14

Analysis of the Machine Chess Game, J.Scott (White), ICL-1900 *versus* R. D. Greenblatt, PDP-10

I. J. Good
Virginia Polytechnic Institute

It is no disgrace for Scott's program to have lost to Greenblatt's which seems to be the best chess program so far written: it finished one of its games with a brilliant five-move combination.* Judging by the present game Greenblatt's program could play about board 2000 for England. Neither program seems able to form a plan that is naturally expressed by a *description* rather than by evaluation functions plus analysis. In the following game the first four moves on each side were played before the machines took over the play, because the ICL program cannot castle. The move time limits originally agreed were 90 seconds for #XESS and 'blitz speed' (5 or 10 seconds per move) for the Greenblatt program, as it was considered that the PDP10 is about 10 times faster than the ICL1909/5. After a few moves the PDP10 team increased its move time limit to about 25 seconds per move, while #XESS remained at 90 seconds per move.

1. P–KN3, P–KN3
2. N–KB3, N–KB3
3. B–N2, B–N2
4. 0–0, 0–0
5. N–QB3, N–QB3 (Both players weakly block their QBPs)
6. P–Q4, P–Q4
7. N–K5, Q–Q3
8. N×N

Better is 8. N–N5 which sets a trap with negligible risk since, if 8. . . ., Q–N5; 9. N×QBP, R–N1; 10. N–R6!, P×N; 11. N×N winning R for N; whereas if 8. . . ., Q–Q1; White can at least repeat position by 9. N–QB3 and presumably Black would then mechanically play Q–Q3. Then White could play 10. B–KB4 or 10. N–N5, Q–Q1; 11. P–QB4 with advantage.

8. . . ., Q×N

* See, for example, *Chess*, 32 (1967) 313.

If 8. . . ., PxN; 9. P–K4 and then, for example, 9. . . ., PxP, 10. NxP, NxN; 11. BxN, BxP; 12. B–B4, P–K4; 13. B–R6, R–Q1; 14. P–B3, B–N3; 15. BxBP!, Q–B3; 16. Q–B3, QxQ; 17. BxQ, and White has a slight advantage. (Not here 16. BxR, RxQ; 17. QRxR, B–R6 and Black wins).

9. B–KN5 (threatens the QP), R–Q1

10. Q–Q2 (prevents P–KR3), B–K3

If 10. . . ., P–QN3; 11. BxN, BxB; 12. P–K4, P–K3; 13. P–K5, and the game has the character of a French defence difficult to evaluate.

11. P–QR3

Both programs reveal what Nimzowitch called 'the lust of the pawns to expand', once the development of the pieces is more or less completed. White did not play 11. P–QR4 since the extra square for the R, in the program's estimation, is more than counterbalanced by the loss of a square for the N. White should have prepared for P–K4.

11. . . ., P–QR4 (Better is QR–B1 with Q–K1 and P–QB4 in 'mind')

12. Q–Q3, P–R3

13. BxN, BxB

14. P–K3 (P–K4 is again double-edged), P–R4

15. P–KB4 (if 15 N–K2, B–B4; but better is QR–B1 followed by N–K2), P–KR5

16. PxP

Prevents 16, . . ., P–R6, but the pawn could be won. For example, 16. K–B2, P–R6; 17. B–B3, K–N2; 18. P–KN4, B–R5 ch.; 19. K–K2, R–R1; 20. R–KN1 with the plan 21. QR–KB1, 22. B–R1, 23. R–B3.

16. . . ., BxRP

17. K–R1, B–B3

18. Q–K2, R–R3 ? (better to bring the Rs to the KR file.)

19. P–QR4

The square QN5 has more value for White now that the Black QRP has advanced.

19. . . ., R–N3

20. N–N5, B–B4

21. P–B3, B–K5 ? (leads to a weak P at K5 and reduces his attacking chances)

22. BxB, PxB

23. P–B4, P–K3 (if B–N2; 24. P–KB5 prevents P–B4)

24. P–QB5, R–R3

25. N–B3 (good, if 26. Q–N2 had been intended), K–N2 (belated)

26. P–R3 ? ? (even a machine should have seen 26. Q–N2), B–K2

27. P–N3 ?

Better is 27. Q–N2, P–B4; 28. R–KN1, Q–K1; 29. NxP, PxN; 30. QxKP, R–B3; 31. RxP ch., QxR; 32. R–KN1, QxR ch.; 33. KxQ.

27. . . ., P–B4

28. K–N2, B–B3

29. QR–K1 ?, B–R5
30. R–B1, B–K2
31. R–KR1, R–KR1
32. R–QR1 ?? (only a machine could play such a move), B–B3
33. Q–QN5, R–Q1
34. Q×Q, R×Q
35. P–R4 ??, P–N3
36. P–R5, P×RP
37. R(KR1)–KN1 ?? (underestimates the value of pawns), P×P
38. K–B2 ch., K–R3
39. N–N5, P×P
40. N×P(Q4), R×N!

Slightly better than 40. . . ., B×N; since it reduces the material more.

41. P×R, B×P ch.
42. K–N3, R–B6 ch.
43. K–N2, B×R
44. K×B, R×P
45. R–QB1, P–K6 ?
46. R×P, K–N3
47. K–B1, R–N5
48. K–K2, R×P(B5)
49. K×P, R–K5 ch
50. K–Q3, P–R5
51. R–B8, R×P
52. K–B2, P–R6
53. K–B3, P–R7
54. R–KR8, R–R7
55. K–N3, R–K7
56. K–R4, K–N2
57. R–R3, R–R7 ch.
58. K–N5 ??

White had a chance of a draw with 58. K–N3 in the hope that the game would continue, for example, 58. . . ., R–K7; 59. K–R4, R–R7 ch.; 60. K–N3, R–K7; etc. For all White knows, the Black program might have no precaution against a draw by repetition.

58. . . ., P–K4
59. Resigns?

This (human) resignation seems premature since the Black program might play the late end-game very badly. There are principles in the end-game, such as the gradually decreasing net and the avoidance of a draw by stalemate, which are unimportant in the opening and middle-game. I have known a contender for the West of England championship fall into a stalemate trap.