The 4th Harvard Cup Human Versus Computer Chess Challenge

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The fourth edition in the series of Harvard Cup tournaments was held on Saturday, 6 November 1993 at The Computer Museum in Boston, MA. As in previous years, it was a Scheveningen-format match between a team of American grandmasters and a team of computers, with all games played at the G/25 time control. This year, six grandmasters and six computers competed for six rounds, a total of 36 games.

The grandmasters were Michael Rohde, Patrick Wolff, Boris Gulko, Joel Benjamin, Ilya Gurevich, and Alexander Ivanov. The computers included two commerciallyavailable dedicated units and four PC programs. The dedicated units were ChessSystem R30 by TASC B.V. (operated by Chris Avery) and Renaissance SPARC by Saitek Industries Ltd. (operated by Andrew Metrick), and the PC programs were Kasparov's Gambit by Electronic Arts (operated by Marc Leski), BattleChess 4000 SVGA by Interplay Productions (operated by Mark Glickman), M-Chess Professional 3.42 by M Chess (operated by Roger LaFlair), and Socrates Exp by Heuristic Software (operated by Larry Kaufman and Don Dailey). The first two programs listed were commercially available, and the last two were prototypes of future versions of commercial products.

The four PC programs ran on systems provided by Intel Corporation, the title sponsor of the event, which were based on Pentium processors running at 60 MHz with 16 megabytes of RAM.

The event began with remarks by Bruce Mazlish, an MIT professor and author of the book "The Fourth Discontinuity: The Co-evolution of Humans and Machines," and Paul Sullivan of Intel. Chief Arbiter Joel Salman conducted the drawing of lots using numbered, colored diskettes. International Masters Maurice Ashley and Danny Kopec provided commentary during and between the rounds. Play proceeded throughout the morning and afternoon with no significant incidents. There was considerable media coverage of the event, including a segment on an ABC News Nightline episode devoted entirely to chess. Several hundred spectators watched the games on demonstration boards (often looking at the clocks as well), tried two of the programs (Kasparov's Gambit and BattleChess 4000 SVGA) on demonstration machines provided by the IBM PC Company, and toured The Computer Museum, the only museum of its kind in the world.

Overall, the event was organized by Daniel Edelman and Christopher Chabris, with help from Louis Mercuri and the staff of The Computer Museum, all of whom thought it was a great success.

For the computers, however, it was a mild disappointment. Last year they scored 7 points in 25 games, or 28%, but this year they managed only 9 points in 36 games, or 25%. An insignificant setback, surely, but hardly the leap forward that was expected from the much better hardware and additional year of improvements in software. Playing conditions were better this year, but perhaps the grandmasters are gaining experience in playing

computers, and this is helping them to keep pace somewhat with technological improvements. And of course, a sample of 36 games played in one day is not the best for drawing farreaching conclusions.

Joel Benjamin certainly had few problems in scoring a perfect 6-0 victory and earning $1000. Alexander Ivanov at 5-1 received $500. Bunched at 4.5-1.5 were Wolff, Gurevich, and an undefeated Gulko. Rohde, thought to be a specialist in playing computers, appeared fatigued and only managed 2.5-3.5.

On the computer side the winner was Socrates Exp, developed by Larry Kaufman and Don Dailey for Heuristic Software. Their Alpha and Socrates programs had won the previous two Harvard Cups (Deep Thought won the first) among computers, and the three programs now have a combined score of 8/15 against strong grandmasters, including several wins in previous years on what would now be considered obsolete hardware. Following close behind was ChessSystem R30 with 2.5. M-Chess Professional 3.42 quickly beat Wolff in the first round but wound up tied with the surprising BattleChess 4000 SVGA for third place at 1.5. Renaissance SPARC and Kasparov's Gambit rounded out the field.

Benjamin and Socrates will have their names engraved on the permanent Malcolm H. Wiener Trophy and will be invited to defend their titles in the 5th Harvard Cup in 1994.

RESULTS:

| PLAYER | (FIDE) | SocExp | CSR30 | MCPro | BC400 | RenSPARC | KGambit | TOTAL |
|---|---|---|---|---|---|---|---|---|
| Benjamin | (2620) | b 1-0 | w 1-0 | b 1-0 | w 1-0 | w 1-0 | b 1-0 | 6.0 |
| Ivanov | (2535) | b 0-1 | w 1-0 | b 1-0 | b 1-0 | w 1-0 | w 1-0 | 5.0 |
| Gulko | (2635) | b 1/2 | w 1-0 | b 1/2 | w 1/2 | b 1-0 | w 1-0 | 4.5 |
| Wolff | (2585) | w 1-0 | b 1/2 | w 0-1 | b 1-0 | w 1-0 | b 1-0 | 4.5 |
| Gurevich | (2575) | w 1/2 | b 1-0 | w 1-0 | b 1-0 | b 1-0 | w 0-1 | 4.5 |
| Rohde | (2575) | w 0-1 | b 0-1 | w 1-0 | w 0-1 | b 1/2 | b 1-0 | 2.5 |
| | TOTAL | 3.0 | 2.5 | 1.5 | 1.5 | 0.5 | 0.0 | 27-9 |
| | TPR* | 2588 | 2528 | 2395 | 2395 | 2168 | ---- | |
| | SE* | 142 | 144 | 164 | 164 | 257 | --- | |

(*Tournament performance ratings and their standard errors were computed by Mark Glickman. FIDE ratings are from the July 1993 list. In results, color and score are from the human player's point of view.)

Before and after the main event, a special series of games was played between KChess, a PC program under development by David Kittinger, and some of the Harvard Cup grandmasters and staff. Against Wolff, Ivanov, Kopec, and International Master Elliott

Winslow, KChess made an even score of 4/8, good for a performance rating of FIDE 2495 (standard error 128) on Pentium hardware (one game was played on a 486/66).


ROUND 1
(Humans 4, Computers 2 / Cumulative score: Humans 4, Computers 2)

The first round portended danger for the Grandmasters. Rohde (last year's winner and an experienced computer player) was upset by ChessSystem R30 when his attack failed while it simply promoted its c-pawn. Gulko was more successful in his attack with the Black pieces; a vicious exchange sacrifice led to great kingside chances for him. After Black ceded his strong point at e5 in a Spanish Game Ivanov was able to get strong kingside attacking chances against Kasparov's Gambit. The pressure was only relieved when Black converted into a lost ending an exchange down. Benjamin played beautifully to win a rook ending from a c3-Sicilian. Patrick Wolff obtained a winning attack against M-Chess but due to a hallucination gave up too much material and lost the endgame.

Alexander Ivanov -- Kasparov's Gambit
Spanish Game
1 e4 e5 2 Nf3 Nc6 3 Bb5 a6 4 Ba4 Nf6 5 0-0 Be7 6 Re1 b5 7 Bb3 d6 8 c3 0-0 9 h3 Nb8 10 d4 Nbd7 11 Nbd2 Bb7 12 Bc2 Re8 13 Nf1 Bf8 14 Ng3 g6 15 a4 Bg7 16 Bd3 c6 17 Bg5 h6 18 Bd2 Kh7 19 h4 exd4 20 cxd4 Kg8 21 Qc1 Kh7 22 h5 c5 23 hxg6+ fxg6 24 e5 dxe5 25 dxe5 Ng4 26 Bxg6+ Kxg6 27 Qc2+ Kf7 28 Qf5+ Kg8 29 Qxg4 Bxf3 30 Qxf3 Nxe5 31 Qd1 Nc4 32 Rxe8+ Qxe8 33 Bc3 Rd8 34 Qg4 Ne5 35 Bxe5 Qxe5 36 axb5 axb5 37 Nf5 Kh8 38 Ra6 Qxb2 39 Rg6 Rd4 40 Nxd4 Qa1+ 41 Kh2 Qxd4 42 Qxd4 Bxd4 43 Rxh6+ Kg7 44 Rb6 Bxf2 45 Rxb5 Bd4 46 Kg3 Kf6 47 Kf4 Be5+ 48 Ke4 Bd4 49 Rb8 Kg5 50 Rc8 Kf6 51 g4 Kf7 52 Rd8 Kg6 53 Kf4 Bg7 54 Rd6+ Kf7 55 Kf5 Ke7 56 Re6+ Kd7 57 g5 Bd4 58 Re4 Kd6 59 g6 Bg7 60 Re6+ Kd7 61 Ra6 Ke7 62 Ra7+ Kf8 63 Ra8+ Ke7 64 Rc8 Bd4 65 Kg5 Kd6 66 Kh6 Kd7 67 Rxc5 Kd6 68 Rc8 1-0

Ilya Gurevich -- BattleChess 4000 SVGA
Philidor Defense
1 e4 e5 2 Nf3 d6 3 d4 Nf6 4 Nc3 Nbd7 5 Bc4 Be7 6 a4 exd4 7 Nxd4 Ne5 8 Ba2 0-0 9 0-0 Bd7 10 f4 Bg4 11 Qe1 Ng6 12 h3 Bd7 13 Qf2 Qe8 14 Bd2 Bxa4 15 Nxa4 Nxe4 16 Qe3 Bh4 17 Nc3 Ng3 18 Rf3 Qxe3+ 19 Bxe3 a6 20 Bf2 Nh5 21 Bxh4 Nxh4 22 Rf2 Rae8 23 g4 Nf6 24 Kh2 Re3 25 Re2 Rxe2+ 26 Ndxe2 Re8 27 Kg3 Ng6 28 Kf3 Nh4+ 29 Kf2 h5 30 g5 Ne4+ 31 Nxe4 Rxe4 32 Bd5 Rb4 33 b3 Kf8 34 Bc4 c6 35 Ra4 Rxa4 36 bxa4 Ng6 37 Bd3 b5 38 axb5 cxb5 39 Bxg6 fxg6 40 Ke3 Kf7 41 Nd4 d5 42 Kd3 b4 43 Nc6 Ke6 44 Nxb4 a5 45 Nc6 a4 46 Nd4+ Kf7 47 Kc3 a3 48 Kb3 a2 49 Kxa2 Ke7 50 Kb3 Kd7 51 Kb4 1-0

Socrates Exp -- Joel Benjamin
Sicilian Defense
1 e4 c5 2 c3 d5 3 exd5 Qxd5 4 d4 Nf6 5 Nf3 Nc6 6 Na3 Bg4 7 Be2 cxd4 8 cxd4 e5 9 dxe5 Qxd1+ 10 Bxd1 Bb4+ 11 Bd2 Bxd2+ 12 Kxd2 0-0-0+ 13 Kc1 Ne4 14 Rf1 Rd5 15 Nd2 Nxd2 16 Bxg4+ Kb8 17 Re1 Rhd8 18 f4 Rc5+ 19 Nc2 Nb4 20 Bd1 Nxc2 21 Bxc2 Rdc8 22 Kxd2 Rxc2+ 23 Ke3 Rxb2 24 Re2 Rc3+ 25 Kf2 Rxe2+ 26 Kxe2 Ra3 27 Kd2 g6 28 g3 h5 29 Ke2 b5 30 Kd2 Kb7 31 Kc2 Kb6 32 Kb2 Re3 33 Rc1 Re2+ 34 Rc2 Rxc2+ 35

Kxc2 Kc5 36 Kd3 Kd5 37 Ke3 a5 38 Kd3 b4 39 Ke3 a4 40 Kd3 Kc5 41 h3 Kd5 42 g4 h4
43 f5 gxf5 44 gxf5 Kxe5 45 f6 Kxf6 46 Kc4 b3 47 axb3 axb3 48 Kxb3 Ke5 49 Kc3 Kf4 50
Kd4 Kg3 51 Ke4 Kxh3 0-1

Patrick Wolff -- M-Chess Professional 3.42
Sicilian Defense
1 e4 c5 2 Nf3 d6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 a6 6 Bc4 e6 7 Bb3 b5 8 0-0 Be7 9 Qf3 Qc7
10 Qg3 b4 11 Nce2 0-0 12 Bh6 Ne8 13 c3 bxc3 14 Nxc3 Nd7 15 Bxe6 fxe6 16 Nxe6 Qc4
17 Bxg7 Qxe6 18 Bxf8+ Kxf8 19 f4 Rb8 20 b3 Nef6 21 Rae1 Qg4 22 Qxg4 Nxg4 23 h3
Ngf6 24 e5 Ne8 25 Nd5 Bh4 26 Re3 dxe5 27 fxe5+ Kg7 28 Re4 Bg5 29 Rg4 Kh6 30 Rf5
Ndf6 31 Rgxg5 Bxf5 32 Rxf5 Nxd5 33 g4 Ng7 34 Rf7 Ne6 35 Kg2 Rc8 36 Kg3 Ng5 37
Ra7 Rc3+ 38 Kf2 Nxh3+ 39 Ke1 Re3+ 40 Kd2 Nhf4 41 Rxa6+ Kg5 42 Ra7 Re2+ 43 Kc1
Nd3+ 0-1

Renaissance SPARC -- Boris Gulko
English Opening
1 c4 e5 2 Nf3 e4 3 Nd4 Nc6 4 Nxc6 dxc6 5 Nc3 Nf6 6 g3 Bc5 7 Qb3
0-0 8 Bg2 Re8 9 0-0 h5 10 Na4 Bd4 11 e3 Be5 12 Nc5 h4 13 Nxb7 Qe7 14 d4 exd3 15
Na5 hxg3 16 Nxc6 gxf2+ 17 Kh1 Qd6 18 c5 Qxc5 19 Nxe5 Qxe5 20 Rxf2 Bf5 21 Bxa8
Rxa8 22 a4 Ng4 23 Rf4 Be4+ 24 Kg1 Qh5 25 Qxf7+ Qxf7 26 Rxf7 Kxf7 27 Bd2 Ke6 28
Rc1 Rh8 29 Rc4 Kd5 30 Rd4+ Ke5 31 Ba5 c5 32 Bc7+ Kf5 33 Rd7 Nf6 34 Rd6 Ne8 35
Rd8 Nxc7 36 Rxh8 d2 37 Rf8+ Ke5 38 Rf1 Bc2 39 a5 d1/Q 0-1

ChessSystem R30 -- Michael Rohde
Bogo-Indian Defense
1 d4 Nf6 2 c4 e6 3 Nf3 Bb4+ 4 Bd2 c5 5 Bxb4 cxb4 6 g3 0-0 7 Nbd2 Nc6 8 Bg2 d6 9 0-0
e5 10 Qc2 Bg4 11 e3 a5 12 dxe5 dxe5 13 Rfd1 Qe7 14 Ne4 Rad8 15 h3 Bf5 16 Nfd2
Kh8 17 g4 Bg6 18 Rac1 Rd7 19 g5 Ng8 20 Nf1 Rfd8 21 Nfg3 h6 22 h4 f5 23 Rxd7 Rxd7
24 h5 fxe4 25 hxg6 Qxg5 26 Bxe4 Nf6 27 Bf5 Rd8 28 Kf1 Nh5 29 Nxh5 Qxh5 30 Be4
Ne7 31 Bxb7 Nxg6 32 c5 Nh4 33 c6 Qg4 34 c7 Qh3+ 35 Ke1 Rc8 36 Rd1 1-0


ROUND 2
(Humans 5, Computers 1 / Cumulative Score: Humans 9, Computers 2)

The humans took more risks this round with their pawn structures. The grandmasters
made many more pawn advances, which, with one exception, did not turn out badly. This
time Wolff's long attack with an exchange sacrifice in the Yugoslav Attack of the Dragon
Variation of the Sicilian Defense did finally work. Socrates's defense against Rohde's two
bishops proved what a solid program it is. Ivanov played very riskiliy with his pawns
across the board, but eventually M-Chess's queenside greed left a knight offside while
Ivanov concocted a devastating attack. Benjamin played a dynamic and instructive game-
also stemming from an opening where his queenside pawns were slightly weakened for
activity. Gulko used the slow buildup approach for White against computers (to which he
could add his signature). Ilya Gurevich played a very impressive attacking game against
Kasparov's Gambit. He repeated Fischer's opening choice as Black in the Gruenfeld
against Petrosian in 1971 in the Candidates Matches. With White's king caught in the
center, sacrificing three pawns against a computer proved an excellent idea.

Kasparov's Gambit -- Ilya Gurevich
Gruenfeld Defense
1 d4 Nf6 2 c4 g6 3 Nc3 d5 4 Bf4 Bg7 5 e3 c5 6 dxc5 Qa5 7 Rc1 Ne4 8 cxd5 Nxc3 9 Qd2
Qxa2 10 bxc3 Qa5 11 Nf3 Nd7 12 c6 bxc6 13 dxc6 Nc5 14 Qb2 Na4 15 Qa3 0-0 16 Nd4
e5 17 Nb3 Qd5 18 Bxe5 Bxe5 19 Qxa4 Rb8 20 Nd4 Rb2 21 Qxa7 Bh3 22 Qa3 Rfb8 23
c4 Qe4 24 f3 Qh4+ 25 g3 Qh6 26 Nb5 Bxf1 27 c7 Re8 28 Rxf1 Qxh2 29 Qd3 Bxc7 30
Kd1 Red8 31 Nd4 Qg2 32 Ra1 Be5 33 Kc1 Bxd4 34 exd4 Re8 0-1

BattleChess 4000 SVGA -- Joel Benjamin
Sicilian Defense
1 e4 c5 2 Nc3 Nc6 3 f4 e6 4 Nf3 Nge7 5 d4 cxd4 6 Nxd4 d5 7 Nxc6 bxc6 8 Be3 Rb8 9
Rb1 Qc7 10 Qd2 dxe4 11 Nxe4 Nd5 12 Bc4 f5 13 Bxd5 cxd5 14 Nc3 Ba6 15 Bd4 Bd6 16
Qe3 Kf7 17 g3 Rb4 18 a3 Rc4 19 b4 Rc8 20 Kd2 Qd7 21 Rhe1 Be7 22 Rb3 Rxd4+ 23
Qxd4 Bf6 24 Qf2 Bc4 25 Rbb1 d4 26 Nd1 d3 27 c3 Qa4 28 Rc1 Qxa3 29 h4 Bb3 30 c4
Qxb4+ 31 Nc3 Bc2 32 Qxa7+ Kg8 33 Re5 Bxe5 34 fxe5 Qxc4 35 Qa3 Qd4 36 Rf1 Qxe5
37 Rf4 h6 38 Qb4 Rxc3 39 Qxc3 Qe2+ 40 Kc1 Qd1+ 41 Kb2 Qb1+ 42 Ka3 d2 43 Rd4
d1/Q 44 Rxd1 Bxd1 45 Qc8+ Kh7 46 Qxe6 Qb3+ 47 Qxb3 Bxb3 48 Kxb3 Kg6 49 Kc4
Kh5 50 Kd3 Kg4 51 Ke2 Kxg3 52 h5 Kg4 53 Kd3 Kxh5 54 Kc4 f4 0-1

Michael Rohde -- Socrates Exp
Queen's Indian Defense
1 Nf3 Nf6 2 c4 b6 3 Nc3 Bb7 4 d4 d5 5 cxd5 Nxd5 6 Qc2 e6 7 e4 Nxc3 8 bxc3 Nd7 9 Bd3
Be7 10 0-0 0-0 11 Bf4 c5 12 d5 exd5 13 exd5 Bxd5 14 Bxh7+ Kh8 15 Bf5 Bxf3 16 gxf3
Bg5 17 Bd6 Be7 18 Bg3 Nf6 19 Rfe1 Rg8 20 Rad1 Qf8 21 Qe2 Re8 22 Bc2 Bd6 23 Qf1
Rxe1 24 Qxe1 Bxg3 25 hxg3 Qa8 26 Qe7 Qxf3 27 Re1 Qxc3 28 Bb1 Ra8 29 Rd1 Re8 30
Rd8 Qc1+ 31 Kg2 Rxd8 32 Qxd8+ Ng8 33 Be4 Qh6 34 Bd5 Qh5 35 Qd7 Nf6 36 Qc8+
Kh7 37 Bf3 Qe5 38 Qb7 Qe6 39 Qxa7 c4 40 a4 c3 41 Qc7 Qb3 42 Qc8 c2 43 Qh3+ Kg6
44 Qc8 Qb2 45 Be2 c1/Q 46 Bd3+ Kg5 47 Qf5+ Kh6 48 Qh3 Nh5 49 Qf5 Qf6 0-1

M-Chess Professional 3.42 -- Alexander Ivanov
Modern Defense
1 e4 g6 2 d4 Bg7 3 Nc3 c6 4 Bc4 b5 5 Bb3 a5 6 a4 b4 7 Nce2 d5 8 e5 Na6 9 Bg5 f6 10
exf6 exf6 11 Bf4 Ne7 12 h3 0-0 13 Nf3 g5 14 Bg3 Ng6 15 h4 g4 16 Nd2 h5 17 c3 Bf5 18
0-0 Bh6 19 Bc2 Bxc2 20 Qxc2 f5 21 Nb3 Kg7 22 Be5+ Kh7 23 Ng3 Qxh4 24 Nxf5 Qg5 25
Nxh6 Kxh6 26 Nxa5 Rac8 27 Bd6 Rf6 28 Bxb4 Nxb4 29 cxb4 Nh4 30 Kh1 Nf3 31 g3
Nxd4 32 Qc3 Nf3 33 Rfd1 Kg7 34 Nb3 h4 35 Nd4 Kf7 36 Kg2 Rh8 37 gxh4 Nxh4+ 38 Kf1
g3 39 f3 Ng6 40 b5 Nf4 41 Ne2 Rh1+ 42 Ng1 Rxg1+ 43 Kxg1 Ne2+ 44 Kg2 Nxc3 45 Rd3
Ne2 46 Rb3 Nf4+ 47 Kf1 g2+ 48 Kf2 Re6 49 Re3 Nh3+ 50 Ke2 Qxe3+ 51 Kd1 Qd3+ 52
Kc1 g1/R mate 0-1

Patrick Wolff -- Renaissance SPARC
Sicilian Defense
1 e4 c5 2 Nf3 d6 3 d4 Nf6 4 Nc3 cxd4 5 Nxd4 g6 6 Be3 Bg7 7 f3 0-0 8 Qd2 Nc6 9 Bc4
Qa5 10 0-0-0 Bd7 11 Bb3 Rfc8 12 h4 Ne5 13 Kb1 Nc4 14 Bxc4 Rxc4 15 Nb3 Qc7 16 h5
gxh5 17 Bh6 Kh8 18 Bxg7+ Kxg7 19 Nd5 Nxd5 20 Qg5+ Kf8 21 exd5 Rc8 22 Qh6+ Ke8
23 Qxh7 Kd8 24 Rd2 Be8 25 Re1 a5 26 Nd4 Rb4 27 Qe4 Qd7 28 Rde2 Rc7 29 a3 Rb6
30 Kc1 Qa4 31 Nf5 Qb3 32 Qxe7+ Rxe7 33 cxb3 Rxe2 34 Rxe2 Bd7 35 Nd4 h4 36
Kd2 Bc8 37 Re1 h3 38 g4 a4 39 b4 Bd7 40 Rh1 Ra6 41 Rxh3 Rb6 42 Rh7 Be8 43 g5

Kc8 44 f4 Ra6 45 f5 Rb6 46 f6 Kd8 47 g6 fxg6 48 Ne6+ Kc8 49 Re7 Bf7 50 Rxf7 Kb8 51 Rd7 Ka7 52 f7 1-0

Boris Gulko -- ChessSystem R30
Queen's Pawn Opening
1 d4 c6 2 Nf3 Nf6 3 Bf4 d6 4 e3 Nd5 5 Bg3 Qb6 6 Qc1 g6 7 c4 Nf6 8 Nc3 Bf5 9 Be2 Bg7 10 0-0 0-0 11 c5 dxc5 12 Na4 Qb4 13 Nxc5 Nbd7 14 a3 Qb6 15 Na4 Qb3 16 Nc3 Nb6 17 Nd2 Qe6 18 Re1 Nfd5 19 e4 Nxc3 20 bxc3 Bg4 21 f3 Bh5 22 Rb1 Rfc8 23 Qc2 c5 24 d5 Qf6 25 e5 Qg5 26 f4 Qh6 27 c4 Bxe2 28 Rxe2 Qh5 29 Nf3 Rc7 30 h3 Qf5 31 Qxf5 gxf5 32 Rc2 Bh6 33 Ne1 Bg7 34 Nd3 f6 35 Bf2 fxe5 36 fxe5 Na4 37 Re1 Rac8 38 Nf4 Rd7 39 Bh4 b5 40 cxb5 c4 41 e6 Rb7 42 Bxe7 Bc3 43 Rd1 Rxe7 44 d6 Rg7 45 Nd5 Rb8 46 Nxc3 Nc5 47 Re2 Kf8 48 Rd5 Rg3 49 Rxc5 Rxc3 50 d7 Ke7 51 Rc8 Rd3 52 Rxb8 1-0


ROUND 3
(Humans 3.5, Computers 2.5 / Cumulative score: Humans 12.5, Computers 5.5)

Benjamin continued his strong technical approach. Socrates upset Ivanov mainly by hanging in tough with two rooks against a queen. Gurevich made it look easy by winning a piece in and ending. Wolff tried to steer ChessSystem into an ending that he thought he could win from a c3 Sicilian, but ChessSystem managed to hold on. Gulko exhibited another beautiful slow buildup of his center, and once again Rhode simply played too sharply.

Boris Gulko -- Kasparov's Gambit
Queen's Pawn Opening
1 d4 Nf6 2 Bf4 Nc6 3 Nf3 e6 4 c4 Bb4+ 5 Nbd2 d6 6 a3 Bxd2+ 7 Qxd2 0-0 8 e3 Qe8 9 Be2 e5 10 Bg3 e4 11 Ng1 Bf5 12 Bh4 Qe7 13 Bd1 a6 14 Ne2 h6 15 Nc3 g5 16 Bg3 Rad8 17 h4 g4 18 h5 d5 19 cxd5 Nxd5 20 Nxd5 Rxd5 21 Bb3 Rd7 22 Rc1 Be6 23 Bxe6 Qxe6 24 Rc5 f5 25 0-0 Qf7 26 Qc2 Rfd8 27 Rc1 Re8 28 Qc4 Qxc4 29 R1xc4 Rf8 30 b4 Rff7 31 a4 Ne7 32 Bxc7 Nd5 33 Be5 Nb6 34 Rc1 Nxa4 35 Rc8+ Rf8 36 Rxf8+ Kxf8 37 Rc8+ Ke7 38 Rh8 Nb2 39 Rxh6 Nd3 40 Rh7+ Ke6 41 Rxd7 1-0

Michael Rohde -- BattleChess 4000 SVGA
English Opening
1 Nf3 Nf6 2 c4 g6 3 Nc3 d5 4 cxd5 Nxd5 5 Qa4+ Nc6 6 Nxd5 Qxd5 7 e4 Qe6 8 Bb5 Bd7 9 0-0 Bg7 10 d3 Qd6 11 Be3 Bxb2 12 Rab1 Bg7 13 d4 a6 14 e5 Qe6 15 d5 Qxd5 16 Rfd1 Qe6 17 Bc4 Nxe5 18 Bxe6 Nxf3+ 19 gxf3 Bxa4 20 Bb3 Bc6 21 Bd5 Bxd5 22 Rxd5 e6 23 Rd2 b6 24 Rc2 Be5 25 f4 Bd6 26 Kg2 0-0 27 Rc6 Rfd8 28 Kf3 Kf8 29 Ke2 Ke7 30 h3 Kf6 31 Rd1 Rab8 32 Kf3 Kf5 33 Rg1 h6 34 h4 Rd7 35 Rcc1 Be7 36 Rh1 h5 37 Rc6 Rb7 38 Rh2 Rd3 39 Rh1 Bd6 40 Rg1 Bxf4 [time] 0-1

Socrates Exp -- Alexander Ivanov
Modern Defense
1 e4 g6 2 d4 Bg7 3 Nf3 d6 4 Be2 b6 5 0-0 Bb7 6 Nc3 e6 7 d5 e5 8 Be3 Nd7 9 a4 Ne7 10 a5 a6 11 axb6 cxb6 12 Qd2 0-0 13 Bh6 b5 14 Bxg7 Kxg7 15 Rfe1 h6 16 Rad1 Rc8 17 Bd3 Qc7 18 Nh4 g5 19 Nf3 Nc5 20 Rc1 Ng6 21 Qe3 Qd7 22 Bf1 b4 23 Na2 a5 24 Nd2 f5 25 exf5 Rxf5 26 Nc4 Qc7 27 Qh3 Rcf8 28 Ne3 R5f6 29 Qh5 Bc8 30 Qe2 Rxf2 31 Qxf2 Rxf2 32 Kxf2 Ne4+ 33 Kg1 Qf7 34 Bd3 Qf2+ 35 Kh1 Nc5 36 Re2 Qh4 37 Bf5 Ba6 38 g3

Qd4 39 c3 bxc3 40 bxc3 Qa4 41 c4 Ne7 42 Rcc2 Qe8 43 Rf2 Bc8 44 Bxc8 Qxc8 45 Nc3 Nd3 46 Rfd2 Nb4 47 Rb2 Qc5 48 Re2 Qd4 49 Nb5 Qe4+ 50 Kg1 Qg6 51 Nc7 Kg8 52 Ne6 Qd3 53 Re1 Ng6 54 Rbb1 h5 55 Nxg5 h4 56 Rbd1 Qb3 57 Ne4 Nd3 58 Rb1 Qa2 59 Rb8+ Kf7 60 Rf1+ Ke7 61 Nf5+ Kd7 62 Rb7+ Kd8 63 Nxd6 h3 64 Rf8+ Nxf8 65 Nf7+ 1-0

Joel Benjamin -- M-Chess Professional
Tarrasch Defense
1 d4 Nf6 2 Nf3 d5 3 c4 e6 4 Nc3 c5 5 cxd5 exd5 6 Bg5 Be7 7 e3 Nc6 8 dxc5 0-0 9 Rc1 h6 10 Bh4 Be6 11 Be2 Bxc5 12 Nxd5 Qa5+ 13 Qd2 Qxd2+ 14 Nxd2 Bxd5 15 Rxc5 g5 16 Bg3 Bxg2 17 Rg1 Bh3 18 f4 Nh7 19 Nf3 Rfc8 20 fxg5 b6 21 Rc3 hxg5 22 Ba6 Bg4 23 Bxc8 Rxc8 24 Ne5 Nxe5 25 Bxe5 Rxc3 26 Bxc3 Be6 27 Kf2 f6 28 Bd4 a6 29 a3 b5 30 Rc1 Bc4 31 Rc3 Kf7 32 b3 Bd5 33 Rc7+ Kg6 34 b4 Nf8 35 Ra7 Ne6 36 Rxa6 Nxd4 37 exd4 Kf5 38 Ke3 Kg6 39 Rd6 Bb3 40 Rb6 Bc4 41 Rc6 Bb3 42 Rc3 Be6 43 Rc5 Bd7 44 d5 f5 45 Rc7 f4+ 46 Kd4 Bf5 47 d6 Kf6 48 d7 Ke7 49 d8/Q+ Kxd8 50 Rc5 Bd7 51 Rxg5 f3 52 Ke3 f2 53 Kxf2 Ke7 54 h4 Kf6 55 Ke3 Be8 56 Kf4 Bc6 57 h5 1-0

Renaissance SPARC -- Ilya Gurevich
Gruenfeld Defense
1 Nf3 Nf6 2 d4 g6 3 c4 Bg7 4 Nc3 d5 5 Qa4+ Bd7 6 Qb3 dxc4 7 Qxc4 a6 8 Bf4 b5 9 Qc5 0-0 10 Bxc7 Qc8 11 Be5 Qxc5 12 dxc5 Nc6 13 e3 Nxe5 14 Nxe5 Rfc8 15 Nd3 Bf5 16 a4 Bxd3 17 Bxd3 b4 18 Na2 Nd7 19 c6 Nc5 20 Nxb4 a5 21 Rc1 Nb3 22 Rc4 axb4 23 Rxb4 Na5 24 Be4 Nxc6 25 Bxc6 Rxc6 26 0-0 Rc2 27 b3 Bf6 28 Rd1 Ra2 29 Rb7 Rc8 30 g3 Rcc2 31 Rf1 Bg5 32 Kg2 Bxe3 33 Rxe7 Bxf2 34 Kh3 h5 35 Kh4 Kg7 36 Kh3 Kh6 37 Rxf7 Bg1 38 g4 Rxh2+ 39 Kg3 h4+ 40 Kf4 Rhf2+ 41 Ke4 Rxf7 42 Rxf7 h3 43 Rf8 h2 44 Rh8+ Kg5 45 Kd3 Kxg4 46 Rh6 g5 47 Rh7 Kg3 48 Rh5 g4 49 a5 Kg2 50 Ke4 h1/Q 0-1

ChessSystem R30 -- Patrick Wolff
Sicilian Defense
1 e4 c5 2 c3 Nf6 3 e5 Nd5 4 d4 cxd4 5 cxd4 d6 6 Nf3 Nc6 7 Nc3 dxe5 8 dxe5 Nxc3 9 Qxd8+ Nxd8 10 bxc3 Bd7 11 Bd3 e6 12 0-0 Rc8 13 Bd2 h6 14 Rfe1 Bc5 15 Nd4 0-0 16 Nb3 Be7 17 Rad1 Nc6 18 f4 Rfd8 19 Be3 Be8 20 Bf2 Kf8 21 Re3 b6 22 Rh3 Nb8 23 Bd4 Ba4 24 f5 exf5 25 Bxf5 Bd7 26 Rf3 Kg8 27 Bxd7 Rxd7 28 Re1 Nc6 29 Rxf7 Nxd4 30 Nxd4 Kxf7 31 e6+ Ke8 32 exd7+ Kxd7 33 Rd1 Bf6 34 Nb5+ Ke6 35 Nxa7 Rxc3 36 Nb5 Rc6 37 Re1+ Kd5 38 Rd1+ Kc4 39 Rc1+ Kd5 40 Rd1+ Ke4 41 a4 Ke3 42 Re1+ Kd3 43 Kf2 Kc2 44 Kf3 Kb3 45 Re4 Rc4 46 Rxc4 Kxc4 47 Nc7 Kb4 48 Nd5+ Ka5 49 Ke4 Bd8 50 Nc3 Kb4 51 Kd3 Kb3 52 g3 Be7 53 Nd5 Bc5 54 Nc3 Bb4 55 Nd5 Ba5 56 Ne7 h5 57 Nd5 Kxa4 58 Nf4 b5 59 Nxh5 Ka3 60 Nxg7 b4 61 Nf5 b3 62 Ne3 Bc7 63 Nd5 b2 64 Kc2 Ka2 65 Nc3+ Ka1 1/2-1/2


ROUND 4
(Humans 4.5, Computers 1.5 / Cumulative score: Humans 17, Computers 7)

In the Modern Defense played by Gulko against M-Chess it appeared that White had strong kingside attacking possibilities; in the ensuing ending White wins a pawn but the game simplifies into a draw. Gurevich vs. Socrates was truly a drawn game from the opening. Wolff defended well to win a Richter-Rauzer Sicilian against BattleChess. Rhode's draw against Renaissance, stemming his unprecedented losing streak, was actually a wonderful creative effort on his part. Ivanov's game against ChessSystem took

a very delicate course. In many ways his play was like a computer's -- he stole a pawn and hung onto it for dear life until he could to transform it into a winning ending. Benjamin -- Kasparov's Gambit was probably the only game where Benjamin did not really deserve to win. In this game of "wild rooks" either side could have come out a winner and a draw would have been fair, but Benjamin won on time. After this round the computers, with 7/24, were slightly ahead of last year's total of 7/25, but far from fatigue for the humans, the last two rounds saw their results improve.

Joel Benjamin -- Kasparov's Gambit
Queen's Gambit Declined
1 d4 Nf6 2 Nf3 d5 3 c4 e6 4 Nc3 Be7 5 Bg5 0-0 6 e3 h6 7 Bh4 Ne4 8 Bxe7 Qxe7 9 Rc1 Nxc3 10 Rxc3 c6 11 Bd3 dxc4 12 Rxc4 Nd7 13 0-0 e5 14 dxe5 Nxe5 15 Re4 Nxf3+ 16 Qxf3 Be6 17 Bc4 Rad8 18 Bxe6 fxe6 19 Qe2 Rd5 20 h3 Rfd8 21 b4 Rd2 22 Qc4 R8d5 23 a4 Kh8 24 b5 c5 25 a5 b6 26 a6 e5 27 Rg4 Qd7 28 Rg6 Rb2 29 Rc6 Rb4 30 Qe2 Rd2 31 Qf3 Kg8 32 Qg3 Rxb5 33 Rxh6 Qd3 34 Re1 Rbb2 35 Rg6 Qd7 36 Qxe5 Rxf2 37 Kh2 Ra2 38 e4 Rad2 39 Re3 Rf7 40 Reg3 Re7 41 Qb8+ Qd8 42 Qf4 Rd4 43 Qg5 Qd7 44 e5 Rd5 45 Qh4 Rexe5 46 Rh6 Qe7 47 Rh8+ Kf7 48 Rf3+ Ke6 49 Qg4+ Kd6 50 Qc8 Qc7 51 Qa8 Ke7 52 Rg3 Rg5 53 Re8+ Kd6 54 Rge3 c4 55 Qd8+ Qxd8 56 Rxd8+ Kc6 57 Rc8+ Kb5 58 Rc7 Rd2 59 Rg3 Rxg3 60 Kxg3 Kxa6 61 Rxc4 Kb7 62 h4 a5 63 Rf4 [time] 1-0

BattleChess 4000 SVGA -- Patrick Wolff
Sicilian Defense
1 e4 c5 2 Nf3 d6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 Nc6 6 Bg5 e6 7 Qd2 Be7 8 0-0-0 0-0 9 Nb3 Qb6 10 f3 Rd8 11 Be3 Qc7 12 Qf2 d5 13 Kb1 dxe4 14 Rxd8+ Bxd8 15 Nxe4 Nxe4 16 fxe4 b6 17 Bf4 e5 18 Be3 Be6 19 Bb5 Be7 20 Rd1 Nd8 21 Qg3 Nb7 22 Bh6 Bf6 23 Rf1 Qd8 24 Be3 Nd6 25 Rd1 Qc7 26 Bd3 Qc6 27 Nd2 Rc8 28 Rf1 Kh8 29 h4 Nc4 30 Nxc4 Bxc4 31 Bf2 Bxh4 32 Qh3 Bxd3 33 Qxd3 Rd8 34 Qe2 Bxf2 35 Qxf2 Qxe4 36 Qxf7 Qf4 37 a3 Rd1+ 38 Rxd1 Qxf7 39 Rd8+ Qg8 40 Rxg8+ Kxg8 41 b4 h5 42 c4 h4 43 c5 bxc5 44 bxc5 Kf7 45 Kc2 g5 46 Kd3 g4 47 c6 Ke6 48 Ke3 Kd6 49 Ke2 Kxc6 50 Kf1 h3 51 gxh3 gxh3 52 Kf2 e4 0-1

Ilya Gurevich -- Socrates Exp
Petroff Defense
1 e4 e5 2 Nf3 Nf6 3 Nxe5 d6 4 Nf3 Nxe4 5 d3 Nf6 6 d4 g6 7 Bd3 Bg7 8 Qe2+ Be6 9 Ng5 Qe7 10 0-0 Nc6 11 c3 Bf5 12 Qxe7+ Nxe7 13 Bxf5 Nxf5 14 Re1+ Kf8 15 Na3 h6 16 Nf3 Re8 17 Bf4 g5 18 Bg3 Nd5 19 Nc2 Nde7 20 Re4 Nxg3 21 hxg3 f5 22 Re2 Nd5 23 Rae1 Rxe2 24 Rxe2 Kf7 25 Kf1 Bf6 26 Nd2 h5 27 Nc4 h4 28 N4e3 hxg3 29 fxg3 Ne7 30 Kf2 Rh7 31 Nb4 Rh2 32 Nbd5 Nxd5 33 Nxd5 Bd8 34 Ne3 Kg6 35 g4 f4 36 Nf5 Bf6 37 Re8 Rh8 38 Rxh8 Bxh8 39 Kf3 Kf6 40 Ke4 Ke6 41 d5+ Kf7 42 g3 fxg3 43 Nxg3 Be5 44 Ne2 Kg6 45 Nc1 Kf6 46 Nd3 Bh2 47 c4 a5 48 a3 a4 49 Kd4 Bg1+ 50 Kc3 Bc5 51 b4 axb3 52 Kxb3 Bd4 53 Kb4 Ke7 54 Kb5 Kd7 55 a4 c6+ 56 Kb4 Be3 57 Kc3 c5 58 Ne1 Bf4 59 Nf3 b6 60 Ng1 Ke7 61 Ne2 Be5+ 62 Kd3 Kf6 63 Ke4 Bb2 64 Ng3 Bc1 65 Nh1 Bf4 66 Nf2 Be5 67 Kf3 Ke7 68 Ne4 Bf4 69 Ke2 Kd7 70 Kd3 Ke7 71 Kc2 Ke8 72 Kb3 Ke7 73 a5 bxa5 74 Ka4 Kd7 75 Kxa5 Kd8 76 Kb6 Kd7 77 Kb7 Be3 78 Nc3 Bd2 79 Na4 Ba5 80 Nb6+ Ke8 81 Kc6 Kd8 82 Nd7 Ke7 83 Nb8 Bc3 84 Kc7 Ba5+ 85 Kc8 Kf6 86 Kd7 Be1 87 Kxd6 Bg3+ 88 Kxc5 Bxb8 89 Kc6 Be5 90 d6 Ke6 91 c5 Bf4 92 Kb7 Bxd6 93 cxd6 Kxd6 94 Kb6 Ke5 95 Kc5 Kf4 96 Kd4 Kxg4 97 Ke4 Kg3 98 Kf5 g4 99 Ke4 Kf2 100 Kf4 g3 [time] 1/2-1/2

M-Chess Professional 3.42 -- Boris Gulko
Modern Defense
1 e4 g6 2 d4 Bg7 3 Nc3 Nc6 4 d5 Nb8 5 Nf3 d6 6 Bd3 Nf6 7 0-0 0-0 8 h3 Nbd7 9 Be3 c6
10 Bd4 Qc7 11 Be2 Re8 12 Qd2 a6 13 Qg5 c5 14 Be3 b5 15 Qh4 b4 16 Na4 e6 17 dxe6
Rxe6 18 Ng5 Re7 19 Bc4 Bb7 20 Rad1 Ne5 21 Bd5 Bxd5 22 exd5 Rae8 23 Nxc5 h6 24
Nge4 Nxe4 25 Nxe4 Nd7 26 Ng3 Qxc2 27 Qxb4 Qxb2 28 Qxb2 Bxb2 29 Bxh6 Ba3 30 f3
f5 31 Bg5 Re5 32 Bf4 R5e7 33 Kh2 Nb6 34 h4 Kf7 35 h5 Kf6 36 h6 Rh7 37 Rd3 Bc5 38
Bc1 g5 39 Bb2+ Kg6 40 Bd4 Rxh6+ 41 Kg1 Bxd4+ 42 Rxd4 Rh4 43 Rd2 Re5 44 Rb1
Rxd5 45 Rxd5 Nxd5 46 Rd1 Ne3 47 Rxd6+ Kf7 48 Rxa6 Rc4 49 Ra3 Rc1+ 50 Kh2 Re1
51 Rb3 Kg6 52 a4 f4 53 Rb6+ Kg7 54 Nh5+ Kf7 55 g3 Nf1+ 56 Kg2 Nxg3 57 Nxg3 fxg3
58 a5 Ra1 59 a6 Ra4 60 Kxg3 Kg7 61 Kf2 Ra3 62 Ke2 Kh7 63 Rc6 Kg7 64 Rd6 Kh7 65
Rb6 Kg7 66 Re6 Kh7 67 Rd6 Kg7 68 Rd7+ Kg6 69 a7 Kf5 70 Rf7+ Kg6 71 Rb7 Kf5 72
Rc7 Kf6 73 Rh7 Kf5 74 Rb7 Kf4 75 Rf7+ Ke5 76 Kf2 Ke6 77 Rg7 Kf6 78 Rc7 Kg6 79 Re7
Kf6 80 Rh7 Kg6 81 Rd7 Kf6 82 Rb7 Kg6 83 Ke1 Kf5 84 Kd2 Kf4 85 Rf7+ Ke5 86 Rd7 Kf4
87 Kc2 Ra6 88 Rf7+ Ke3 89 Kc3 Ra1 90 Kc4 Ra2 91 Kc5 Ra1 92 Kb6 Rb1+ 93 Kc7
Rc1+ 94 Kb8 Rb1+ 95 Rb7 Ra1 96 Rb3+ Kf4 97 a8/Q Rxa8+ 98 Kxa8 1/2-1/2

Renaissance SPARC -- Michael Rohde
Nimzoindian Defense
1 Nf3 Nf6 2 d4 e6 3 c4 b6 4 Nc3 Bb4 5 Bg5 h6 6 Bd2 Bb7 7 e3 0-0 8 Bd3 d6 9 0-0 Nbd7
10 Qa4 c5 11 a3 Bxc3 12 Bxc3 Ne4 13 Be1 Rc8 14 d5 Ndf6 15 dxe6 fxe6 16 Nh4 Ng4 17
Ng6 Qg5 18 Nxf8 Nxe3 19 fxe3 Nd2 20 Bh7+ Kh8 21 Bg3 Nxf1 22 Nxe6 Qxe3+ 23 Kxf1
Qxe6 24 Qc2 Qe3 25 Bxd6 Re8 26 Bg6 Re6 27 Bg3 Rxg6 28 Re1 Qg5 29 Re5 Qf6+ 30
Kg1 Bc6 31 Qe2 Kh7 32 Qd3 Qf7 33 b4 cxb4 34 axb4 Qd7 35 Qxd7 Bxd7 36 Re7 Bf5 37
Rxa7 Re6 38 Rc7 Re2 39 Bf2 Be4 40 g4 Kg8 41 Bxb6 Rg2+ 42 Kf1 Rxg4 43 Rd7 Bf5 44
Rd8+ Kf7 45 Bd4 Bd3+ 46 Kf2 Bxc4 47 Kf3 Rg5 48 Rd7+ Kf8 49 Rc7 Bb5 50 Kf4 Rg2 51
h3 Bd3 52 Kf3 Rg5 1/2-1/2

Alexander Ivanov -- ChessSystem R30
Sicilian Defense
1 e4 c5 2 Nf3 Nc6 3 d4 cxd4 4 Nxd4 Nf6 5 Nc3 g6 6 Nxc6 bxc6 7 e5 Ng8 8 Bc4 Bg7 9
Bf4 Qa5 10 0-0 Bxe5 11 Bxe5 Qxe5 12 Re1 Qf4 13 Re4 Qf6 14 Re3 d5 15 Bxd5 Bf5 16
Ne4 Bxe4 17 Bxe4 Rc8 18 c3 Nh6 19 Qa4 Kf8 20 Qxa7 Ng4 21 Rg3 Qe6 22 Qd4 Nf6 23
Bd3 c5 24 Qe3 Qxe3 25 Rxe3 c4 26 Bf1 e6 27 a4 Ke7 28 a5 Rc5 29 Ra4 Nd5 30 Re2
Ra8 31 Rd2 Raxa5 32 Rxa5 Rxa5 33 Bxc4 Ra1+ 34 Bf1 Ra2 35 Re2 h5 36 g3 g5 37 Rc2
g4 38 Bc4 Ra1+ 39 Kg2 Kd6 40 Rd2 Kc5 41 Bxd5 exd5 42 Rd4 Ra7 43 b4+ Kc6 44 c4
dxc4 45 Rxc4+ Kb5 46 Rc5+ Kxb4 47 Rxh5 Kc3 48 Rf5 Rc7 49 Rf4 Kd3 50 Rxg4 f6 51
Rf4 Rf7 52 h4 Rf8 53 g4 Rg8 54 Kf3 Rg6 55 h5 Rh6 56 Rf5 Kd4 57 Kf4 Kd3 58 f3 Kd4 59
Ra5 Kd3 60 Ra3+ Kc4 61 Kf5 Kb5 62 Re3 Kc5 63 Re6 Kd5 64 Rxf6 1-0


ROUND 5
(Humans 5.5, Computers 0.5 / Cumulative score: Humans 22.5, Computers 7.5)

M-Chess against Gurevich was a straightforward, nice technical achievement for
Gurevich on the Black side of the Sicilian Defense. Wolff's battle with Socrates was really
a tragedy for Black. The program played an excellent game until on move 25 it deferred
Qe2+, which would have transposed into an easily won ending. Gulko versus

BattleChess was one game which slipped away from Gulko after his usual methodical buildup. Perhaps fatigue played a role here. Ivanov vs. Renaissance was a Caro-Kann Advance Variation and one of the few games where a program was beaten straight out of the opening. Perhaps opposite color square complex exploitation as in this game is not a bad idea against computers. Kasparov's Gambit versus Rohde was another Bogo-Indian Defense where Rhode again attacked. But this time while the program was busy winning an offside piece his attack was successful.

Kasparov's Gambit -- Michael Rohde
Nimzoindian Defense
1 d4 Nf6 2 c4 e6 3 Nc3 Bb4 4 Nf3 b6 5 Bg5 h6 6 Bd2 Bb7 7 e3 0-0 8 Bd3 d6 9 0-0 Nbd7 10 a3 Bxc3 11 Bxc3 Ne4 12 Be1 f5 13 Nd2 Ndf6 14 f3 Ng5 15 Bg3 Qe7 16 b4 Rad8 17 Qa4 a6 18 Kh1 Rb8 19 Rae1 Ba8 20 Qxa6 Bc6 21 c5 d5 22 Bc2 Qd7 23 cxb6 Bb5 24 bxc7 Bxa6 25 cxb8/Q Rxb8 26 Bxb8 Bxf1 27 h4 Nf7 28 Rxf1 Qc8 29 Bxf5 exf5 30 Bf4 Qc3 31 Nb1 Qb2 32 Bg3 Nh5 33 Kh2 Nxg3 34 Kxg3 Nd6 35 Re1 Nc4 36 Kh3 Qf2 0-1

Boris Gulko -- BattleChess 4000 SVGA
Queen's Pawn Opening
1 d4 Nf6 2 Bf4 d5 3 e3 Bf5 4 c4 Nc6 5 Nc3 e6 6 Nf3 Bb4 7 a3 Bxc3+ 8 bxc3 0-0 9 Bg5 Qe7 10 Bd3 Bxd3 11 Qxd3 dxc4 12 Qxc4 h6 13 Bh4 Qd8 14 0-0 Qd5 15 Qd3 Ne4 16 Rab1 Nd6 17 Nd2 Ne5 18 Qe2 Ng6 19 Bg3 Qc6 20 c4 Nf5 21 Rb4 Nxg3 22 hxg3 b6 23 Qh5 Rad8 24 Rc1 Rd6 25 Qb5 e5 26 Qxc6 Rxc6 27 d5 Rd6 28 e4 Re8 29 c5 Rd7 30 Ra4 Ra8 31 cxb6 cxb6 32 Rc6 Re8 33 Rac4 f6 34 a4 Ra8 35 Kf1 Kf7 36 Nf3 Ne7 37 Rc7 Ke8 38 Rc2 Kd8 39 R7c3 Rc8 40 Rxc8+ Nxc8 41 Ke2 Nd6 42 Kd3 f5 43 Nxe5 fxe4+ 44 Kd4 Rc7 45 Nc6+ Ke8 46 g4 Kd7 47 Re2 Kc8 48 Ke5 Kd7 49 Rc2 Rc8 50 Kd4 Rc7 51 Rc3 Ke8 52 Ke5 Kd7 53 Kd4 Ke8 54 Re3 Kf7 55 f3 exf3 56 gxf3 h5 57 Re6 Rxc6 58 dxc6 Kxe6 59 gxh5 Ne8 60 Kc4 Kd6 61 Kd4 Nf6 62 c7 Kxc7 63 Ke5 Nh5 64 Kf5 Ng3+ 65 Kg6 Ne2 66 Kxg7 Nd4 67 f4 Ne6+ 68 Kf6 Nxf4 69 Ke5 Ne2 70 Kd5 Nc3+ 71 Kc4 Nxa4 72 Kb5 Nc5 73 Kb4 Kd6 74 Kb5 Kd5 75 Kb4 a6 76 Kc3 a5 77 Kb2 b5 78 Kc3 b4+ 79 Kb2 Kc4 80 Kc2 Nd3 81 Kd2 b3 82 Ke3 b2 83 Ke4 a4 84 Kf5 a3 85 Ke6 Nb4 [time] 1/2-1/2

Patrick Wolff -- Socrates Exp
Three Knights Game
1 e4 e5 2 Nf3 Nf6 3 Nc3 Bb4 4 Nxe5 0-0 5 Be2 Re8 6 Nd3 Bxc3 7 dxc3 Nxe4 8 c4 d6 9 0-0 Nc6 10 Nf4 Ne5 11 f3 Nc5 12 Re1 Bf5 13 Be3 Ng6 14 Qd2 Bxc2 15 Nh5 Bf5 16 g4 Bd7 17 b4 Ne6 18 f4 Nef8 19 f5 Ne5 20 Bh6 Qh4 21 Qf4 Bc6 22 Bxg7 Nf3+ 23 Bxf3 Rxe1+ 24 Rxe1 Qxe1+ 25 Kg2 Bxf3+ 26 Qxf3 Qxb4 27 Bc3 Qxc4 28 Nf6+ Kh8 29 Qe3 Qxa2+ 30 Kh3 Qb1 31 Nd5+ f6 32 Nxf6 Qf1+ 33 Kh4 Qc4 34 Nxh7+ Qxc3 35 Qxc3+ Kxh7 36 Qxc7+ Kg8 37 f6 Ne6 38 Qe7 Kh8 39 Qxe6 Rf8 40 g5 a5 41 g6 Rg8 42 Qf7 Rxg6 43 Qxg6 a4 44 Qg7 mate 1-0

M-Chess Professional 3.42 -- Ilya Gurevich
Sicilian Defense
1 e4 c5 2 Nf3 e6 3 d4 cxd4 4 Nxd4 a6 5 Bd3 Qc7 6 0-0 Nf6 7 Be3 Be7 8 Nc3 d6 9 Qf3 Nbd7 10 Qg3 0-0 11 Be2 Re8 12 Bh6 Bf8 13 Bd2 b5 14 a3 Bb7 15 f3 Rac8 16 Kh1 d5 17 Qxc7 Rxc7 18 exd5 Nxd5 19 Bd3 Nc5 20 Nxd5 Bxd5 21 Be2 g6 22 Bg5 Rcc8 23 Rfd1 Na4 24 Rab1 Ba2 25 Ra1 Nxb2 26 Rxa2 Nxd1 27 Bxd1 Red8 28 Bxd8 Rxd8 29 c3 e5 30 Rd2 exd4 31 Rxd4 Rxd4 32 cxd4 Bxa3 33 Kg1 Bb2 34 d5 Kf8 35 Kf2 Ke7 36 Ke3 Kd6 37

Kd3 a5 38 Be2 Be5 39 Kc2 b4 40 Kb3 Bxh2 41 Ka4 Kxd5 42 Bd1 Kd4 43 Kxa5 Bd6 44 Bb3 Ke3 45 Bxf7 Kf2 46 Bd5 Kxg2 47 Be4 Kg3 48 Kb5 Kf4 49 Kc6 h5 50 Kxd6 h4 51 Bxg6 h3 52 Kc5 h2 53 Kxb4 h1/Q 54 Be4 Qc1 0-1

Alexander Ivanov -- Renaissance SPARC
Caro-Kann Defense
1 e4 c6 2 d4 d5 3 e5 Bf5 4 h4 h5 5 c4 e6 6 Nc3 Nd7 7 cxd5 cxd5 8 Bg5 Be7 9 Qd2 Bxg5 10 hxg5 Rc8 11 Be2 Bg6 12 Nb5 Rc2 13 Qb4 Qxg5 14 Nf3 Qxg2 15 Rg1 Qh3 16 Nd6+ Kd8 17 Nxb7+ Kc7 18 Qd6+ Kc8 19 Ba6 Rc7 20 Nc5+ Kd8 21 Ng5 Qf5 22 Ngxe6+ fxe6 23 Nxe6+ Qxe6 24 Qxe6 Ne7 25 Rxg6 Rc6 26 Qxc6 Nxc6 27 Rxc6 1-0

ChessSystem R30 -- Joel Benjamin
Sicilian Defense
1 e4 c5 2 c3 d5 3 exd5 Qxd5 4 d4 Nf6 5 Nf3 Nc6 6 dxc5 Qxd1+ 7 Kxd1 e5 8 b4 Bf5 9 Nbd2 0-0-0 10 b5 Na5 11 Nxe5 Bxc5 12 Nxf7 Ne4 13 Ke1 Nxf2 14 Be2 Nxh1 15 Nxh8 Rxh8 16 g4 Bg6 17 a4 Nf2 18 Ba3 Re8 19 Bxc5 Nd3+ 20 Kf1 Nxc5 21 Ra3 Rf8+ 22 Kg1 Rd8 23 Nf3 Nab3 24 c4 Nd4 25 Nxd4 Rxd4 26 a5 Bd3 27 Bxd3 Rxd3 28 Rxd3 Nxd3 29 h3 Kc7 30 Kg2 Kd6 31 Kf3 Ne5+ 32 Ke4 Nxc4 33 Kd4 Nxa5 0-1


ROUND 6
(Humans 4.5, Computers 1.5 / Final score: Humans 27, Computers 9)

Finally Rohde won a smooth technical game. He ground down M-Chess by converting an isolated pawn to an pawn advantage and then a winning queen ending. Socrates versus Gulko was the program's second consecutive mishap. It should have won either in the middlegame or the ending. However there were so many exchanges that it stumbled into a drawn rook and pawn ending. BattleChess against Ivanov involved some risky maneuvers by the latter before he won a pawn, and later sacrificed the exchange in an ending to force victory. Benjamin was given a nice final round gift when Renaissance got its queen trapped. Gurevich never quite recovered the pawn he sacrificed in the opening against ChessSystem. Finally Wolff won a relatively short game which demonstrated how difficult positional pawn sacrifices like the Benko Gambit can be for computers to fathom.

Kasparov's Gambit -- Patrick Wolff
Benko Gambit
1 d4 Nf6 2 c4 c5 3 d5 b5 4 cxb5 a6 5 bxa6 g6 6 e4 Nxe4 7 Qa4 Nf6 8 a7 Na6 9 Nf3 Bg7 10 Bxa6 Rxa7 11 Nc3 0-0 12 Qc4 Bxa6 13 Qxc5 Qb8 14 a4 Rc8 15 Qa3 Rb7 16 a5 Rb3 17 Qa2 Ng4 18 h3 Ne5 19 Nxe5 Bxe5 20 f4 Bxc3+ 21 bxc3 Rbxc3 22 Bd2 Rc2 23 Qb1 Rxd2 24 Qxb8 Re2+ 0-1

BattleChess 4000 SVGA -- Alexander Ivanov
Pirc Defense
1 d4 g6 2 Nf3 Bg7 3 c3 d6 4 e4 Nf6 5 Bd3 Nbd7 6 0-0 e5 7 Bg5 h6 8 Bd2 0-0 9 Na3 b6 10 Re1 Bb7 11 Nb5 a6 12 Na3 Re8 13 Qc2 exd4 14 cxd4 d5 15 e5 Ne4 16 b4 c5 17 bxc5 bxc5 18 Rab1 Qc8 19 Bf4 g5 20 Be3 cxd4 21 Bxd4 g4 22 e6 Rxe6 23 Bxg7 gxf3 24 Qxc8+ Bxc8 25 Bd4 Ndc5 26 Bxe4 Nxe4 27 g3 Nd2 28 Rbd1 Re2 29 Nc2 Ne4 30 Nb4 Be6 31 a3 Rc8 32 Rc1 Rc4 33 Red1 Rxd4 34 Rxd4 Rxf2 35 Kh1 Rg2 36 Rf1 Nf2+ 37 Rxf2 Rxf2 38 h4 Re2 39 Rf4 d4 40 Nd3 Bd5 41 Kg1 Rg2+ 42 Kf1 Rd2 43 Ne5 d3 44

Rg4+ Kf8 45 Rd4 Be6 46 Nxf3 Ra2 47 Ke1 Rxa3 48 Kd2 Ke7 49 Rxd3 Rxd3+ 50 Kxd3 Kd6 51 Ke4 Bd5+ 52 Kf4 Bxf3 53 Kxf3 Ke5 54 Ke3 a5 55 Kd3 Kf5 56 Kc4 Kg4 57 Kd4 Kxg3 58 h5 Kg4 59 Kd3 f5 60 Kc4 f4 61 Kd3 a4 62 Kc3 f3 63 Kb4 f2 64 Kxa4 f1/Q 65 Kb4 Kxh5 66 Kc5 Kg4 67 Kd5 Kf5 68 Kd4 Qd1+ 69 Kc5 Ke5 70 Kb5 Kd5 71 Kb6 Kd6 72 Kb7 Qb3+ 73 Ka8 Kc7 0-1

Socrates Exp -- Boris Gulko
Pirc Defense
1 e4 g6 2 d4 Bg7 3 Nf3 d6 4 Be2 Nf6 5 Nc3 0-0 6 0-0 Nc6 7 d5 Nb8 8 Bf4 Nh5 9 Be3 e5 10 dxe6 fxe6 11 Qd2 Nc6 12 Rad1 Qe7 13 Ng5 Bd7 14 Nb5 Rac8 15 Bxh5 gxh5 16 f4 h6 17 Nf3 Rf7 18 Kh1 a6 19 Nc3 Rcf8 20 g3 Qf6 21 Nh4 b5 22 a3 Na5 23 Qe1 Nc4 24 Bc1 Bc6 25 Rf3 Rd7 26 b3 Nb6 27 Rfd3 Qf7 28 Nf3 Re7 29 Be3 Nd7 30 Bf2 Nf6 31 Bd4 Ng4 32 Bxg7 Qxg7 33 h3 Nf6 34 Kh2 Nd7 35 Nd4 Bb7 36 Re3 h4 37 f5 Ne5 38 gxh4 Kh8 39 Rg3 Qf6 40 Nxe6 Rxe6 41 fxe6 Nf3+ 42 Rxf3 Qxf3 43 Nd5 Rg8 44 Qc3+ Qxc3 45 Nxc3 Re8 46 Nd5 Rxe6 47 Nxc7 Rxe4 48 Rxd6 Re2+ 49 Kg3 Rxc2 50 Nxa6 Rc3+ 51 Kg4 Bxa6 52 Rxh6+ Kg7 53 Rxa6 Rxb3 54 h5 b4 55 h6+ Kh7 56 a4 Rc3 57 Rb6 Rc4+ 58 Kf3 b3 59 a5 Ra4 60 a6 b2 61 Rxb2 Rxa6 62 Rb4 Kxh6 63 Kg4 Rc6 64 h4 Ra6 65 h5 Rc6 66 Re4 Ra6 67 Rc4 Rb6 68 Ra4 Rc6 69 Rd4 Rb6 70 Rc4 Ra6 71 Re4 Rb6 72 Rf4 Rc6 73 Rb4 Rd6 74 Rh4 Rc6 75 Rd4 Rb6 76 Rc4 Ra6 77 Re4 Rb6 78 Ra4 Rc6 79 Kg4 Rb6 80 Rd4 Rc6 81 Rf4 1/2-1/2

Michael Rohde -- M-Chess Professional 3.42
Tarrasch Defense
1 Nf3 d5 2 c4 e6 3 d4 Nf6 4 Nc3 c5 5 cxd5 exd5 6 g3 Nc6 7 Bg2 Be7 8 0-0 0-0 9 Bg5 cxd4 10 Nxd4 Re8 11 Rc1 Bg4 12 h3 Bd7 13 Nb3 Be6 14 e3 Rc8 15 Qd2 Ne4 16 Nxe4 Bxg5 17 Nxg5 Qxg5 18 Rfd1 Qh5 19 Kh2 Bg4 20 Re1 Bf3 21 Nd4 Bxg2 22 Kxg2 f6 23 Rc5 Nxd4 24 Qxd4 Rxc5 25 Qxc5 b6 26 Qd4 Re4 27 Qd3 Ra4 28 Rc1 Rxa2 29 Rc8+ Kf7 30 Rc7+ Kf8 31 Qb3 Ra5 32 Qb4+ Rc5 33 Rxc5 bxc5 34 Qxc5+ Kg8 35 Qxa7 Qe8 36 Qd4 Qb5 37 b4 Kf7 38 Qa7+ Kf8 39 Qa5 Qb7 40 Qc5+ Ke8 41 Kf1 Qd7 42 h4 Qh3+ 43 Ke1 Qh1+ 44 Ke2 Qe4 45 b5 Qg4+ 46 Ke1 Qd7 47 b6 h6 48 Kd2 g6 49 Kc3 h5 50 Kb4 Qb7 51 Qd6 Qc8 52 Qxd5 Ke7 53 Qc5+ Kd7 54 Qxc8+ Kxc8 55 e4 1-0

Joel Benjamin -- Renaissance SPARC
Slav Defense
1 d4 d5 2 c4 c6 3 Nc3 Nf6 4 e3 e6 5 Nf3 Nbd7 6 Bd3 Bd6 7 e4 dxe4 8 Nxe4 Nxe4 9 Bxe4 0-0 10 0-0 c5 11 Bc2 Qb6 12 Qd3 g6 13 Be3 Be7 14 Rad1 Qxb2 15 Rb1 Qxa2 16 Ra1 Qxa1 17 Rxa1 Rd8 18 dxc5 Nxc5 19 Qc3 Bd7 20 Ne5 f5 21 Bxc5 Bxc5 22 Nxd7 Rxd7 23 Qe5 Bd4 24 Qxe6+ Rf7 25 Rd1 Rd8 26 c5 Rdd7 27 Rxd4 Rde7 28 Bb3 Rxe6 29 Bxe6 1-0

Ilya Gurevich -- ChessSystem R30
Spanish Game
1 e4 e5 2 Nf3 Nc6 3 Bb5 a6 4 Ba4 Nf6 5 0-0 Be7 6 Re1 b5 7 Bb3 0-0 8 d4 Nxd4 9 Nxd4 exd4 10 e5 Ne8 11 c3 dxc3 12 Nxc3 Bb7 13 Nd5 d6 14 e6 f5 15 Bf4 Nf6 16 Nxe7+ Qxe7 17 Rc1 Rae8 18 Qd4 Ne4 19 Qa7 c5 20 Rxe4 fxe4 21 Bxd6 Qxd6 22 e7+ c4 23 exf8/Q+ Rxf8 24 Rd1 Qf6 25 Bc2 Qxb2 26 Bb1 c3 27 Qc5 Qe2 28 Rf1 Qd2 29 Qe5 c2 30 Qe6+ Kh8 31 Bxc2 Qxc2 32 Qe7 Qc8 33 h3 Bd5 34 a3 Qf5 35 Qa7 Bc4 36 Rd1 Bd3 37 Rc1 Qf6 38 Qe3 a5 39 Rc7 b4 40 axb4 axb4 41 Rb7 Qc3 42 Qb6 Qa1+ 43 Kh2 Qe5+ 44 Kg1

Qc3 45 Kh2 h6 46 h4 Qe5+ 47 Kg1 Rc8 48 g3 Qa1+ 49 Kh2 Rc1 50 Kh3 Rh1+ 51 Kg4 Qe5 0-1


CONCLUSIONS

The grandmasters still proved dominant. However the program's play may still be improving despite their slightly reduced percentage (25) versus last year's (28).It can safely be stated that Socrates and possibly ChessSystem R30 played on a par with the Grandmasters.

Joel Benjamin proved to be the Grandmaster capable of playing most "didactically" in this event. He regularly resorted to and highlighted themes which illustrated the genuine weaknesses of computer chess programs. One could say that Michael Rohde was playing "experimentally" -- and for this he should be commended. That is, he was willing to take on compromised pawn structures for dynamic possibilities. This time his approach did not work out, but Michael's aggressive and unique style always makes his games interesting. Boris Gulko played more like a machine (especially as White) against the programs, than machines do. That is, from a very modest opening he systematically built up his center to a steamroller. It was a marvel to watch this transformation as it took place. Ilya Gurevich, a first time Harvard Cup participant, was the player who seemed to enjoy himself most. He was undefeated until his last round loss. Ilya's approach, on the board and off, was cheerful and refreshing. Patrick Wolff did not have a smooth road to 4.5. His play did exhibit versatile style in switching from attack to defense, but he was a bit lucky to win his 5th round game against Socrates. Alexander Ivanov played six games in six different styles, varying from aggressive attacks to delicate endings with minuscule advantages.

In a sense the outcomes of Socrates' last two games were tragic. In each case after excellent build-ups out of the opening and early middlegame the program went astray. That is, its "mop up" routines could use some refinement. It's even score could easily have been a point or two better! ChessSystem scored a few impressive points and one would have expected M-Chess to do a little better. However a score of 25% (for BattleChess and M-Chess) and an overall composite score of 25% for all the programs is not bad. For "exemplary play against computers" the games of Benjamin and Gulko are particularly recommended.

Based on the results and games where should most work go? Clearly situations which in general involve programs concentrating on extreme, far-away board sectors to gain material need further attention. That is, the tuning of material gain vs. positional factors must be refined. Of course, this is not an easy problem; in some games programs were able to win for this very reason. In addition, the development of algorithms particular to facilitating transformation of endgame advantages to easier (better) board states needs further attention. One of us (Danny Kopec) is working on such conceptualization of endgames into phases and is available for consultation.


FURTHER INFORMATION

Other detailed articles on the 4th Harvard Cup may be found in Chess Life (February 1994 issue) and American Chess Journal (issue #3). The latter will also include a "forum" on how computers are changing chess. The 5th Harvard Cup is now being planned for late 1994. For more information on the Harvard Cup series or American Chess Journal, or to receive the scores above by electronic mail (with the extra games played by KChess), please contact Christopher Chabris.