



Mephisto's dual edge

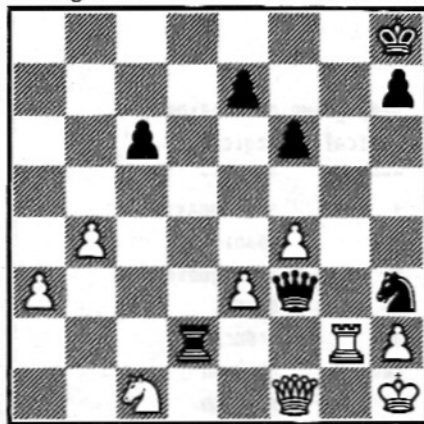
Tony Harrington puts the theory of Mephisto III's better positional chess into practice, examining its selective search strategy.

Last month I looked at some of the design differences between the Mephisto II and the new Mephisto III, stressing that the Mephisto III is a selective search program while the Mephisto II is the traditional 'brute force' design.

In theory, the Mephisto III is supposed to play better positional chess. It can afford to look at fewer moves, because it has a better evaluation of the relative merits of a position. It 'knows', much as an experienced club player knows, what moves are worth looking at in any position.

But how does it work in practice? To get some idea of whether the two machines would perform differently in key positions, I chose two positions from *The Penguin Book of Chess Positions*, by CH O'D Alexander — a marvellous little book, rich in testing combinations. These consisted of one relatively simple combination and one rather difficult, deep combination respectively.

Both the II and the III had no difficulty with the first position, despite the fact that so great a player as Smyslov managed to overlook the win for black:



Position One, page 111, position 6

In this position, Smyslov played 1 ... Nh3-f2+ and settled for a perpetual check, moving the knight backwards and forwards between f2 and h3. He had an easy win. Both the II and the III

found it in a few minutes (level setting 6). They both played 1 ... Rd2-f2. White has nothing better to do than give up his queen for the rook. The continuation more or less plays itself for the next few moves:

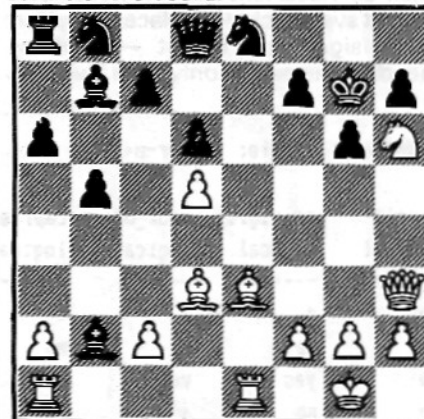
Mephisto II

2 Qf1×Rf2 Nh3×Qf2+
3 Kh1-g1 Qf3×e3
4 Rc1-a1 Nf2-g4+
5 Kg1-h1 Qe3×f4

Mephisto III

2 Qf1×Rf2 Nh3×Qf2+
3 Kh1-g1 Qf3×e3
4 Rc1-a1 Nf2-h3+
5 Kg1-h1 Nh3×f4

And the win, with Black's material advantage, is straightforward. Although it is not particularly significant here, notice that the two machines choose different ways of capturing the pawn on f4. The III's choice of capture is perhaps slightly better, positionally, since it puts the black knight nearer the centre of the board.



Position 2, page 85, position no 10

This is not an easy combination to discover, chiefly because of the presence of Black's bishop on the a1-h8 diagonal. The key move is 1) Nh6×f2! This wins outright owing to a beautiful combination: 1 ... Qd8-f6! (if 1 ... Kg2×Nf7 then 2 Qh3×h7+ wins, for example, 2 ... Bb2-g7, 3 Be3-d4! Re8×Re1, 4 Ra1×Re1 Qd8-g8, 5

Qh7×g6+ Kf7-f8, 6 Re1-e8 mate). So, 2 Qh3-h6+ Kg7-g8 (if 2 ... Kg7×Nf7 then 3 Qh6×h7+ Qf6-g7 4 Bd3×g6+ Kf7-f6 5 Be3-g5+ Kf6×Bg5 6 Qh7-h5+ Kg5-f6 7 Qh5-f5 mate) 3 Be3-d4! Re8×Re1 4 Ra1×Re1 and Black, rather surprisingly, has run out of moves, despite the fact that two white pieces are hanging. White threatens 5 Re1-e8+ Kg8×Nf7 6 Qh6-f8 mate. Other tries by Black, such as 1 ... Re8×Be3 also come to grief.

As I said, this is not an easy combination to see. Both the II and III missed the potential of 1 Nh6×f7 and concentrated on saving the threatened white rook on a1. The II opted for 1 Ra1-b1 while the III played the positionally better move, 1 Ra1-d1, but neither found anything of interest in the position.

When I gave the two machines the key move 1 Nh6×f7, the III found the best defence for black inside five minutes, 1 ... Qd8-f6, which means that it analysed 1 ... K×N and found that it led to mate. The Mephisto II, after 20 minutes, still thought that 1 ... K×N was sound and expected white to play 2 Ra1-b1, salvaging the hanging rook! The III showed a far better grasp of the position. Its suggested continuation was:

1 ... Qd8-f6.
2 Qh3-h6! Kg7-g8 (again, rejecting K×N, which leads to the mate analysed above.
3 Be3-d4 Re8×Re1.
4 Ra1×Re1 Qf6×Nf7.
And now it spoiled the combination by taking the black bishop on b2 instead of going directly for the kill by 5 Re8+. In the sequence it expected this made no difference:
5 Bd4×Bb2 Bb7×d5.
6 Re1-e8+ Qf7×Re8.
7 Qh6-g7 checkmate.

But instead of taking the pawn on d5, black can play a much stronger defensive move, 5 ... Nb8-d7, when 6 Re1-e8 no longer works.

Still, despite this flaw, the evidence is strong that the III performs better than the II in rich positions. There is still a

great deal of room for improvement, but the selective search strategy is perhaps not the total disaster some of its critics claim it to be.

Games section

White: Mephisto II. Black: Mephisto III.
Game played at level 3. Notes by John Nunn.

The interest in this game lies in the difference between the two programs. Mephisto III is a selective search program, so might be expected to be weaker in tactics but stronger in strategy. In the event the tactical ability of Mephisto III is never tested, since at no stage is Black required to enter into deep calculation. Mephisto II makes some strategical errors which are efficiently exploited. In human chess it is often claimed that a good positional player will usually beat a good tactical player, because the positional player will be able to steer the game into channels which allow no scope for the tactically gifted player to show his ability. Perhaps that is what happened in this game.

1 e2-e4 c7-c5
2 Nb1-c3 e7-e6
3 f2-f4 Qd8-h4+

(A time-wasting queen excursion which goes against all the advice given to beginners.)

4 g2-g3 Qh4-f6
5 e4-e5

(The queen was badly placed on f6, preventing the natural development of the g8 knight, and this pawn thrust encourages Black to repair the damage done by his premature queen sortie. 5 Ng1-f3 was better.)

5 ... Qf6-d8
6 d2-d4 c5xd4
7 Qd1xd4 d7-d5
8 e5xd6 e.p. Nb8-c6
9 Bf1-b5 Qd8xd6
10 Qd4xd6 Bf8xd6
11 Bc1-e3 Bc8-d7
12 0-0-0 Bd6-e7
13 Ng1-e2

(The only weak square in Black's position is d6 and white should have occupied it by 13 Nc3-e4 followed by Ne4-d6+.)

13 ... 0-0-0
14 Bb5xNc6

(White's first major positional error. In an open position a bishop is more valuable than a knight so this exchange was quite wrong.)

14 ... Bd7xBc6
15 Rh1-e1 Rd8xRd1+
16 Re1xRd1 a7-a6
17 Ne2-d4 Bc6-g2

(Black, on the other hand, seems well aware that he should preserve his bishop from exchange.)

18 f4-f5 e7-e5

(A good move isolating the pawn at f5 and marking it out for future attack.)

19 Nd4-e2 Bg2-h3

(White has no way to defend f5 and must lose a pawn.)

20 Rd1-d5 f7-f6
21 Be3-c5 Bh3xf5
22 Nc3-a4 Bf5-e6

23 Bc5xB7 Ng8xB7
(Not 23...Be6xRd5 24 Nc4-b6+ Kc8-b8 25 Nb6xBd5 defending the e7 bishop and thus winning bishop and knight for rook.)

24 Rd5-c5+
(A misguided move. Rooks belong on open files, so White should have retreated down the d-file. The rook move to c5 is heading down a dead-end street.)

24 ... Kc8-d8
25 c2-c4?
(White generously seals off the only exit! After Black's reply the rook will have no moves at all.)

25 ... Ne7-c6
26 Na4-b6
(A desperate attempt to prevent ...Kd8-c7 followed by ...b7-b6 winning the trapped rook.)

26 ... Kd8-e7
27 h2-h4 Rh8-d8
28 Nb6-d5+
(In attempting to prevent Black's rook penetrating to d3 White loses his own rook, but there was no defence in any case.)

28 ... Ke7-d6
29 Rc5xNc6+ Kd6xRc6
30 Ne2-c3 Be6xNd5
31 c4xBd5+ Kc6-d6

(Black is slow to convert his material advantage into a win, but Mephisto III is never in danger of letting the game slip away.)

32 Kc1-d2 b7-b6
33 Kd2-e3 g7-g6
34 Nc3-e4+ Kd6-e7
35 d5-d6+ Ke7-e6
36 g3-g4 h7-h6
37 b2-b3 f6-f5
38 Ne4-d2 b6-b5
39 g4xf5+ g6xf5
40 Nd2-f3 Ke6-d5
41 d6-d7 f5-f4+
42 Ke3-e2 e5-e4
43 Nf3-h2 f4-f3+
44 Ke2-e3 Rd8xd7
45 Nh2-g4 Rd7-d6
46 Ng4-f2 Rd6-e6
47 a2-a3 Re6-g6
48 a3-a4 b5xa4
49 b3xa4 Rg6-e6
50 Nf2-d1 Re6-c6
51 Nd1-f2 Rc6-c3+
52 Ke3-f4 Rc3-a3
53 Nf2-g4 f3-f2
54 Ng4-h2 f2-f1=Q+
55 Nh2xQf1 Ra3-f3+
56 Kf4-g4 Rf3xNf1
0-1

White: Superstar. Black: John Ebert (1730). French Defence. Notes by David Levy

1 e2-e4 e7-e6
2 d2-d4 d7-d5
3 Nb1-c3 Bf8-b4
4 e4-e5 c7-c5
5 Bc1-d2

(A rarely played move which should lead to a quiet position offering chances to both sides. More usual is 5 a2-a3 Bb4xc3+ 6 b2xc3, when the advantage of the two bishops is offset by the doubled pawns on the c-file.)

5 ... Ng8-e7
6 Nc3-b5 Ne7-f5?
(Losing a pawn. The correct continuation is 6...Bb4xd2+ 7 Qd1xd2 0-0, with equal chances.)

7 c2-c3 Bb4-a5
8 d4xc5 0-0
9 g2-g4?

(Interesting, but very dangerous. After this move the white king may soon come under strong pressure.)

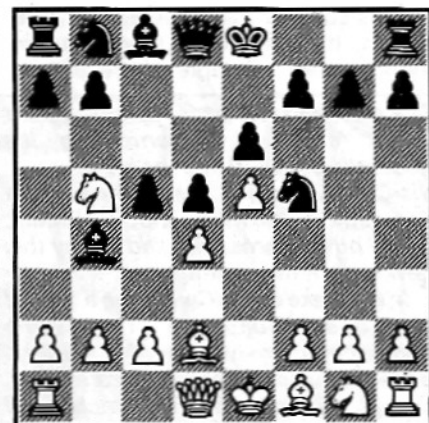
9 ... Qd8-h4??

A horrible blunder, losing a piece, but this move illustrates one of the well known axioms of human v computer play. The human player should normally try to avoid complicated tactical variations because computer programs excel at tactics, since their analytical ability is flawless within a given horizon. Humans, on the other hand, can easily make a tactical oversight.

Here Black assumes that the pin on the g-pawn (10 g4xf5 Qh4-e4+ and 11 ... Qe4xh1) will give him a good game, but he has not analysed far enough. Superstar now sees, with a 5-ply search, that Black is lost.

Instead, Black should have played 9...a7-a6, and if 10 Nb5-d6 f7-f6. For example, 12 e5xf6 Qd8xf6 with pressure on f2, or 12 f2-f4?? f6xe5 13 f4xe5 Qd8-h4+.

10 Qd1-a4 Nb8-c6
11 Ng1-f3



Position after 6...Ne7-f5?

(The point. White's 10th move defended the g-pawn from the side, and at the same time attacked the black bishop on a5. Black was forced to react to the threat of the bishop and now White drives the queen away from h4 so that the g-pawn is free to capture.)

11 ... Qh4-e7
12 g4xf5 e6xf5
13 0-0-0 a7-a6
14 Nb5-d6 Ba5-c7
15 Bd2-g5 f7-f6
16 e5xf6 g7xf6
17 Bg5-h6 Nc6-e5
18 Nf3xe5 b7-b5
19 Rh1-g1+ Kg8-h8
20 Bh6xf8 Bc7xd6
(Of course, 20...Qe7xf8 allows 21 N (either)-f7+ and mate next move.)
21 Bf8xe7 b5xa4
22 Be7xf6 mate

END