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Practice and Theory of Automated Timetabling IV

4th International Conference, PATAT 2002
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Selected Revised Papers

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Preface

This volume contains a selection of papers from the 4th International Conference on the Practice and Theory of Automated Timetabling (PATAT 2002) held in Gent, August 21–23, 2002.

Since the first conference in Edinburgh in 1995, the range of timetabling applications at the conferences has become broader and more diverse. In the selected papers volume from the 1995 conference, there were just two contributions (out of 22) which did not specifically address school and university timetabling. In the selected papers volume from the 1997 conference in Toronto, the number of papers which tackled non-educational problems increased. Two of the papers addressed more than one timetabling application. In both of these papers, educational applications were considered in addition to other applications. A further three papers were concerned with non-educational applications. The conference steering and programme committees have worked hard to attract a wide range of timetabling applications. In the conference held in Konstanz in 2000, the diversification of timetabling problems increased significantly. Of the 21 selected papers in the postconference volume, just 13 were specifically concerned with educational timetabling. In the previous volumes, the papers had been sectioned according to solution technique. In the Konstanz volume the papers were classified according to application domains. One section of the volume was entitled "Employee Timetabling," while sports timetabling, airfleet scheduling, and general software architectures for timetabling were also represented. In the present volume, more than one-third of the 21 papers discuss problems in application areas other than academic and educational ones. Sports timetabling and hospital timetabling are particularly well represented. Indeed, they have their own sections. This shift into more diverse timetabling application domains reflects the growing maturity of the conference series and the goals set by the steering committee. Educational timetabling is a crucially important application area and it will always play a central role in the PATAT conferences. We would like to see the conference series attract even more interest in educational timetabling but we would also like to see the series continue to attract high-quality submissions from sports timetabling, employee timetabling, transport timetabling, and from across the timetabling application spectrum. Another key aim of the conference series is to foster multidisciplinary research which draws on the strengths of Operational Research, Artificial Intelligence and other disciplines. The timetabling research field has always attracted researchers from across disciplinary divides and one of the main goals of the conference series is to support and extend this multidisciplinary collaboration.

Another important aspect of modern timetabling research is the goal of integrating the human aspect of timetabling with the automation of the problem. In a contribution to the previous PATAT conference, Michael Carter[1] said:

[1] Michael W. Carter, A Comprehensive Course Timetabling and Student Scheduling System at the University of Waterloo, in Practice and Theory of Automated Timetabling III (edited by Burke and Erben), pages 64–82.

> "Practical course timetabling is 10% graph theory, and 90% politics! When we first began designing the system, we were warned: 'You cannot dictate to professors when they will teach courses!' Consequently, we were told that course timetabling could not work."

And he went on to show that it *did* work, if the human factors alluded to in the warning were taken into account. In his conclusions he said:

> "...simply giving timetable reps the facility to make real time on-line changes was the single most important contribution."

These comments have relevance for the design of timetabling decision support systems across the application spectrum. The goal of developing interactive and adaptive systems that build on human expertise and at the same time provide the computational power to reach high-quality solutions continues to be one of the key challenges that currently faces the timetabling research community. While human/machine interaction in timetabling has an important role to play, it is clear that there are exciting research opportunities opening up in the underpinning automation methodologies for timetabling across the application range. The success of the series of international conferences on the Practice and Theory of Automated Timetabling (PATAT) has reflected the interest and activity of the scientists who are working in the area and addressing the above (and many other) significant research issues.

As mentioned above, for this fourth volume, we continued with the practice of organizing the papers around application themes – which was established in the last volume. The papers represent a broad range of practical and theoretical research issues and they cover a variety of techniques and applications.

Conference Series

The meeting in Gent was the fourth in the PATAT series of international conferences. The first three conferences were held in Edinburgh (August/September 1995), Toronto (August 1997) and Konstanz (August 2000). Selected papers from these three conferences appeared in the Springer Lecture Notes in Computer Science series. The full references are:

Edmund Burke and Peter Ross (Eds.): *Practice and Theory of Automated Timetabling*, 1st International Conference, Edinburgh, UK, August/September 1995, Selected Papers. Lecture Notes in Computer Science, Vol. 1153. Springer 1996.

Edmund Burke and Michael Carter (Eds.): *Practice and Theory of Automated Timetabling II*, 2nd International Conference, PATAT 1997, Toronto, Canada, August 1997, Selected Papers. Lecture Notes in Computer Science, Vol. 1408. Springer 1998.

Edmund Burke and Wilhelm Erben (Eds.): *Practice and Theory of Automated Timetabling III*, 3rd International Conference, PATAT 2000, Konstanz, Germany, August 2000, Selected Papers. Lecture Notes in Computer Science, Vol. 2079. Springer 2001.

The fifth conference in the series will be held in Pittsburgh, USA, in August 2004. Future conferences will be held every two years. For further information about the conference series, contact the steering committee (whose members are listed below) or see http://www.asap.cs.nott.ac.uk/ASAP/ttg/patat-index.html.

The PATAT conference series is affiliated with the Association of European Operational Research Societies Working Group on Automated Timetabling. See http://www.asap.cs.nott.ac.uk/ASAP/watt/ for further details about this working group.

Acknowledgements

The Gent conference was a great success and we are indebted to a large number of people for their hard work and commitment. In particular, we would like to thank all the members of the organizing committee (listed below). Their effective administration of the event played a significant contribution in its success. Very special thanks go to Greet Vanden Berghe, whose attention to organization and detail was invaluable to the smooth running of the organization.

The papers that appear in this volume were carefully and thoroughly refereed. Many thanks go to the members of the programme committee (listed below) who spent a significant amount of their valuable time rigorously reviewing the submitted papers.

We are also very grateful to the staff of Springer-Verlag for their support and encouragement. As series editor of the Lecture Notes in Computer Science series, Jan van Leeuwen was (as he has always been since the first volume) particularly helpful throughout the duration of this project. We would also like to particularly thank Piers Maddox for the excellent job he did (as he did with the previous volume) in copy editing the book. His hard work is very much appreciated. Special thanks also go to Alison Payne for all the secretarial support she provided during the preparation of this volume.

Of course, it is the authors, presenters and delegates who ultimately determine the success of a conference. Our thanks go to them for the enthusiasm and support they have given this and previous PATAT conferences. Finally, we would like to thank the steering committee (listed below) for their continuing work in bringing us this and future PATAT conferences. We apologize for any omissions that have been inadvertently made. So many people have helped with this conference and with the series of conferences that is difficult to remember them all.

May 2003

Edmund Burke
Patrick De Causmaecker

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