

The Newest Sargon—2.5

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Time travel is common now. You've decided to spend the afternoon in Vienna on a sunny spring day in 1770. There is talk that at the Royal Palace the Baron Wolfgang von Kempelen, counselor to the Royal Chamber, will be giving a demonstration of his amazing Automaton Chess Player. You wander over towards the Palace.

The murmur of the crowd grows as the Baron rolls a large wooden cabinet into the courtyard, the result of a solemn promise he made to the Queen 6 months ago to build a chess-playing machine. The Baron smiles graciously and invites anyone to come forward from the crowd to play the Automaton.

Meanwhile, the noblemen are about ready to accuse the Baron of a hoax. A machine that thinks? Rubbish. Sacrilege. And the spectators are no more convinced. Catcalls from the crowd dare the Baron to open the cabinet—obviously big enough to hold a small man—whereupon von Kempelen opens all the doors only to reveal a complex system of pulleys, gears, and levers, nothing else.

About this time, you decide to come forth from the crowd to play this wondrous machine. Unknown to everyone, you have Sargon 6, no bigger than a matchbook, hidden in your palm. With its aid, you win, but the Automaton plays a superb game. Afterwards, a crowd gathers around you, and the Baron congratulates you on your game. Everyone agrees that the machine played a creditable game of chess, clearly outplayed by a genius. A priest overhearing this remarks that this is proof of the superiority of the human mind. You shrug, put Sargon 6 in your pocket, and wander off into the crowd.

The Baron will go on to amaze the bewildered crowds in Europe and America for many years, and the machine will defeat many chess players. It will take 70 years for the hidden compartment and the hoax to be revealed. But the dream of a chess-playing machine is planted firmly in the minds of men. A dream which would take another 200 years to come true.

Introduction

Sargon 6 isn't available yet, but Sargon 2.5 is. It is a game module and holder slightly larger than a hardback book, but the real guts are no larger than a pocket calculator. This is the MGS (Modular Game System) from Chafitz; as of this writing, it is the strongest chess-playing microcomputer you can buy.

You may already be familiar with the Sargon 1 and

Sargon 2.0 computer programs written by Dan and Kathe Spracklen. These are available on cassette or floppy disk (from Hayden Books) for the Apple II and TRS-80 computers. But now Chafitz is marketing Sargon 2.5 as a plug-in ROM (read-only memory) module that fits into the MGS. Presumably, when Sargon 3 and other versions are available, you can remove the old ROM and plug in the new one. Not only does this protect the firmware, but allows new games (such as checkers and backgammon) to be run on the same system.

The technical specifications of the MGS-Sargon 2.5 combination are many and impressive. The system is rather complete: a benefit of Chafitz's previous experience with its chess machine, Boris. A touchpad keyboard allows the user to:

- force selection of best move
- use the machine in its hint mode
- set playing level (from 0 to 6)
- set up a given position
- show elapsed time (either player, cumulative, or time per move)
- withdraw a move or moves (up to three moves)

At a Glance

| | |
|--|--|
| Name Chafitz Modular Game System with Sargon 2.5 | mable memory (for internal use only) |
| Manufacturer Chafitz Inc, 856 Rockville Pike, Rockville MD 20852, (301) 340-0200 | Additional features Includes AC adapter, keyboard, chessboard, magnetized chess pieces; Sargon 2.5 is a removable module that can be replaced by other game modules (not yet released) |
| Price \$375 | Software Sargon 2.5 program, held in 8 K bytes of ROM |
| Processor 6502, 8-bit | Options Rechargeable battery option |
| System-clock frequency 2 MHz | |
| Memory 2 K bytes of program- | |

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Sicilian Defense

| White | Black |
|--------------|------------------------------|
| Martellaro | Sargon 2.5 (level 4) |
| 1. e2-e4 | c7-c5 |
| 2. Ng1-f3 | d7-d6 |
| 3. Bf1-b5 ch | Bc8-d7 |
| 4. Bb5-c4 | Nb8-c6 |
| 5. Nb1-c3 | Ng8-f6 |
| 6. d2-d4 | c5xd4 |
| 7. Nf3xd4 | Qd8-b6 |
| 8. Bc1-e3 | Qb6xb2?? |
| 9. Nd4-b5 | Ra8-c8 |
| 10. Ra1-b1 | ...and Black loses his Queen |

Table 1: Beginning of a chess game between the author and Sargon 2.5.

The system is very nicely packaged. The quality of the plastic case and the display is outstanding. In the instruction manual there is a brief rule description of chess and information on the USCF (United States Chess Federation). This is an important and welcome addition. Overall, the instructions are clear and easy to understand. For once, we have complete documentation.

A conversation with Kathe Spracklen revealed that the decision algorithms of Sargon 2.5 are exactly the same as those of Sargon 2.0. The only modification is that the host 6502 microprocessor runs at 2.0 MHz as opposed to the Apple's effective 1.0 MHz, and Sargon 2.5 *thinks on its opponent's time*. The result of this is that Sargon 2.5 is often ready with a move as soon as the opponent enters his move. The program uses 8 K bytes of ROM and 2 K bytes of programmable memory.

Playing Strength

When chess programs were first written for microcomputers (Microchess 1.0 on the KIM and Sol), we all laughed and proceeded to demolish them. While we had respect for the programs on big computers, microcomputer chess programs had a poor reputation. Times have changed, and now the average player can no longer bully microcomputer-based chess programs. That is not to say that Sargon can't be beaten by a good player. (Some results are given here; see tables 1 and 2.) But now a player must use care and caution, and a single slip can mean disaster.

Sargon 2.5 in experimental form obtained a USCF rating of 1641 in a rated human tournament (the 1979 Paul Masson Championship). This is not bad at all for a machine that plays under tournament time controls and can be held in the palm of your hand. Reportedly, the Spracklens are working on major improvements that will boost its rating (Sargon 3) to 1800 in tournament time. Sargon 2.5 is probably the last microcomputer program that we amateur players will be able to consistently beat.

Playing Results

In a match of five games between Sargon 2.5 and Sargon 2.0 (which runs on my Apple II), the programs split—two wins, two losses each, and a declared draw. Sargon 2.5 started out slowly indeed. I didn't mind too much when I (rated about 1700) and a friend (rated 1850)

Grunfeld-Indian Defense

White Sargon 2.5 (level 4) Black Sargon 2.0 (level 3)

1. d2-d4
2. c2-c4
3. Nb1-c3
4. c4xd5
5. Nc3xd5
6. Ng1-f3
7. Bc1-f4

Ng8-f6
g7-g6
d7-d5
Nf6xd5
Qd8xd5
Bf8-g7
.....

This gets the Bishop developed in preparation for 8. e2-e3.

8. e2-e3 Nb8-c6
9. Qd1-d2 Qd5-a5 ch
 Nc6-b4!

Not a bad move for a \$30 program. But it will be fruitless.

10. Ra1-c1 Bc8-f5
11. Rc1-c5 Qa5-b6
12. Bf4xc7 Nb4-c2 ch

Sargon 2.0 has been wanting to do this badly. Now, however, it is in vain.

13. Rc5xc2 Qb8-e6
14. Bf1-b5 ch Ke8-f8
15. Bb5-c4 Qe8-e4
16. Rc2-c3 Bf5-g4
17. Qd2-d1

Sargon 2.5 is finding all the right defensive moves and is a pawn and Knight to the good.

17. Bg4xf3

18. g2xf3 Qe4-f5
19. O-O

Taunting Sargon 2.0 to do any harm...

19. b7-b5
20. Bc4-b3 Qf5-g5 ch
21. Bc7-g3 Qg5-f6
22. Rc3-c5 a7-a6
23. Bb3-d5 Ra8-d8
24. Qd1-c2

Threatening, of course, 25. Rc5-c8.

24. Qf6-f5
25. Qc2xf5 g6xf5
26. Bd5-b7 e7-e6
27. Bb7xa6 b5-b4
28. Rc5-c4 Rd8-a8?

Black was in serious trouble, but there was no reason to allow the following clincher.

29. Bg3-d6 ch Kf8-e8
30. Bb6-b5 ch

The mating web starts...

30. Ke8-d8
31. Rc4-c7 Ra8-a5
32. Rc7-b7

Threat: Rb7-b8 mate.

32. Ra5-a8
33. Rb7-d7 ch Kd8-e8
34. Rd7-a7 ch Ke8-d8
35. Ra7xa8 mate

Table 2: Record of a complete chess game between Sargon 2.5 (running on the Chafitz Modular Game System) and Sargon 2.0 (running on an Apple II computer).

Technical Notes on Sargon 2.5 and the Chafitz Modular Game System

The MGS is a plastic case with a slide-out tray. The top of the chessboard is brown and white soft grain with algebraic-notation markings. In the tray is the receptacle for the plug-in ROM, a keyboard (supplied with a chess overlay), and a compartment with chessmen—standard Staunton chess pieces, magnetized, with a 2¼-inch King. There is an AC (alternating current) adapter supplied. An optional battery pack is available for \$39.95; on battery power, the unit can retain an adjourned position for about 24 hours. The total system price is \$375.

Sargon 2.5 plays at six levels. Level 4 gives a reply in 2 to 4 minutes, plays in tournament time, and is rated 1641. If you want to wait 20 to 40 minutes per move at level 5, the claimed rating is 1800.

| Opponent of Sargon 2.5 | USCF Rating | Results |
|------------------------|-------------|--------------------------|
| Martellaro | (1700+) | 2 wins, 1 loss |
| J. Irwin | (1850) | 1 win |
| Sargon 2.0 | (1800?) | 2 wins, 2 losses, 1 draw |

Table 3: An informal list of match results between Sargon 2.5 and other opponents.

took three games from Sargon 2.5. But when Sargon 2.0 won its first two games, apprehension mounted. We wondered if there was a faulty ROM in Sargon 2.5, but we decided it was unlikely. Later, Sargon 2.5 came back to win two straight games against Sargon 2.0 and redeem itself (see match results, table 3).

The circumstances of the first two losses to Sargon 2.0 are peculiar. In the first game, everything was even down to pawns and King against pawns and King. But Sargon 2.0 gained a tempo (an advantage in time) and promoted a pawn to Queen before Sargon 2.5 could. In the second game, Sargon 2.5 played very speculatively on the attack and lost a Bishop for a pawn, then later another pawn. A whole Bishop down going into the end game with no

compensation whatsoever caused me to declare a win for Sargon 2.0.

This is hard to quantify or justify, but it appears that Sargon 2.5 with its greater look-ahead capability plays more (what I would call) speculatively. Sargon 2.5 will play solid defense and sacrifice soundly, but it also appears to play a little more aggressively and loosely than Sargon 2.0. Sargon 2.0 is very solid and conservative and never risks too much. Because of this, Sargon 2.5 can get into trouble on the offensive.

It is also peculiar that in the games Sargon 2.5 won, it was on the defensive with White. (See the game score in table 2.) Sargon 2.0 huffed and puffed on the attack with Black for twenty moves, flailing away. When Sargon 2.5 was done fending off the attack, it was a Bishop and two pawns up and proceeded to mate. Astonishing.

The difference in strength between Sargon 2.5 and Sargon 2.0 seems small yet definite. My personal subjective experience is that Sargon 2.5 is more resilient on the defense, and I would prefer to play Sargon 2.0 as the weaker opponent. However, if you are running Sargon 2.0 on your microcomputer, the \$300-plus investment for the "improved" version is hardly worth it. Wait for Sargon 3. ■