1st Creative Computing Microcomputer Chess Tournament

Stephen Kimmel

Whether you play chess or not, you'll enjoy this account of microcomputer games and programs being pitted against one another.

When International Chess Grandmaster David Levy wagered that no computer program would be able to beat him in the next ten years, it became obvious that computer chess was big money. It always has been. Millions have been spent on research projects studying chess as an exercise in artificial intelligence, but the really big money was yet to come.

It was inevitable that the microcomputer would enter the scene. The big money came to computer chess as the computer became inexpensive enough for everyone to afford one. Hordes of machines and programs began to bid for the millions of customer dollars. The claims are myriad. Boris is King! Challenger is the best. Karpov is afraid of our Chess Computer. Sargon: The 1978 champion. Microchess 1.5 is the best computer chess program. There is an old saying: The amazing thing about dancing bears isn't how well they dance but that they dance at all. Insert obvious paraphrase.

How much of the noise is advertising hype? How much of it is due to the skill of the programmers? Are any of them any good or is microcomputer chess still in its dancing bear phase? Which of them plays the best game of chess? How many writers are telling us they don't dance as well as bears?

Armed with several pounds of salt, I pitted five of the best known (read most highly advertised) against each other in a microcomputer chess tournament to answer these ques-

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tions. However, since nobody buys computers to have them play each other, I insured the relevance to human players by including two rated humans.

HUMAN 1400 is an average tournament chess player with an official rating of 1400. The scale runs from 400 to Karpov's 3000+. He started playing chess at age 7 and has played in numerous tournaments. He prefers a wide open game.

HUMAN 1000 is an average chess player. He never studied chess, except for the opening, and hadn't played for ten years before his recent series of games. HUMAN 1000 has a fair grasp of basic strategy, good ability in the opening part of the game and plays conservatively.

Time

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playing a computer. People expect computers to be faster than they are. People are reassured when the computer takes more time to find the move they selected.

There is also a boredom threshold. Of six humans I tried, all showed signs of boredom when required to wait over three minutes. Try it yourself, put something on a computer screen and see how long you can look at it without fidgeting. The human player simply won't wait very long for the computer to make its

There's a lot of confusion in the computer chess world with the myriad of conflicting claims.

only legal move. The most desirable time appears to be between one and two minutes, more time becomes a burden over a fifty move game. If the computer is playing well, shorter times become intimidating.

I set each machine so that it took as much time as possible under three minutes. All of the programs except Microchess 1.5 could be set higher. Normally the next setting was much higher. Chess Challenger took six minutes at it's next setting. Sargon averaged 10 minutes. JS&A took four hours. These levels are too long to be practical.

The Tournament

The first computer contestant was Microchess 1.5, which I purchased at a Radio Shack. Written in 1976 by Peter Jennings and marketed by Personal Software, Microchess 1.5 is the old man of the group. I ran it on a 4K TRS-80.

Microchess 1.5 evokes the same sadness as Eniac. In it's day, it was a triumph of innovation and programming ability. Now, like Eniac, it is mainly an historical curiosity. Microchess 1.5 didn't win a single game in the tournament. It's style of play was described by one spectator as "Attack

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at all costs." As black, it seemed particularly prone to develop one piece, move it until it lost it, and develop another piece as illustrated in Figure 1. This is a hideously bad style of play. I inquired of Personal Software if there was a problem with my tape. They offered me my money back. I plan on taking it and I suggest you do the same.

If chess on microcomputers is like a dancing bear, then Microchess 1.5 is a dancing bear in a telephone booth. It only requires 4K and that's

Position After 8 PxN HQ-Q3
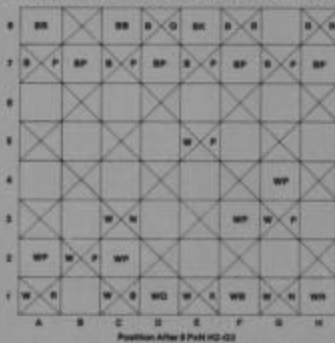
BORIS...3 Minutes   Microchess 1.5 (IQ = 3)

1 P-Q4	d2-d4	N-KB3	g8-f6
2 N-QB3	b1-c3	N-N5	f6-g4
3 P-KB3	f2-f3	N-KB3	g4-f6
4 P-K4	e2-e4	N-QB3	b8-c6
5 P-K5	e4-e5	N-KR4	f6-h5
6 P-KN4	g2-g4	NxP(K5)	c6-e5
7 PxN(K5)	d4-e5	N-N6	h5-g3
8 PxN	h2-g3	P-Q4	d7-d5
9 QxP	d1-d5	QxQ	d8-d5
10 NxQ	c3-d5	P-QB3	c7-c6
11 N-QB7	ck d5-c7	K-Q1	e8-d8
12 NxR	c7-a8	B-K3	c8-e6
13 B-KB4	c1-f4	P-KN4	g7-g5
14 R-Q1	ck a1-d1	K-K1	d8-e8
15 N-B7	ckmt a8-c7		

Figure 1. Boris vs. Microchess 1.5.

Boris also displays the move it considers best so far while it's thinking. This lets you analyze your responses while waiting. It was the only computer that did anything interesting while thinking.

the only reason I can think of for buying one. HUMAN 1000 beat Microchess handily twice and said, "I've played worse chess players but I don't remember when." HUMAN 1400's included the shortest game of the tournament, a ten move classic. He spent a substantial amount of his time laughing.

BORIS was the second unit to arrive and it promptly beat Microchess twice. Figure 1 shows the position after eight moves. Having won two knights for a pawn, Boris has already won the game. It took only seven more moves. Human 1000 beat BORIS twice and HUMAN 1400 routinely increased Boris's computing time. While neither game was difficult, they weren't laughers either.

Boris plays fair chess and is entertaining.

Boris is marketed by Chafitz of Rockville, Maryland through quality stores. They have a toll free number, (800) 638-8280, so you can find out where Boris is sold. It comes in a variety of models ranging from the new Boris Diplomat at $119.95 to a coffee table model that sells for considerably more.

Boris has most of the desirable features. Crisp calculator style keys, an easy-to-read display, random moves between equal alternatives, ability to play both black and white, easy special positioning and move verification and easily understood instructions. Boris also uses a timer system which has advantages and disadvantages. The disadvantage is that it always takes that amount of time even if it only has one move. The advantage is that you always know exactly when it will respond.

Boris also displays the move it considers best so far while it's thinking. This lets you analyze your responses while waiting. It was the only computer that did anything interesting while thinking. We liked this feature very much.

And, of course, the messages. When the computer is ahead, or the game is about even, one liners appear randomly. The cute messages stop when the machine is behind. It isn't Henny Youngman, but it may make Boris the best "entertainment" value. Boris plays a reasonable game, though in the early game it lacks insight. In the end game, when there are fewer alternatives to evaluate, Boris becomes stronger.

Our Sargon tape arrived next. Sargon was written by Kathe and Don

Spraklen and is published by Hayden Publishing. I bought my copy from Microtronix. Sargon was run on a 16K TRS-80. It is also available for other machines and in book form. Unfortunately, our Sargon tape wouldn't load. Hayden is aware they have a problem. They are working on it and are very courteous about exchanging tapes. If you are having problems don't hesitate to send yours back.

The JS&A Chess Computer was the next unit to arrive. The unit is manufactured in Hong Kong making it the only foreign entry. At $100, it is only entry with no chess set or display. This unit has real problems. It has very sloppy keys that may require pushing several times or respond more than once to a single push. The display doesn't match the keys which created problems during the tournament.

In its own peculiar way, the JS&A unit is very reassuring. Even Russian chess champions understand the capitalistic concept of hype. Their ads quote Karpov as saying he'd played several games with it at level 6 and found it a challenge. So the first thing I did was to begin a game at level six. It took the JS&A unit between 32 and 42 hours to compute a response to E2-E4 (pawn to king four). Assuming that a game needs 30 moves to qualify as challenging, Karpov must have spent two months per game in the same location. Hype.

The best "dedicated" chess machine - Chess Challenger 7.

The JS&A unit's strategy seems to be "Defend at all costs and attack if you see a free piece or a quick kill." Against weaker players, it spends a lot of its moves waiting for an opening. Against stronger players, it sputters, and gasps and plays moves that HUMAN 1400 described as "simply illiterate." Karpov described it when he said, "You Americans have a saying: Garbage in, garbage out." The unit won't really play white. You can make it move first by entering the illegal move E2-E2 but that produces a mirror image game.

The JS&A Chess Computer was in trouble against Microchess until

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Microchess made a horrifying blunder and lost the game. Their second game ended in a draw, the only game of the tournament Microchess 1.5 didn't lose. Boris, Human 1400 and Human 1000 all beat it convincingly. Human 1400 was laughing again.

The JS&A Chess Computer doesn't check your moves for legality. Combined with the sloppy keys, this leads to numerous mistakes. We found the opening move A5-D8 (empty square takes queen) especially devastating. At this point I thought that Boris might be the ultimate winner in the computer division. So far, none of the units had seriously challenged a human player.

Then Chess Challenger 7 appeared. It is the latest model manufactured and marketed by Fidelity Electronics of Chicago. This model sells for around $100 (just like the JS&A unit). Chess Challenger 10 sells for $275. You can order one by calling (800) 243-5676.

Chess Challenger has fairly crisp keys and an audio feedback system that's nice. It has all the features Boris has except that its special positioning was difficult to master and the instructions were unclear. Chess Challenger's best feature is it's book of openings in memory. This insures that Challenger won't get into trouble early. It also makes Challenger the best chess tutor.

Chess Challenger does have some weak points. It has fine carved wooden chess pieces and plastic sandwich bags to carry them in, but I don't understand why they put magentic weights in pieces to be used with an all plastic board. You actually need a carrying case and a board. The display can be difficult to read in certain lighting. Overall, it is the

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cheapest looking unit of the group, but it plays a terrific game of chess. At level seven it ruthlessly punishes not only mistakes but weak plays. Challenger made the fewest blunders of any of the computers and its style of play is easily the most human of the programs we examined.

Challenger creamed JS&A and Microchess. It's game with Human 1400 was a little different. Human 1400 realized that he was in trouble about 15 moves into the game. He was never able to recover and resigned after 42 moves. In this tourna-

ment, it was the first time any of the computers had beaten a human. Human 1400's play improved considerably now that he had an opponent he had to be serious about. He won all the rest of his games.

Moral: Microcomputer chess programs aren't as good as an average tournament player...yet...but if you get careless some of them will beat you.

The electronic loser - JS&A Computer Chess.

The matches with Human 1000 became more important. If Challenger could beat Human 1000 twice then it wouldn't make much difference how the other games turned out. Human 1000 was aware of Human 1400's loss and realized that his normal style of play was doomed to defeat. On move 11 Human 1000 offered a queen sacrifice. See Figure 2. Interest in the game suddenly ran high. The foregone assumption that Challenger would have little trouble with Human 1000 crashed. There was a trap. If Challenger accepted the sacrifice, it would eventually lose a piece and perhaps the game. If it declined, then Human 1000's advantage would be much less. The other computers had accepted every sacrifice offered. Speculation was that Challenger would accept the sacrifice and the momentary material advantage.

Chess Challenger 7 declined the sacrifice. It demonstrated much more insight than any of the previous pro-
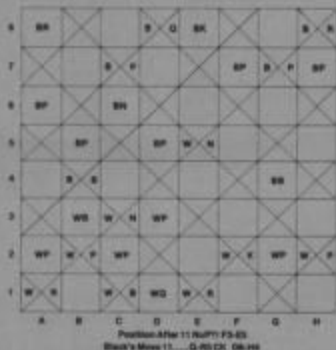

Figure 2. Human 1000 vs. Chess Challenger.

grams. Although Chess Challenger lost both games to Human 1000, there was very little doubt that it would be the eventual computer winner.

It came as a surprise when Boris drew Challenger in the first game. The second game is shown in Figure 3. Boris has Challenger in perpetual check. Challenger couldn't find the way out. The game ended in stalemate by repetition. Challenger had drawn both of its games with Boris.
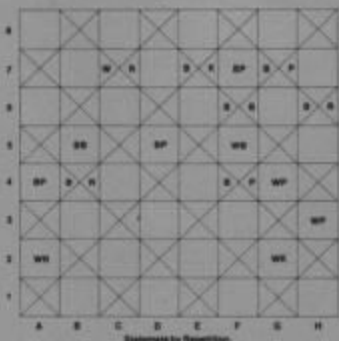

Figure 3. Boris vs. Chess Challenger.

The good Sargon tape arrived and the program dispatched JS&A and Microchess with relative ease. Sargon plays an interesting, unhuman game of chess. Still it wins games and was the untied, unbeaten winner of the West Coast tournament. It is a bit too aggressive as black, attacking when it should be consolidating. It's losses stem from this fact. It has a special exchange evaluator that sometimes gives it great depth of insight.

The outcome of the entire tournament would depend on one last game. I could almost hear Challenger cursing for not being able to break to stalemate with Boris.

Sargon displays as many as the last ten moves, which is a very nice feature. It took a while to get used to making moves without hitting enter. The graphics are acceptable although it is possible to get confused about which color a piece is. I think they need a feature to number the board. Sargon beat Boris as white but lost as black in two long games. As black, Sargon lost to Challenger.

I was ready to write up Chess Challenger 7 as the computer winner at this point. But one skeptic pointed out that if Sargon could win as white,

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as it had against Boris, there would be a three way tie in the computer matches. Boris and Challenger would have records of 5-1-2 while Sargon would be 6-2-0. Sargon won it's second game against Challenger. It lost both games to Human 1400 and as black against Human 1000.

The outcome of the entire tournament would depend on one last game. I could almost hear Challenger cursing for not being able to break to stalemate with Boris. If Human 1000 lost, then Sargon and Challenger would be essentially tied. Any other conclusion and the clear winner

Chafitz has recently hired Atkins and Slate (the programmers of the World Computer Chess Champion Chess 4.6) to work on the Boris program.

would be Chess Challenger 7. After consultation it was decided that Sargon would be declared the winner if it won. Both would have beaten humans playing about as well. And Sargon was taking about half as much time.

Would Human 1000 do it again to Sargon as he had against Chess Challenger? I imagined this to be a moment of high tension in the microcomputer chess world.

And The Winner Is...

HUMAN 1400 won eight straight games before suffering his only defeat to Chess Challenger, then he went on to win three more. His record was 11 wins, one loss and was good for an easy first place.

HUMAN 1000 won second place before he played Sargon. He beat Sargon as white, Chess Challenger and Boris only by playing his very best game. These three systems are all rated near the 1100 level. This is slightly weaker than an average tournament chess player. JS&A and Microchess are still in the dancing bear phase.

Human 1000 offered a bizarre swap in the crucial game with Sargon. He traded a knight for three pawns. Materially the trade was about even and it had devastated Sargon's pawn structure. More important though, it prematurely freed Sargon's queen rook. This was a fatal flaw. Six moves later Sargon offered the rook as a sacrifice. The stunned spectators watched the only computer originated sacrifice in the tournament force

Human 1000 playing Boris while being an interface. (All photos by B. Chilcoat.)

checkmate. Sargon had beaten Human 1000.

Sargon, therefore, was the computer winner. It is easily the best program available for the home computer. A very close second, essentially a tie, is Chess Challenger 7, the best of the dedicated chess computers. The results are shown in Figure 4.

The Future

The JS&A people tell us that they are discontinuing their Chess Computer. One industry source says that there are legal problems. The JS&A Chess Computer is such an inferior product that it richly deserves to be discontinued. JS&A, though, can be counted on to bring out a new product which should be much better.

Chafitz has recently hired Atkins and Slate (the programmers of the World Computer Chess Champion Chess 4.6 to work on the Boris program. I expect them to add an opening book and introduce a pruning mechanism. Chafitz has just announced a breakthrough that, they say, will revolutionize computer chess though they don't say what it is. My guess,

and it's only a guess, is that they've combined a faster clock with Texas Instrument's bubble memory chip. Something like that could really make Boris a unit to be considered, it would be a quantum leap.

Use of Sargon will increase, eventually pushing Microchess 1.5 out of the market. Sargon II, which will probably have an opening book, will come out sometime in the not too distant future.

The future of Microchess is more difficult to predict. Microchess 1.5 is more heavily advertised than Sargon, so it will hold on for a while. Microchess 2.0, the version available for Pet and Apple, is reported to be better than Microchess 1.5. Unless they come out with a version for the TRS-80, I don't see how they hold on to the TRS-80 market.

One of the interesting things about Challenger is how much of the package is computer...less than half. I expect the next model to be the size of a hand-held calculator. This should run in the $50-$75 range. It may even be available for Christmas. I'll probably buy one.

Of course, others will enter the field. Mighty rumors are coming from the manufacturers about the powers of the Atari chess program. I hope to report on that later. As of June 1979, it was unavailable in mid-America.

Cardinal had a unit mentioned in the May issue, though no word is available on how good it is. I fully expect Texas Instruments to get into the act soon.

Sargon and Chess Challenger are the best available now. They have put to rest the dancing bears. Now the amazing thing about chess programs will be how well they play. □

WINNER		HUMAN 1400	HUMAN 1000	SARGON	CHALLENGER	BORIS	JS&A CHESS	MICROCHESS	RECORD (Win-lose-tie)	RATING
HUMAN 1400	W		*	*		*	*	*	11-1-0	1400
	B		*	*	*	*	*	*		
HUMAN 1000	W			*	*	*	*	*	9-3-0	1325
	B				*	*	*	*		
SARGON 2 PLY LOOK AHEAD	W				*	*	*	*	7-5-0	1100
	B						*	*		
CHESS CHALLENGER 7 LEVEL 7...Avg 3 minutes	W	*		*		-			6-4-2	1100
						-				
BORIS 3 minutes allowed	W			*			*	*	5-5-2	1050
	B				-		*			
JS&A COMPUTER CHESS LEVEL 4...Avg 3 minutes	W							-	1-10-1	750
MICROCHESS 1.5 IQ LEVEL 3	W							*	0-11-1	650
	B									

Figure 4. The winners...and the losers.

* = Win
- = Draw