50th Anniversary Paper

A commentary on Wright MB (1991): Scheduling English cricket umpires

One of the pleasures, and surprises, on taking over the editorial chair from John Hough in 1991 was the number of papers relating to sport that I received: in particular, those based on cricket. Several needed to be rejected, including one that demonstrated how to choose the Indian cricket team using the Analytic Hierarchy Process. A wise decision, or so I thought until England visited the sub-continent the following winter and were soundly beaten.

However, one stream of papers, represented by this month's anniversary paper, was a pleasure to read and to publish. The fact that it emanated from an office a few doors down the corridor from my own was irrelevant. I found them fascinating to read, because of the context. It was also clear that they were pushing forward the application of relatively new combinatorial optimisation techniques such as simulated annealing and tabu search.

The first paper,¹ reproduced with this issue, deals with the initial problem Mike Wright tackled for the Test and County Cricket Board (TCCB). Mike had heard about the "TCCB employee who used to shut himself away in virtual hermetic seclusion for three or four weeks in January and February each year". Fixtures and umpires needed to be scheduled, and Mike volunteered to tackle this. To try him out the TCCB asked him to start with scheduling the umpires. His paper is full of fascinating details, for the cricket aficionado. In conversation with Mike I learnt about others, which could not be included in the paper, to prevent potential libel problems. The paper also highlights some important technical points regarding the construction of objective functions for complex problems of this general type.

The first paper was followed by a second the following year.² A new team, Durham, was to be added to the domestic cricket championship. It was perceived, and so it turned out, that they would be a weak team. Unfortunately, at that time there was not a balanced fixture list. Each team played some teams twice, and some teams once. Those that played Durham twice would have an advantage. The question Mike was asked was "How can fairness be established?" The paper explains how this issue was resolved in conjunction with the client, resulting in a

four-year schedule that was as fair as possible. It was not Mike's fault that the solution was never implemented, as the structure of the championship was changed so that every team played every other team exactly once.

The final, so far, paper in this stream describes the work that Mike did to schedule the fixtures in the English domestic season, using a novel form of tabu search.³ Again, this is not only interesting for some of us from the application viewpoint, but pertinent developments in the theory are demonstrated. In this case, Mike develops an approach using "intensification" and "diversification". These are two opposing strategies used in local search. Broadly speaking, intensification involves the gradual improvement of a solution, whilst diversification allows a major change to be made to avoid a local optimum. The main technical advance reported in this paper concerns the precise approach to diversification, influencing the search process to move into potentially fruitful new areas. He has since further developed this approach and used it for related problems such as school timetabling.⁴

JORS Editor 1991–1996

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Editors' Note. In 1998 Frank Duckworth and Tony Lewis published their method for setting the target in interrupted one day cricket matches,⁵ which has become probably the most publicised paper in the journal's history.

References

- 1 Wright MB (1991) Scheduling English cricket umpires *J Opl Res Soc* **42**: 447–452.
- 2 Wright MB (1992) A fair allocation of county cricket opponents *J Opl Res Soc* **43**: 195–201.
- 3 Wright MB (1994) Timetabling county cricket fixtures using a form of tabu search. *J Opl Res Soc* **45**: 758–770.
- 4 Wright MB (1996) School timetabling using heuristic search. *J Opl Res Soc* **47**: 347–357.
- 5 Duckworth F and Lewis A (1998). A fair method for resetting the target in interrupted one-day cricket matches. *J Opl Res Soc* **49**: 220–227.