
Foreword

On July 15, 2000 Steve Smale will turn seventy. To celebrate his birthday, an international conference will be held at City University of Hong Kong. Some months ago, we had the idea of taking this opportunity to publish Steve's collected works so that the final volumes could be ready by July 15, 2000. It was probably a timely decision since Steve, who had turned down previous suggestions to publish his collected work, accepted our proposal right from the start.

The reasons for publishing Steve's collected papers are only too clear. Steve Smale is one of the great mathematicians of this century, a fact acknowledged not only by the different distinctions he has been granted, but also by the breadth and the depth of his work. Its breadth is witnessed by his fundamental contributions to so many diverse areas of mathematics, ranging from Dynamical Systems to Theory of Computation, from Differential Topology to Mathematical Economics and from Calculus of Variations to Mechanics. Its depth can be seen from the fact that he has an amazing ability to lay foundations, invent techniques, and create new concepts and ideas, as well as being able to crack hard problems such as the Poincaré conjecture for dimensions greater than or equal to five.

The structure of these volumes of collected papers reflects the breadth of Steve's contributions. We have avoided a purely chronological ordering of the papers. Each volume is divided into several parts, and each of these parts contains the papers Steve wrote on a specific subject. Within each part, the papers are sorted chronologically. In some sections, we have included a paper written by a world leader commenting on Steve's contributions to that particular subject. Volume I also contains papers by close friends and colleagues of Steve that describe different aspects of his work, and a paper written by Steve himself, specifically for these volumes, with retrospective remarks on his own work.

Many people and institutions have helped make this project possible. These include the different publishing houses that have kindly given us the permission to reprint Steve's papers, and World Scientific for its constant willingness to cooperate with us. Ms Colette Lam, Executive Assistant of the Liu Bie Ju Centre for Mathematical Sciences here at the City University of Hong Kong, has been of invaluable help in putting the volumes together. Last but not least, we want to thank Steve Smale for his continuous availability and his warm disposition towards our project.

As a final thought, we would like to point out that Steve Smale is a man of many accomplishments, a good number of which are not related to mathematics. For instance, he is a very keen hiker, has been an accomplished sailor for years, and has managed to put together one of the finest collections of crystals in the world. He has produced excellent photographs of his crystals, and some of these photos grace the covers of these three volumes.

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