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BEM/MRM 2011

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# Boundary Elements and other Mesh Reduction Methods XXXIII

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# Preface

This book contains edited versions of many of the papers presented at the 33<sup>rd</sup> International Conference on Boundary Element and other Mesh Reduction Methods, which was held in our New Forest Wessex Institute Campus in 2011.

Having been instrumental in originating the Method through the combined efforts of my associates at Southampton University, I do not cease to be surprised by its vitality. Since 1978 when the first conference took place and the first book bearing the BEM name was published, the method has constantly evolved.

It is most unusual for a scientific conference dealing with a particular methodology to survive for as long as this Conference has. I attribute this capacity to the wider remit of this Meeting, ie finding ways of reducing, or even better, totally suppressing the need for a mesh.

In the 1970s we started to question the need to discretise the problem in order to find a numerical solution. It was the right question at the wrong time, as finite element was emerging as the dominant computational technique. This was the moment when our research on Boundary Elements started. It is difficult nowadays to envisage the hostile reception that BEM received at that time. It took another 10 to 15 years to demonstrate its advantages and by then we were already looking at ways of BEM evolving beyond its classical formulation.

This led to the development of meshless techniques – research which has continued until today. A substantial part of the current work however seems to concentrate on finding simple solutions which may not always lead to the best results.

It seems appropriate to put more emphasis on achieving robustness and accuracy in particular when solving large engineering problems. We need to develop general purpose computer codes equivalent to those produced with finite elements.

This requires to progress from the realm of mathematical possibilities into that of engineering certainty.

The BEM/MRM Conference is the ideal forum to discuss these and other issues which are crucial to the development of the Method. Since 1978, this series of conferences have produced more than 60 volumes recording all major advances in BEM/MRM.

Judging by the papers published in this Volume, the topic continues to evolve, validating the need to hold these meetings on a regular basis. The next conference, due to take place in Split, Croatia from 25–27 June 2012, will ensure that.

I must express my sincere gratitude to all contributors for the quality of the papers and in particular to the members of the International Scientific Advisory Committee and other colleagues who helped to select them.

Carlos A. Brebbia  
New Forest, UK, 2011

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