

# Microchess 1.5 versus Dark Horse

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When the Second World Computer Chess Championships were held in Toronto last August (see January 1978 BYTE, page 108), the opportunity arose to challenge one of the best chess programs in the world to a friendly match against my microcomputer. A match was arranged between Microchess version 1.5 and Dark Horse for the day after the tournament.

Dark Horse is a program written by Ulf Rathsman of Stockholm SWEDEN. It is written in FORTRAN IV and occupies 24 K

words of programmable memory with 60 bit words on a CDC 6600 computer. On average, it is capable of analyzing 12,000 positions per move made. In addition, it utilizes its opponent's time by preparing replies to expected moves. Although Dark Horse is considered to be a small program by classical mainframe computer chess standards, its strategy is efficient and it finished in sixth place at the World Computer Chess Championships.

Microchess is a program I wrote for the

White: Microchess      Black: Dark Horse

It was decided by a coin toss that Microchess would play white. Since neither program makes use of an opening book, the opening is a little unorthodox. However, by move 3 the position looks like a normal opening.

1.	N-QB3	P-K3
2.	N-KB3	N-QB3
3.	P-K4	N-KB3
4.	P-K5	N-KN5
5.	P-Q4	P-Q4
6.	B-KN5	B-K2
7.	BxB	QxB
8.	B-K2	Q-N5
9.	R-QN1	O-O
10.	P-QR3	Q-K2
11.	O-O	P-QN3
12.	P-QR4	Q-N5
13.	P-KN3	B-N2
14.	B-N5	P-QR3
15.	N-QR2	Q-QR4
16.	BxN	BxB
17.	P-N3	P-QN4
18.	Q-K1	QxQ
19.	R(B1)xQ	PxP
20.	N-N4	PxP
21.	NxB	PxP

Dark Horse evaluates the pawns captured plus the resultant pawn on the seventh rank as more valuable than the lost bishop.

22.	N-K2ch	K-R1
23.	R(N1)-B1	R(B1)-K1
24.	N-B6	K-N1
25.	RxP	P-QR4
26.	R(K1)-K2	P-R5
27.	N-N4	R(K1)-QB1
28.	R-N2	P-QB4

29.	N-Q3	P-R6
30.	R(N2)-Q2	PxP
31.	NxP	R-B5
32.	N-B4	P-R7

Dark Horse, which prints out the expected continuation, expected 33. RxP RxR, 34. RxR RxN, 35. R-K2, winning a knight for the pawn. It did not foresee 35. R-R8 (mate in one) because it truncated the analysis at 6 ply on this continuation. A search to 9 ply would be necessary to determine the threat.

33. P-B3      ...

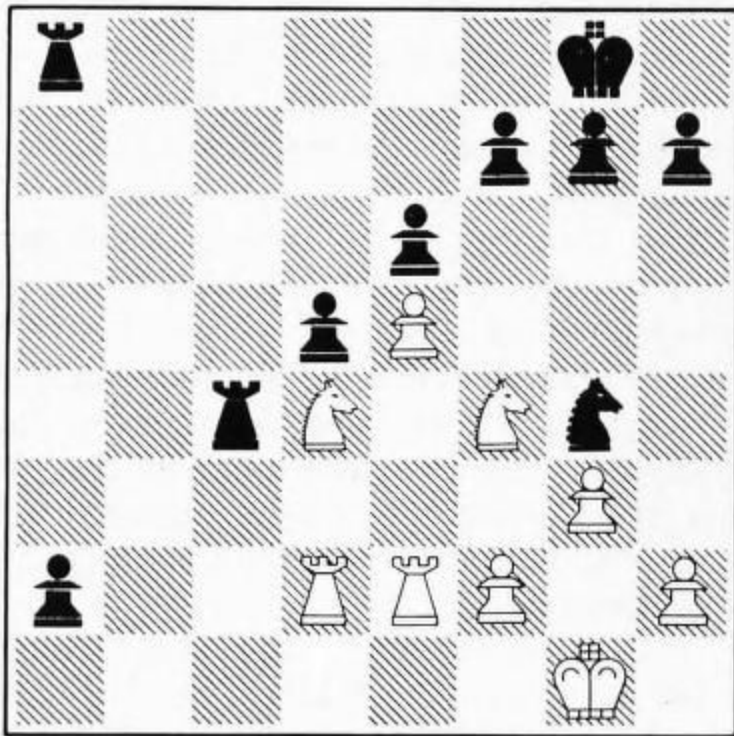
Microchess did not take the pawn because it expected the same continuation that Dark Horse projected, with the loss of a knight. The threat of P-R8ch was not evaluated correctly due to a bug in the program. This blunder resulted in a loss for Microchess.

33.	...	P-R8 (Q)ch
34.	K-N2	NxP (K5)
35.	N-N3	Q-B6
36.	K-R3	RxN
37.	PxR	QxPch
38.	K-R4	Q-N5 Mate!

Microchess took 47 minutes while Dark Horse required only 11 minutes of processor time for the game. Part of this difference is explained by Dark Horse's ability to compute responses on its opponent's time.

Although Microchess was defeated by Dark Horse, it was not as one-sided a game as might be expected given the difference in computing power. Further improvements in Microchess will probably bring it close to the playing level of Dark Horse and other programs in its class, but at a slower speed.

**DARK HORSE**



**MICROCHESS**

Position after 32. . . . P-R7.

KIM-1 in 1976. Commercial versions are available for the KIM-1, and a translated version is available for the 8080. Version 1.5 is an extended version of the original program. It occupies 2.5 K of programmable memory and runs on a KIM-1 with expansion memory. Although it plays better chess than the first version of Microchess, it is incomplete and requires further development.

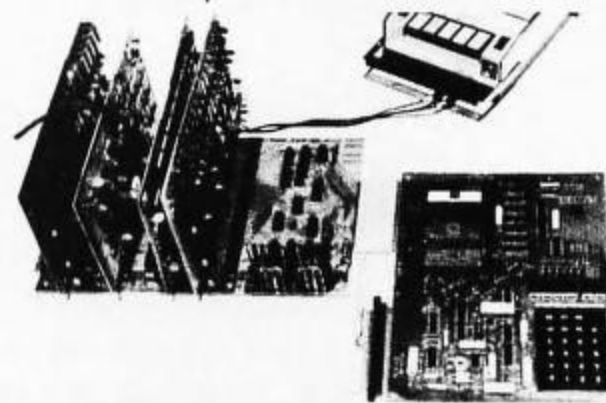
Because of the complexity of chess analysis, time becomes an important factor both for micro and mainframe programs. One expected solution to the problem is the use of multiple microprocessors to process portions of the analysis in parallel. Such a distributed network can reasonably be expected to play as well as Chess 4.6, if not better, provided the heuristics used are equally powerful. I would not be surprised to see this type of equipment in use at the Third World Computer Chess Championships in 1980 to be held in Tokyo and Melbourne. ■

The following programs are available from MicroWare Ltd, 27 Firstbrooke Rd, Toronto, Ontario M4E 2L2 CANADA:

Microchess, A Chess Playing Program for the 6502 processor. Price: \$13.

Microchess, A Chess Playing Program for the 8080 processor. Price: \$18.

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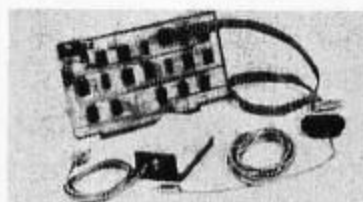
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