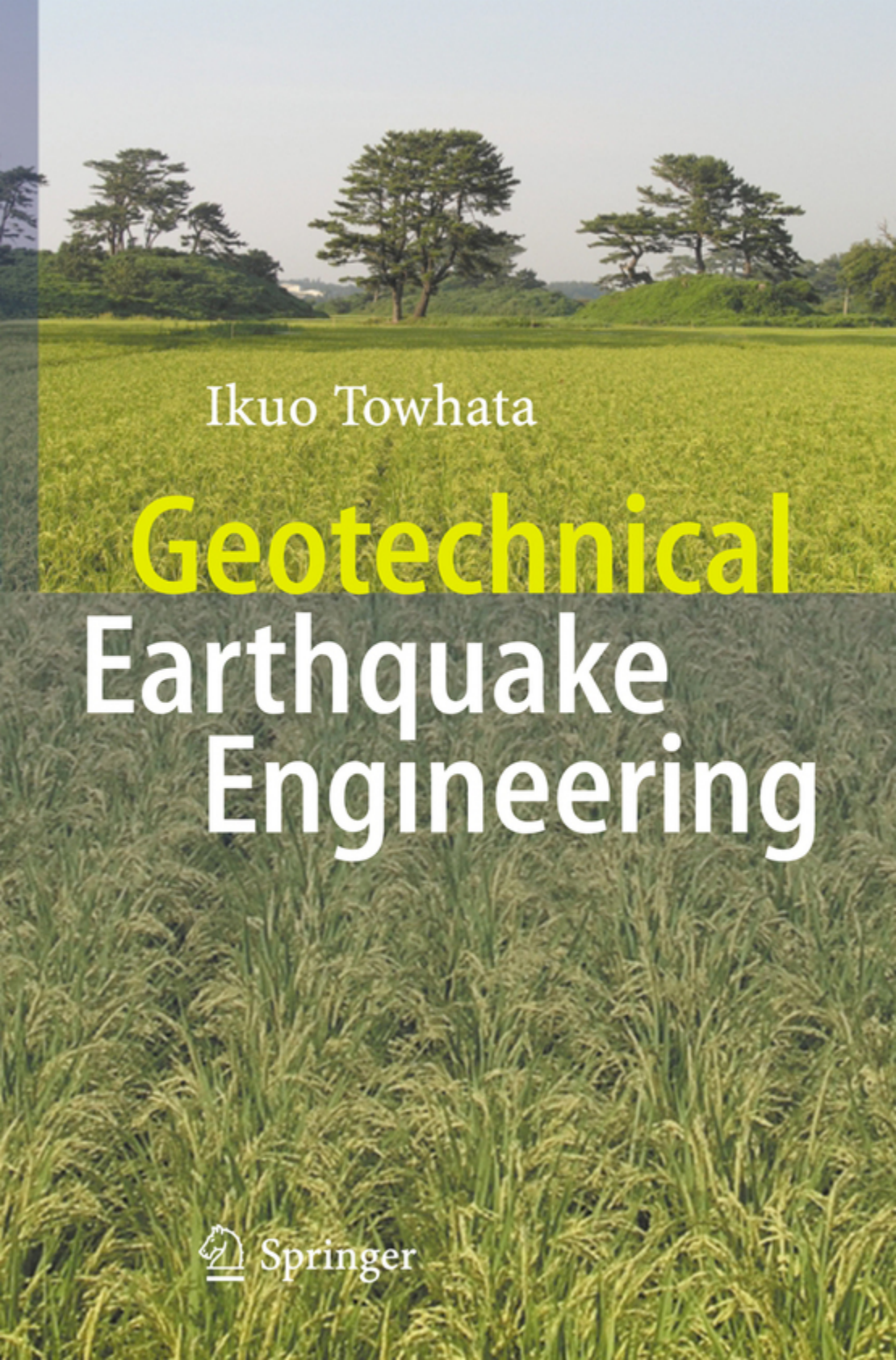
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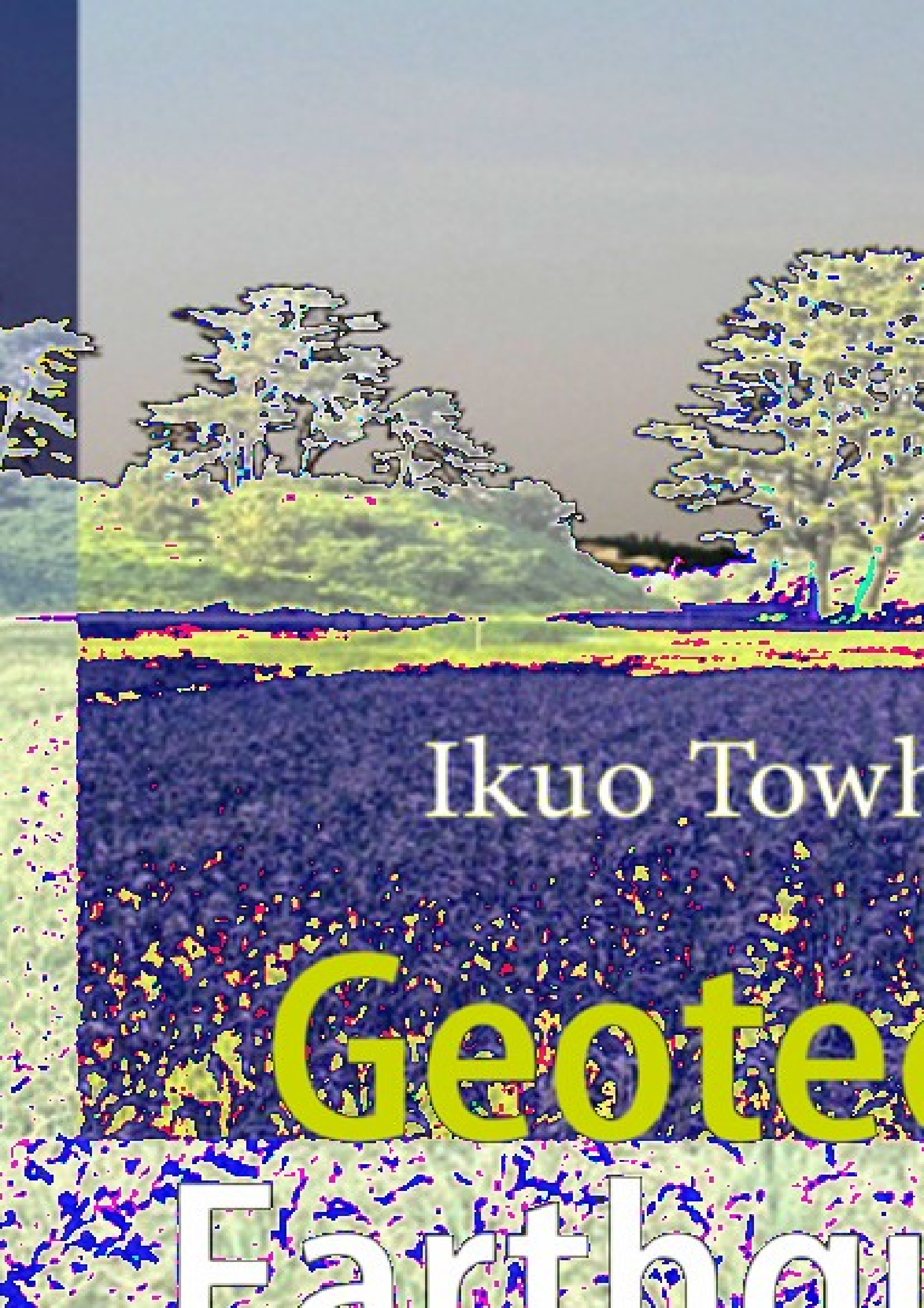
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Editors: Wei Wu · Ronaldo I. Borja

Ikuo Towhata

Geotechnical Earthquake Engineering

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Preface

This book is a product of my long-term activities in both education and research. Its publication was made possible by a financial support supplied by the Ministry of Education, Culture, Sports, Science and Technology. As for education, I was told for the first time in 1985 to teach soil dynamics in Asian Institute of Technology in Bangkok, Thailand. I collected experimental and field findings from many publications and made a small series of handouts. Since computer technologies were not well advanced in mid 80s, the handouts were products of cut-and-paste in the physical sense. Many pages were even handwritten. Afterwards, I started to teach the same subject in 1995 at University of Tokyo. Since then I have added more information from field investigation and laboratory tests as well as analyses. It has become possible to put all in an electronic media that makes teaching easier. Readers can find that this book includes Japanese writing among English text. This is because I use this text for teaching in Tokyo.

The main aim of this book is a collection of data which is useful in understanding the state-of-art technology and its application to new topics. Understanding the fundamental issues is important because practice makes use of many assumptions, hypotheses, and way of thinking. It has been my policy to show reasons why practice employs those ideas by showing experimental and field backgrounds. This idea does not change even today.

Collecting the background information is not very easy for an individual person. It is necessary to read many publications; some were published in the first half of the 20th Century, and others in domestic publications. Not being impossible, this information collection is firstly a time-consuming business. Secondly, the access to old publication may not be easy to everybody. I am therefore attempting in this book to collect information as much as possible so that the new generation of readers can save time in studying. Many figures were therefore reproduced from the original publications. Moreover, I tried to visit important sites and take photographs in order to show the ideas in practice to be meaningful. Although the result is not perfect, information in this book will be helpful when readers have to understand the meaning of present practice and improve it in future. This is particularly important because the development of our society generates new kinds of problems and new approach is continuously required.

One major problem in this book is the enormous amount of information. For very young readers who have just started geotechnical engineering and soil mechanics, it is more important to get the overall scope than learning details. The total number of pages and contents in this book may prevent their efforts. In this regard, I decided to classify the contents into three categories; elementary, advanced, and miscellaneous. Readers can pick up only pages of their interest in place of reading from the first page to the last. The miscellaneous content is not necessarily less important; sometimes many interesting topics are therein found. It is recommendable therefore that young readers take a quick look at those pages as well. On the other hand, it is not expected for readers to start reading from the first page and continue till the last.

I do hope that information in this book will help readers develop their knowledge and career in the discipline of geotechnical engineering. Certainly the contents of this book miss many important issue. I am going to show additions and modifications in my home page. Readers are advised to visit occasionally the site of Geotechnical Engineering Laboratory, Department of Civil Engineering, University of Tokyo (URL : http://geotle.t.u-tokyo.ac.jp).

Ikuo Towhata
June, 2007.

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