
Preface

Thirteen years have passed since IBM's Deep Blue stunned the world by defeating the human world chess champion at that time, Garry Kasparov. The purpose of this book is to initially reconsider Deep Blue's achievement and then to survey subsequent milestones in the world of computer chess. Following Deep Blue's retirement, there has been a succession of better and better chess engines, that is, computing systems programmed to play chess. Today, there is little question that the world's best chess engines are stronger than the world's best humans. We have seen a steady progression of talent, from Deep Blue to Fritz and Junior and Shredder to Hydra and Zappa and Rybka and There are now a number of chess engines better than the world's best human.

Each of the 21 chapters in the book — except the final one — covers a milestone of some sort. There are 20. The first chapter looks back at Deep Blue's matches with Garry Kasparov in 1996 and 1997. Ten other chapters are concerned with the ten World Computer Chess Championships that have taken place: in 1999 and then yearly beginning in 2002 and ending in 2010. Three chapters are concerned with man-machine matches: between Fritz and Kramnik (2002), Kasparov and Deep Junior (2003), and Fritz and Kramnik (2006). Three historical matches between the leading engines each occupy a chapter: Hydra versus Shredder in 2004 in Abu Dhabi, Junior versus Fritz in 2007 in Elista, and Zappa versus Rybka in 2007 in Mexico City. Lastly, there are three chapters covering the three most recent Internet Chess Club's Computer Chess Tournaments held in 2008, 2009, and 2010. These three events are each covered in late chapters and are included to give the reader a few more games between the leading engines in recent years. The final chapter makes a number of general observations.

There have been other important competitions for chess programs in recent years. These include, in particular, the yearly Dutch Computer Chess Championships, the International CSVN Tournaments, and the International Paderborn Computer Chess Championships. Games from these competitions are not presented in this book, though pointers to them appear in the references.

Information on the computing systems used in the competitions is given in most chapters. Of interest are processor speeds, memory sizes, and the number of processors used. You should be able to see the correlation between the progress in technology and the improvement in the engines.

In 1975, I published my first book entitled *Computer Chess*; it surveyed developments in the field to then. Three books, coauthored with David Levy, followed: *More Chess and Computers* in 1980, *All About Chess and Computers* in 1982, and *How Computers Play Chess* in 1991. These books surveyed the period when computers were rapidly developing and the programs were reaching grandmaster level. *Deep Blue: Computer Chess Comes of Age* was published in 1997; it covered the overall history of computer chess, focusing on Deep Blue's first encounter with Kasparov. *Deep Blue: An Artificial Intelligence Milestone* was published in 2003 and covered the story of Deep Blue, focusing on the Rematch. As said previously, this current book surveys the years since the two Deep Blue versus Kasparov matches.

Initially, I started out to write a book focusing on the three man-machine matches that constitute Chaps. 4, 5, and 8 to show that Kasparov's problems in 1997 were repeated in the three major contests in 2002, 2003, and 2006. However, as I gathered material and began to write, it became clear that the real story was the chess engines, themselves, and their steady improvement to the point now where there is little question whether man or machine is best. The issue is which engine is best now, how good it is, and, perhaps, how much better it can get.

This book may be most appreciated by chess players and aficionados of the game. A total of 118 games are included, mostly between the top engines. The games of 17 different engines are included. Analysis of the games is a risky business, as criticizing a player whose strength surpasses the world's best players is often a mistake. However, there is an attempt to examine the play nevertheless. One could write pages of analysis on each game, but a choice was made to include more games than extensive analysis. If one were to write a book about great poets or artists, it would be necessary to include examples of their writings and paintings. And here, too, the games of these great men and machines tell the story. The games are not necessarily the best games played. Our purpose is to provide a comprehensive history of their play, good and bad and mediocre.

With each game, the opening used is specified as given on the chessgames.com Web site. A tree of the openings to a depth of ten moves is given in Appendix 1. Some games have the time taken for each move, the score assigned to the move by the search engine, and the expected reply. This information is included for historical purposes and to give additional insight into the capabilities of the engines. Most often when the time indicated for a move is zero seconds, the move was thought out on the opponent's time.

There have been many games played between the top grandmasters and the top computers in recent years, but only those involving Kasparov and Kramnik are presented. Omitting those played between Hydra and British Grandmaster Michael Adams in 2005 in London was a difficult decision as the match perhaps marks the first major match in which a top grandmaster was really taken to the cleaners by a chess engine. All the games presented in this book appear in a number of places. It is their publication in one place, showing the great progress made from year to year, that distinguishes this book.

I would like to thank Frederic Friedel of chessbase.com for permission to use a number of photos. Similarly, I would like to express thanks to IBM and to the Deep

Blue team members for permission to use a photo of their team. Gian-Carlo Pascutto, Amir Ban, Bob Hyatt, Tord Romstad, Anthony Cozzie, Chrilly Donninger, Frans Morsch, Jeroen Noomen, Stefan Meyer-Kahlen, Vasik Rajlich, Zach Wegner, and Johannes Zwanzger also provided greatly appreciated background information and photos for this book, and I extend my thanks to them.

October 2010

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<http://www.springer.com/978-0-85729-340-4>

Beyond Deep Blue

Chess in the Stratosphere

Newborn, M.

2011, XII, 287 p., Hardcover

ISBN: 978-0-85729-340-4