Boundary Elements
and
Other Mesh Reduction Methods
XXX

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Sponsored by
International Journal of Engineering Analysis with Boundary Elements (EABE)

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WIT*PRESS* **Southampton, Boston**

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Published by

WIT Press
Ashurst Lodge, Ashurst, Southampton, SO40 7AA, UK
Tel: 44 (0) 238 029 3223; Fax: 44 (0) 238 029 2853
E-Mail: witpress@witpress.com
http://www.witpress.com

For USA, Canada and Mexico

Computational Mechanics Inc
25 Bridge Street, Billerica, MA 01821, USA
Tel: 978 667 5841; Fax: 978 667 7582
E-Mail: infousa@witpress.com
http://www.witpress.com

British Library Cataloguing-in-Publication Data

A Catalogue record for this book is available
from the British Library

ISBN: 978-1-84564-121-4
ISSN: (print) 1746-4064
ISSN: (on-line) 1743-355X

The texts of the papers in this volume were set individually by the authors or under their supervision. Only minor corrections to the text may have been carried out by the publisher.

Printed in Great Britain by Cambridge Printing

Preface

We have been very proud at the University of Maribor that the 30th International Conference on Boundary Elements and other Mesh Reduction Methods was hosted in our town. Slovenia has just completed a term of the European Union presidency. For six months we were the nexus for four hundred million plus united Europeans. We are not accustomed to such attention. We were similarly very nervous when the organisers of the Conference chose us as the venue for the finale of the third decade of Boundary Elements, or rather, the beginning of the fourth.

Thirty years in the life of a new idea is, as in the case of a human being, a pivotal point; still young, but old enough; considered bold, yet wise; looking forward, and having something to show. Since 1978, we have come a long way and now BEM is a recognized and powerful computational method.

Our group, at the School of Engineering, continues to work in transport phenomena, predominantly in fluids. Our friends and colleagues specializing in solids can take advantage of parallelization and problem transfer to the boundary much better than we, who are concerned with fluid dynamic problems.

For thirty years, we have been spared the problems that other methods in the area of fluids could not avoid – i.e. the behaviour of pressure on account of vorticity–velocity type formulations. On the other hand, we were concerned with questions others knew nothing or little about – full system matrices, discussing memory sharing and file storage and other topics more suitable for computer scientists than engineers.

We can solve more complex problems than we ever dreamed about. The number of nodes is now in the order of thousands, rather than hundreds. But the quest continues and the goal is still far off as some questions remain unanswered. In our field, problems such as turbulence are still difficult to

solve, as not all problems can be transferred to the boundary. Compromise was necessary in the past and was achieved by using boundary domain techniques. Computers have become faster and cheaper, but we have learnt that 'brute' force is not always the best approach. Sometimes it pays to step back and think about the problem to be solved.

It is time to pass these challenges on to a new generation to continue further developing the beauty and elegance of the boundary element and other mesh reduction methods.

Leopold Škerget
University of Maribor, 2008

Carlos Brebbia writes:

Leopold Škerget's contribution to the development of Boundary Elements applications in fluid dynamics has been outstanding and of major international significance. The result of this work has been the creation of a research school at the University of Maribor, second to none in the field, leading to a new generation of researchers involved in solving a range of ever larger and more complex problems.

The School at Maribor has pioneered work on BEM in fluid dynamics all over the world and they shared their results in the spirit of generosity which is the hallmark of true scientists.

The Boundary Element community owes a debt of gratitude to Leopold's group and this is the main reason that the 30th Conference was held at the University of Maribor. On behalf of all of us at the Conference, I am also grateful to all contributors for participating in this special meeting, and particularly to those who helped to select the papers published in this book.

Carlos A. Brebbia
Maribor, 2008

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