

Konrad Zuse

# The Computer— My Life

With Forewords  
by F. L. Bauer  
and H. Zemanek

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## PREFACE

This book tells the history of the computer from the standpoint of someone who, now more than fifty years ago, built the first computer. At the same time, it was intended to answer the question often posed to me: "How did you actually come to invent the computer?" It also tells my life's story, the story of the inventor Konrad Zuse. Such stories about inventors, or those they tell themselves, have occasionally inclined toward fantasy. The public, it appears, treasures the unsung inventor and divine inspiration above all else. I admit right now that I have very little use for either. Certainly, inspiration has played a part in my life, too, but there was nothing miraculous about this in itself. All in all, my success was the result of hard work. For myself, the saying of the great inventor Edison holds, namely, genius is one percent inspiration and ninety-nine percent perspiration, i.e., work. This is what I want to write about.

Almost as often as the previous question, I am asked about the motives behind my inventions, my interest, yes, my passion for technology. I often sense overtones of an unspoken reproach of naiveté. I want to address this point now. We pioneers of computer development did indeed believe in technology. Among us a great optimism, not to say euphoria, was the rule when it came to the blessings of technological progress. You can call this naiveté, but bear in mind that this attitude was looked upon with growing skepticism only after the war, and then only gradually. The watershed was probably the explosion of the first atomic bomb. From this point on, more than ever before, the researchers and inventors were expected to be aware of their responsibility to society and of the possible repercussions that would accompany their inventions. The inventor, it is demanded, should first make his discoveries known to the public, and then obtain permission to carry on. It remains to be seen how future generations will come to terms with such demands. I have no wish to conceal my doubts on the subject. Painful experience has taught me that only very rarely do new ideas even find an interested audience. In the 1930s I dared tell only my closest friends and colleagues that I believed it was possible that a computer could defeat chess grandmasters. Outsiders would have called me a dreamer. Even if I had been aware of it, how was

I supposed to bring the drawbacks of such “dreaming” up for discussion? I would have only frightened away my supporters, who weren’t very numerous anyway. Quite simply, as a rule, an invention meets with interest only when, so to speak, the still malleable child develops into a sturdy young man who, in order to survive, no longer allows himself to be pushed around so easily. Here, the independence of the researcher and inventor is often overestimated, not to mention the fact that scientific and technological development is such a complicated process that the consequences of any given innovation are very hard to predict.

And something else is forgotten . . . something which might be called the soul, or *Lebensgefühl*, the feeling of being alive, of not all but certainly many inventors. For them, invention or discovery is not one among many activities, but actually as Oswald Spengler said, a passion. Goethe has excellently captured this *Lebensgefühl* in the character of Faust. And, as in Faust, we find Mephistophelian figures in the company of many inventors and discoverers. Only too often the inventor is the idealist who, like Mephisto, tries to improve the world, only to be crushed by harsh realities. If he wants to carry through his ideas, he is forced to do business with the wielders of power, whose sense of reality is sharper and more developed. Today such a power elite is generally – without wishing to make a judgment with this statement – the managers and the military. For example, America’s development of the computer, or even of space travel, is not even imaginable without the support of the military. I myself have dealt chiefly with managers and scientists. According to my experience, the probability of the individual protecting himself against such pact-making is slight.

Two additional observations concerning the technical side of this book. First, many of my papers from before the war were lost during the war. So, for example, there are scarcely any pictures or designs of my first computing machines. Here and there I have had to make use of rough sketches. Second, I have assumed that not all of those interested in the history of the computer are also computer experts. Therefore, I have decided to write the book in as general a form as possible and to include technical appendices for the expert, with references to them in the text.

Finally, I would like to thank all who have helped me in my work, in one capacity or another, and who today are no longer with us. These include first my parents and sister, as well as those with whom I worked directly: Professor Helmut Schreyer, Günther Buttmann, the brothers Herbert and Horst Müller, Hans Lohmeyer, Dr. Hans-Jürgen Funk and Theodor Fromme. In Germany I received special support from Kurt

Pannke, Professor A. Teichmann, Professor Alwin Walther, Gerhard Overhoff, Walter Hubing, Professor Hubert Cremer and Professor Herbert Wagner. After the war, I received considerable support also from Switzerland; my thanks go to Professor Donald Brinkmann, Oskar Weder, Dr. Heinz Rutishauser and especially to Professor Eduard Stiefel. I remember, too, the pioneers of computer development: Hans-Joachim Dreyer (Germany), Howard H. Aiken (USA), John von Neumann (USA) and John W. Mauchly (USA).

*Konrad Zuse*