sundays, the family used to make excursions by bicycle or car, most of the times to arrive at some scenic lookout. Several times Helmut Werner biked from Münster to the Dutch island of Texel with his twins, while his wife followed by car with the younger daughter and the luggage for the holidays. For the last family vacation in 1983, they went to the western part of the USA, and Helmut Werner showed them around all the places he had got to know at various earlier occasions.

He very much enjoyed the professional and social contact with colleagues all over the world. On his last main lecturing tour in September 1984, already ill with cancer, and postponing an appointment for surgery, Helmut Werner and his wife Ingrid visited several universities in China and he lectured almost every day.

Summarizing, Helmut Werner always had a profound reservoir of mathematical problems to be solved, of favourite art to enjoy, of fine experiences to remember and a lot of friends to care for and who cared for him. This helped him a lot when he fell more and more ill. He had to stop lecturing in the middle of a term, one week before Whit Sunday in 1985. He went to hospital the next day because he was very much in pain, but he hoped to be able to continue his lecturing after Whit Sunday. During all the following months, up to the last two weeks, he had some of senior students come to the hospital for discussions or examinations.

He died on November 22, 1985. He always hoped to get his strength back again, supported by his doctors in every physical and mental way, but on the other hand he was prepared to accept his fate, if necessary, but not without having "set his house in order". Rumour has it that he still used his dictaphone in his hospital bed, finishing the last text with “Nach Diktat verstorben.”

R. Schaback Göttingen, March 9, 2013

This text was written for the website “History of Approximation Theory” to offer something with unrestricted access. It is based on parts of [2] and [1], but is not intended to replace Ingrid Werner’s wonderful article in [5] nor Annie Cuyt’s speech at the Lancut conference in 1985, though I owe much to the former, including some verbatim citations. Substantial help for this article was provided by Ingrid Werner, Paul Janßen, Dietrich Braess, and Carl de Boor. A complete bibliography of Helmut Werner’s publications is in [3], but there is also a publicly available list on the website “History of Approximation Theory”. In conclusion, I am greatly indebted to Helmut Werner’s support over all the years, and I am grateful for everything he gave to the scientific world and all the people around him.

References

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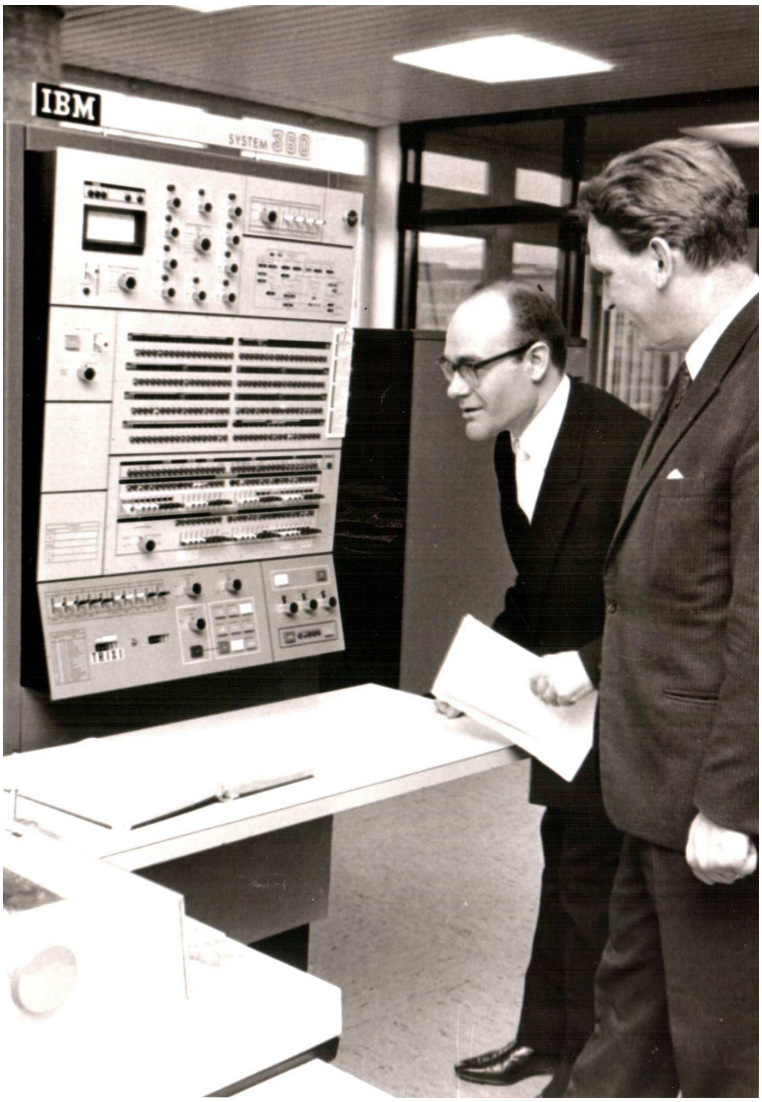

Figure 1: Inauguration of the new IBM 360/50, Münster University, Nov 2nd, 1967. Courtesy of Westfalen-Blatt, Foto: Ed. Heitmann.

Figure 2: Ingrid and Helmut Werner at their Fasching party in 1968

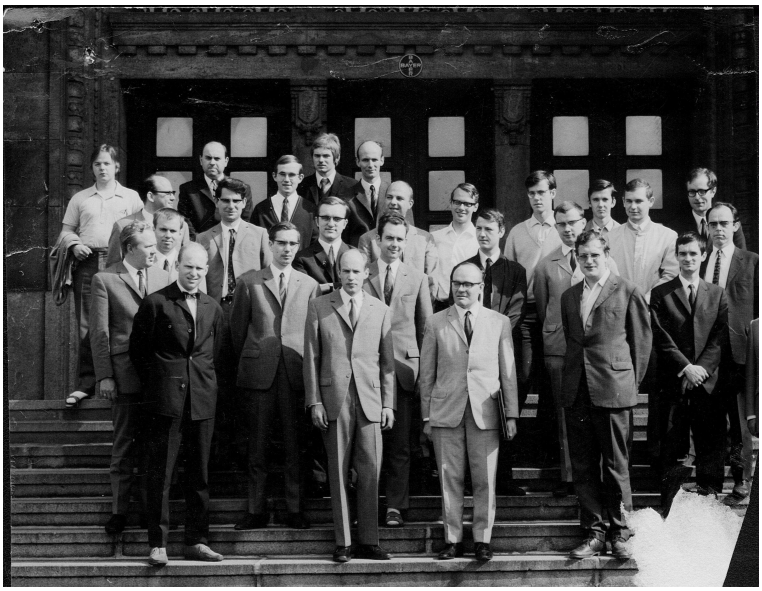

Figure 3: Excursion of the institute and the Computing Center to Bayer Leverkusen on May 14th, 1969. Among others, from left: Engberding, Holling, Neukäter, Dost, Busley, ?, Bendisch, Braess, Schaback, Goorkotte, Naujoks, Lamprecht, Zörkendörfer, Bosse, Arndt, Werner, ?, Schmitt, Stenzel, Pudlatz, Meyer, ?, Schomberg, Hölsken, Witte, Janßen.

Figure 4: At the banks of the Elbe river

Figure 5: A hike around Oberwolfach. Among others, from left: Nürnberger, Hettich, Bredendiek, Ansorge, Hämmerlin, Törnig, Krabs, and Braess

Figure 6: A 1970 hike around Oberwolfach

Figure 7: Student's night shift at the Computing Center, 1968. From left: Ludwig, Schaback.

Figure 8: Another portrait

Figure 9: After installation of a new IBM computer system, 1978. From left: Pudlatz, Reichel, Mecke, Kisker, Werner, Meyer, Janßen, Zörkendörfer