

Mathematics and War

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1. Auflage 2003. Taschenbuch. VIII, 420 S. Paperback

ISBN 978 3 7643 1634 1

Format (B x L): 17 x 24,4 cm

Gewicht: 1630 g

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Preface

In this moment of writing, the whole world is waiting for an announced war; at the moment of reading, there is scarce hope the war will not have taken place or be still in course. This is the *raison d'être* of the present volume.

“Mathematics and war” may seem a peculiar topic when war seems so much more important than mathematics. Importance, however, is concrete, and one of the facets which brings forth and shapes contemporary warfare is its profound mathematization. Therefore, a discussion of war which omits mathematics is bound to miss many points. Reversely, a discussion of mathematics which neglects its actual involvement in war and warfare may also miss quite a few essential points.

Mathematization, however, is also a global and rather abstract description, which on its part must be understood concretely. The papers collected in the volume therefore take up a number of different but mutually related issues, some of them historical, some of them philosophical, some of them concerned with the functioning of weapons and with the actual planning and conduct of war, some of them with the mental impact of the mathematization of fighting on the general population as well as on the fighting crews. Some of the contributions are written from a more or less outspokenly pacifist perspective, others are not. Some of the historically oriented papers deal with personal history, others with military history or the social and institutional history of mathematics; but the history focuses strongly on the last sixty or seventy years.

The reason for this is, on one hand, that our primary motivation has been ethical and aimed at understanding the actual state of the world – the main purpose of the book is not the gaining of pure theoretical insight but to gather valid knowledge that may be used in the situation where the human race is actually navigating; on the other, that the interaction between mathematics and warfare changed dramatically with World War II – indeed that the reasons that make understanding of this interaction practically urgent only came into being with World War II.

The general issues which are touched on are not covered broadly. Even this has its reasons. For one thing, “mathematics and war” is a relatively new interest, at least as a confined research field; broad generalizations must therefore wait until detailed studies are at hand (in the introduction, the editors permit themselves not to follow this wise rule). Moreover, each detailed study fills out a number of pages, and the volume can hold only a limited number of pages. For the purpose of understanding the world and reflecting upon what can be done *now*, the studies contained in the volume and the multitude of perspectives they represent should be useful as points of orientation in a domain that is in need of further development. For this purpose we see it as no disadvantage that many of the studies combine the presentation of factual information and reflection with moral or political stances. At least in their combination, they should approach Weberian *Wertfreiheit*.

Evidently, the editors have thought about which further perspectives could contribute to the global picture. One important theme, though touched at indirectly in several contributions, deserves in-depth investigation on its own: the relation between the public sphere and its institutions (including the media), general mental attitudes about supposedly clinically-rational technology, and the genuine or pretended mathematical rationality of modern warfare.

The volume grew out of an “International Meeting on Mathematics and War”, Karlskrona, Sweden, 29–31 August 2002. We use the opportunity to thank Maurice and Charlyne de Gosson and the Blekinge Institute of Technology and its Mathematics Department for organizing splendidly this conference, which was also supported by Stig Andur Pedersen of The Danish Network for History and Philosophy of Mathematics (MATHNET) and Reiner Braun of The International Network of Engineers and Scientists for Global Responsibility (INES).

We also thank Birkhäuser Verlag for having the courage to risk its money on the book.

January 31, 2003

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Postscript

During the war which *did* take place between the moment of writing the above and the moment of sending the proof-read pages to print, the very President of the American Mathematical Society took notice, not so much of the military role of mathematics in general as of mathematics as a key component in the preservation of US military superiority, implicitly promising the loyal assistance of his members (and asking for adequate payment): “[...] for a military commander to have secure communications in the field depends on fundamental advances in number theory that just a few years ago were touted as the sort of pure science that would never be applied. Future progress in this seemingly abstract area, by us or by hostile forces, could threaten the security of all these communications and would require fundamental new science to repair the damage.” (David Eisenbud, April 9, 2003, to a US Congress subcommittee overseeing the funding of the US National Science Foundation; source: <http://www.ams.org/notices/200306/inside.pdf>).