In the summer of 1989 Dan Edelman, a FIDE Master and then president of the Harvard University Chess Club, was planning a visit by World Champion Garry Kasparov to the college. Kasparov would be traveling to Cambridge from New York, where he was scheduled to play the subsequently famous two-game match against Deep Thought. I was helping Dan to organize the visit, and we wanted to stage a man-against-machine confrontation that would be different from the head-on match format but also intriguing for the public and the press. We were unaware of the AEGON tournaments at the time (that event was just evolving into its mature state), but we decided to adopt a similar formula: to pit teams of four computers and four American grandmasters against each other in the Scheveningen format. Each human would play each computer once, but no humans or computers would play each other.

After a lot of last-minute faxing and telephoning the Harvard Chess Festival was set to begin. Kasparov arrived in the afternoon of Friday, 27 October 1989, spoke at the Russian Research Center, and on the next day shut out eight opponents (seven humans plus the Sargon IV program) in one of his trademark clock simultaneous displays before an audience of about 800. That evening he analyzed some positions with Deep Thought at a party in his honor, and at noon on Sunday the 29th he came to Harvard’s Memorial Hall, built to honor the university’s Civil War dead, to open officially what we had dubbed the First Harvard Cup. In brief remarks he predicted victory for the grandmasters, but warned that he was always ready to defend humanity if necessary. As it turned out he was not needed that day: the human team, consisting of GMs Lev Alburt, Maxim Dlugy, Boris Gulko, and Michael Rohde won by a score of 14.5-1.5 against Chiptest, Deep Thought, Hitech, and Mephisto’s Portorose (a unit with a Motorola 68020 processor running at 12 MHz).

George Mirijanian was the arbiter, IM Danny Kopec provided commentary, and there was a brief public discussion after the games were over. The sponsors included IBM and the American Chess Foundation (ACF). The games were played at G/30, the "active" time limit, and the grandmasters received appearance fees as well as prizes of $500 and $300 to the top two scorers. The top human and computer participants received invitations to the next edition as well as their names engraved on a trophy. Gulko and Rohde at 4-0 shared the prize money and were both invited to return, as was Deep Thought (whose developers later declined on its behalf).

The game below was the first to finish in the First Harvard Cup. After Gulko’s surprisingly easy demolition of Deep Thought, the audience gave Harvard’s former Grandmaster in Residence a standing ovation while the other games were still in progress.

<table>
<thead>
<tr>
<th></th>
<th>Deep Thought</th>
<th>Mephisto Portorose</th>
<th>Chiptest</th>
<th>Hitech</th>
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<td><strong>0.5</strong></td>
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Table 1: Results of the First Harvard Cup, 29 October 1989.

The game below was the first to finish in the First Harvard Cup. After Gulko’s surprisingly easy demolition of Deep Thought, the audience gave Harvard’s former Grandmaster in Residence a standing ovation while the other games were still in progress.
Boris Gulko - Deep Thought (NicKey RE 22.2)
First Harvard Cup, Round 1

Alburt became the first Grandmaster to surrender a half point to a computer in the Harvard Cup series by letting a powerful bind deteriorate into an uncertain pawn race against Mephisto Portorose. But even after several inaccuracies, and allowing Mephisto to queen a Pawn, the two-time U.S. Champion retained enough tactical resources to force the draw.

Lev Alburt - Mephisto Portorose (NicKey VO 22)
First Harvard Cup, Round 2

Shortly after the above game finished, Dlugy gave up the first full point to a computer in Cup history, losing to Deep Thought. Ironically, Dlugy later worked as a consultant to the Deep Thought group at IBM. In the opening, Deep Thought allowed a pawn-fork trick in the center, just as it did against Gulko, and entered an endgame with a clear pawn deficit. But Dlugy slowly lost the thread of the position and was forced to surrender a piece, and with it the game.

Deep Thought - Maxim Dlugy (NicKey SI 48.4.2)
First Harvard Cup, Round 2

After news of Kasparov’s visit got out, we were contacted by Anatoly Karpov, who also wished to visit Harvard. We arranged a one-game match between the former world champion and Deep Thought in Memorial Hall on 2 February 1990. This game, which Karpov was lucky to win, was widely publicized, as was his analysis of the game, given the next day in a lecture prior to a large simultaneous exhibition.

Exhausted by all this organizing, we held no Harvard Cup in 1990, but in the next year we managed to revive the event in conjunction with another Harvard Chess Festival, this time in May, sponsored by Bankers Trust Company, Harvard alumnus Malcolm H. Wiener, and the ACF. Dlugy, Gulko, and Rohde returned and were joined by new grandmaster Patrick Wolff. On the evening of 3 May, once again in Memorial Hall, this time at G/25 “quickplay” or “rapid” tempo, after giving an outdoor exhibition for charity, they faced four computer opponents: Fidelity’s Mach IV (with a 20 MHz 68020 processor), Mephisto’s Lyon (12 MHz 68020), Larry Kaufman’s Rex Chess, and Heuristic Software’s prototype Alpha program. The latter two programs ran on PC clones based on the Intel 80486 processor, Rex Chess running at 25 MHz, Alpha at 33 MHz. Mirijanian returned as arbiter, and after the games Rohde analyzed his fantastic game against Alpha for the spectators.
Despite the seemingly weaker computer team, the results of the Second Harvard Cup were startling: only 12-4 in favor of the human beings. Dlugy with 3.5-0.5 and Rohde and Wolff with 3-1 took the prize money, raised to $600 first and $400 second this year, and Dlugy was invited to play again. Alpha's impressive even score earned it the same invitation, as well as an entry (with Dlugy) on the trophy. Alpha's back-to-back victories against Wolff and Rohde represented both the first and second times that a microcomputer-based program ever defeated a Grandmaster in other than blitz (5-minute) or casual play.

<table>
<thead>
<tr>
<th>Player</th>
<th>Heuristic Alpha</th>
<th>Fidelity Mach IV</th>
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<td>3.0</td>
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<td>Boris Gulko</td>
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<td>0-1</td>
<td>1/2</td>
<td>2.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2.0</td>
<td>1.5</td>
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</tbody>
</table>

Table 2: Results of the Second Harvard Cup, 3 May 1991.

Heuristic Alpha versus Rohde, from the second Cup, was the most exciting game of all three Cups; the spectators were on the edges of their seats during the thrilling 15-minute king hunt at the end. Rohde overlooked Alpha's 21st move, the type of oblique shot computers rarely miss, but he converted his loss of the exchange into a courageous sacrifice of a full Rook to drive Alpha's King all the way up the board. Alpha could have forced a draw more than once, beginning with 29. Kg3, but instead played consistently to win, as did Rohde. After 35. Kf6 Rohde's intuition finally gave out and he went astray. Although a lengthy post-mortem didn't discover it, ironically, another computer later found an incredible winning idea for Black: 35. ... Ba5! 36. Nb6 Be3+ 37. Kg5 Bd4! 38. Qd1 (all other tries lead to mate) Qe5+ 39. Kh4 Qxh2+ 40. Kg4 Qxe2+ 41. Kf4 Qf2+ 42. Qf3 Be5+ winning the Queen. Even so, Rohde could still have salvaged a draw later with 43. ... Bd6! followed by perpetual check with the Queen on a8, b8, and d8.

Heuristic Alpha - Michael Rohde
(NicKey FR 1.4.12)
Second Harvard Cup, Round 2

Alpha had also defeated Wolff in the first round, but Dlugy showed how to handle the program and snapped its 2-0 streak with this methodical positional victory, based on a monster c-file pin:

**Heuristic Alpha - Maxim Dlugy (NicKey SI 1.8)**

Second Harvard Cup, Round 3


In 1992, the Malcolm H. Wiener Trophy, named in honor of the event’s principal ongoing benefactor, was procured and engraved. The Third Harvard Cup was held in New York in conjunction with the first U.S. Chess Festival, and Intel Corporation and the Millburn Corporation joined the list of sponsors for the first time. After the first day of the U.S. Quick Chess Championship (at G/10) in the afternoon of Saturday, 11 July 1992, the Cup began at about 7:30 p.m. at the auditorium of the Hunter College Campus Schools. This time five Grandmasters (Dlugy, Rohde, Wolff, and newcomers John Fedorowicz and Sergey Kudrin) faced Fidelity’s Elite Premiere, Mephisto’s RISC, ChessBase’s Knightstalker (known as Fritz in Europe), The Software Toolworks’s Chessmaster 3000, and Heuristic’s Socrates, another unreleased prototype. The microcomputer programs again all ran on 80486 systems: Socrates at 50MHz, Knightstalker at 33MHz, and Chessmaster 3000 with the DX2 chip. Carol Jarecki served as arbiter, assisted by Sunil Weeramantry.

After a grueling evening, which included a discussion on how computers are affecting the game of chess (with panelists IM Larry Kaufman, GMs Robert Byrne and Joel Benjamin, and Drs. Feng-hsiung Hsu and Murray Campbell) and featured several disputes during the play, the human team won by an 18-7 margin. This represented a score of 28% for the computers, up from 25% in 1991 and 9% in 1989. Rohde scored a clean 5-0 to collect $600, an invitation, and his second entry on the trophy; Kudrin received $400 for his 4-1 effort. At 3-2, Socrates became the first computer of any type ever to earn a positive score against a field of professional grandmasters in a single serious event, a fantastic achievement.

![Table 3: Results of the Third Harvard Cup, 11 July 1992.](image)

The Fedorowicz-Mephisto game was the most interesting of the third Cup. Mephisto RISC fell into what one of the players described as a "book trap" at move 8, but saw that 10. ... Qxd4 would lose to 11. Qa4+ Kd8 12. Ba5+ b6 13. Rf3 (if 11. ... Bd7 12. Bxf7+, or 11. ... Qd7 12. Bb5). It then recovered nicely with threats that dislocated and tied down Fedorowicz’s pieces. After 15. ... e4 it entered an endgame still down a piece for two Pawns, but with relentless pressure managed to convert this into a material imbalance of Bishop and two Pawns against Fedorowicz’s Rook. With both sides running short of time, all of the other material on the board was exchanged until only these forces remained. As his flag hung with about 5 seconds to play, Fedorowicz claimed a draw because he had established a sort of “dynamic fortress” and could demonstrate the proper drawing technique. The arbiters conferred and decided to consider the claim after another ten moves had been played,
but four moves later Mephisto won on time in what by then was a clearly winning position (W: Kd2, Rf2; B: Ka1, Bb5, Pb2). After its early blunder and a few inaccuracies by its opponent the computer played an impressive positional game that looked nothing like an artificial creation.

John Fedorowicz - Mephisto RISC
(NicKey CK 3.4.2)
Third Harvard Cup, Round 3

Diagram 2: Position after 15. ... e4.

Here, Kudrin falls into a pattern similar to that of Alpha-Rohde: unable to pull off an attack against ChessBase Knightstalker because of time pressure, he eventually runs out of tactics and loses.

Sergey Kudrin - ChessBase Knightstalker (NicKey RL 17.2.3)
Third Harvard Cup, Round 2

In 1989 it was obvious that Kasparov would defeat Deep Thought, but it was not so clear how a team of lesser Grandmasters would do against a team of top computers, and since matches between the World Champion and a computer do not happen often, the ongoing Harvard Cup series has provided a useful measurement of progress in computer chess. The Fourth Harvard Cup is being planned for later in 1993. As before, it will be open to commercial, prototype, and research machines and programs, who will face a squad of financially-motivated American Grandmasters. Among other improvements, it will have more explicit rules and eligibility policies to minimize disputes, and it may feature more participants on both teams than in the past. If you are interested in entering a program or a dedicated machine in the Harvard Cup, or in receiving more information about it, please contact the author of this article. Larry Kaufman has already predicted that if systems based on Intel's "Pentium" chip are available, the computers could show superiority over the Grandmasters for the first time ever – at least at the G/25 time limit!