

REVIEW

ADVANCES IN COMPUTER GAMES 9

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What started in 1975 as the *Advances in Computer Chess* conference series, has now fully expanded to include all intelligent computer games, and is hence renamed to *Advances in Computer Games*. Consistently publishing well-edited proceedings has been crucial to the success of this series. The previous two editions already contained a number of papers on games other than Chess. In this ninth volume, the ratio of non-chess to chess papers has risen to 50:50. Of the non-chess papers, three are on Shogi and three are on Go. Backgammon, Amazons, Chinese Chess, and 6×6 Othello & Tsume-Shogi contribute one paper each. In the rock-steady pace of three-year intervals, this conference was held in June 1999 – exactly 24 years after the first meeting. It was hosted by the University of Paderborn, during the 9th World Computer Chess Championship.

Hashimoto *et al.* present an evaluation function for the game of Amazons. As far as I am aware, it is the first-ever paper on the computer implementation of this fascinating game. It contains sufficient information to write your own Amazons-playing program. My recommendation: by all means, do! This exciting new game could certainly use more competitors. At present, one program sovereignly rules the field, and it has thrashed all opposition from the moment it first came onto the scene. Purely as a diversion from his usual chess programming, Johan de Koning picked Amazons from the list of new games announced for the 2000 Olympiad in London. His brainchild, *8QP* (short for Eight Queens Problem), pulled computer Amazons out of its infancy. It finished first in both the 2000 and 2001 Olympiads by winning every single game, in most cases by a large margin. What I like most about the Hashimoto *et al.* paper, is that it subliminally encourages writing an Amazons program. While reading the paper, it is hard to resist the temptation of trying out a few things on a computer. And before you know it, you are writing a move generator, if only to convince yourself that there are indeed 2176 legal moves in the initial position. The authors probably never set out to accomplishing this, but it is a wonderful achievement, nonetheless. However, they do predict: “We are convinced that further work on the Amazons evaluation function will improve the playing strength considerably.” Johan de Koning can attest to that. The question remains: who is next?

One way to discover how various games are interrelated, is to glance through the reference sections. Cazenave’s contribution (‘Generating Patterns with External Conditions for the Game of Go’) cites papers on Nine Men’s Morris, Chess, Checkers, Rubik’s Cube, and, of course, Go. The paper by Wu and Beal (‘Computer Analysis of some Chinese Chess Endgames’) refers to several papers on the construction of (Western) Chess endgames. It also contains the oldest reference I ever came across in a computer-science paper: a manuscript by Zhi Xy from 1570. That is, until I read the final paper in this volume, which has references dating back to 1561 and 1497. In this delightful contribution, Frederic Friedel discusses various ways of cheating in Chess. Don’t close this book without reading it! The account of Clemens Allwermann playing (cheating) in the Böblinger Open is a real detective story. But more important than an occasional low-ranked player who boosts his performance through illicit computer assistance, are the problems that may occur at the very highest level of play. As Friedel explains: “The problem is more serious the higher you go up the Elo scale. Not only do the players need progressively less information, they also gain progressively more from cheating with the computer.” A distinctive cough, a scratch on the head, or any other small inconspicuous signal by an accomplice can communicate that a winning move exists. Friedel relates how during the game Kasparov-Anand (Las Palmas, 1996), Jan Timman found a winning move (g4) for white. FRITZ analyzed this move, and confirmed the win. Kasparov missed it during the game, but Friedel convincingly argues that through a simple prearranged signal (indicating: ‘there is a win here’) he would certainly have found it. Which raises another question in my mind: how do the (FIDE) rules deal with a spectator who simply shouts out: “g4 wins!”?

I hope that Friedel will consider expanding this paper into a full-length book on the subject. There are certainly other instances of cheating, and the examples he presents deserve a broader exposition. The famous ‘yogurt incident’ during the Karpov-Korchnoi match in Bagio City in 1978 is merely a footnote, while the notorious Dr. Vladimir Zukhar is not mentioned at all. Surely, the deliberate distraction of the opponent is a form of cheating as well. And while it is still strictly a human vice, cheating is certainly not confined to the human chess world. There are plenty of stories and rumors about cheating in computer chess, but few were ever committed to paper. And then there is Kasparov’s accusation that DEEP BLUE cheated in game 2 of the 1997 match in New York. The challenged move (Be4) was apparently so brilliant that, according to Kasparov, only a few of the very best human players could have found it. So, the accusation was really a compliment. Cheating in chess (or any other game) is a fascinating topic with many levels of impact. Another wonderful tale of using a computer to cheat (not in chess but at roulette), is *The Eudaemonic Pie* by Thomas Bass. Particularly interesting is the way in which the human gambler received information from the computer hidden in his shoes. Guest star in this thrilling adventure is none other than the great Claude Shannon.

Any one who feared that, after a quarter of a century, *Advances in Computer Games* might be running out of steam, will be in for a treat. The quality of the papers contained in this ninth volume of the series is remarkably high. And it is not just the greater variety of games that makes these proceedings surpass the previous two editions. Perhaps most surprising is the freshness of the Chess contributions, which attest to the still ongoing progress. The fact that the human World Champion lost a match against a chess-playing computer has apparently not discouraged computer-chess research, nor has it weakened the inspiration.

Commercial chess programmers and manufacturers rarely reveal details about their programs. Several years ago, David Levy published in the *ICCA Journal* a number of ideas implemented in his programs. Now it is Marty Hirsch who spills the beans on the innards of MCHES. The prime motivation to eventually publish such ‘secrets’ is seeing these ideas (re)discovered and published by academics and amateurs. The situation is similar to, for example, the invention and publication of public-key encryption by Diffie, Hellman and Merkle. Unknowing to the world, this technique had already been discovered six years earlier by James Ellis, a British cryptographer employed by her Majesty’s Secret Service. But he was sworn to secrecy, and it took another 28 years before his accomplishment was made public. James Ellis was the first person to develop public-key encryption, but it earned him no more than a footnote in the history of cryptography. He later wrote: “Most professional scientists aim to be the first to publish their work, because it is through dissemination that the work realises its value. In contrast, the fullest value of cryptography is realised by minimising the information available to potential adversaries.” Or, in the apologetic words of Marty Hirsch: “The delay of publication is due to commercial considerations.” Even though you cannot have your pie and eat it, his belated publication of ideas deserves praise.

Advances in Computer Games 9 is a beautifully edited book, the third in this series supervised by Jaap van den Herik. This time he teamed up with Burkhard Monien of the University of Paderborn to produce another winner. Conference proceedings (and, for that matter, periodicals such as the *ICGA Journal*) are much more than a bunch of scientific papers wrapped in a cover with some guy’s name on the front. For a field as small as computer games, the quality of publishing is unusually high. By now we may have become used to this high standard, but in reality we are truly spoiled. The only minor complaint I have is that the photographs could do with a bit more contrast. But that is almost like complaining that the cover is blue.

I realize that in this limited space, I cannot do equal justice to all contributions in the book. I merely highlighted some of the papers that particularly caught my fancy, to wet the appetite of readers of this review. It is definitely a must-have for anyone interested in intelligent computer games.