BOARD GAME STUDIES

JOURNAL ONLINE

Issue 8, 2014 Ludus CIUHCT

Board Game Studies Journal

http://bgsj.ludus-opuscula.org
bgsj@ludus-opuscula.org

Supporting Institutions

Associação Ludus
ludus@ludicum.org

Centro Inter-Universitário de
História da Ciência e da Tecnologia
(CIUHCT)

Published by

Associação Ludus
R. da Escola Politécnica, 56
1250-102 Lisboa
PORTUGAL
Typeset in LaTeX

Ludus

BOARD GAME STUDIES

ARTICLES

On game psychology: an experiment on the chess board/screen, should you always "do your best"?

Emanuel Gluskin
Kinneret College

Abstract: *It is noted that allowing, by means of some specific "unreasonable" moves, a chess program to freely occupy the centre of the board, greatly weakens the program's ability to see the serious targets of the game, and its whole level of play. At an early stage, the program underestimates the ability of the opponent, and by some not justified attack (advance) loses time and helps the other side to reach it in the development. Weak coordination of Program's figures, caused by quick advance of these figures, is also obvious at this stage. On a larger scale, the Program is taken out of its library by the unusual start and has difficulties to return to it, often continuing to play indecisively during many of the following moves. Direct use of these difficulties of the program, and the background psychological nuances, make the play more scientifically attractive and the competition scores gained against the "machine" are also dramatically increased. The present work is not intended to advance chess learning in the sense of chess art per se, but rather to better (more widely) put this game in the general scope of one's intellectual interests. This means some general reflections of the problem of keeping/having serious game targets in view of human psychology and education, and the associated modelling, by means of the "unsuccessful" (just as we are) chess programs, of what can happen in the world of human relations and competitions. It is suggested that programs be created with different weaknesses in order to model wrong human behaviour. The aspect of competition is also respected, and a specific variation of the game, named "Corrida", based on some variants of the performed experiments is suggested.*

Keywords: Game psychology; Children education; Chess "corrida", Program's frame; Challenge for the Player; Challenge for the Programmer; The idea of Alyochin's defence.

Introduction

General

An investigation in the field of the chess game is presented, although the chess *as the art* does not really interest us here, but the psychology of the battle revealed by the analysis of an unexpected weakness of a program that otherwise is considered as a strong one.

Chess is an ancient game:

> "Probably originating in India during or before 7th century, chess spread to Persia, to Arabia, and then to Western Europe". Its name and the term 'checkmate' are sometimes said to derive from the Persian 'shah', "king", and 'shah mat', "the king is dead".[1]

Let the latter occur only on the chess board, but this game (playing) includes many elements of human psychology which are really interesting: unexpected tactical tricks/combinations, smart strategic decisions, development of long-term plans using the weaknesses of the opponent, gradual enhancement of the position, systematic use of minor advantages, and even knowledge about what the opponent prefers or dislikes ("I am not playing against wooden pieces", Emanuel Lasker, Figure 1, right), and some others.

A keen interest in the high intellectual nature of chess, — a topic having some relation to our general culture, together with the professional target of automata theory and design, — led Claude Elwood Shannon in his interesting pioneering works [2, 3, 4] to some motivating, even philosophical (in [2] and [4] without any formula), arguments that provided the basis for developing chess programming.

The connection of chess play to human psychology is natural because this very flexible and rich in its possibilities game was invented and developed by humans for themselves. Though this connection is rarely considered, it is the reason for the author's *interest* in the topic and is one of the main focuses in the present *experimental* work. This work is also a logically-critical one, i.e. it criticises seeing chess play just as a type of competition. Let us, first of all, set our heuristic position in this investigation.

The educational slant of the present work is not so much associated with the victory problem, but much more with a psychological, even philosophical, meaning of the program's observed weaknesses. By analysing these unexpected weaknesses, we give, in fact, some advice for human education, and finally suggest to the Programmers to create programs with different

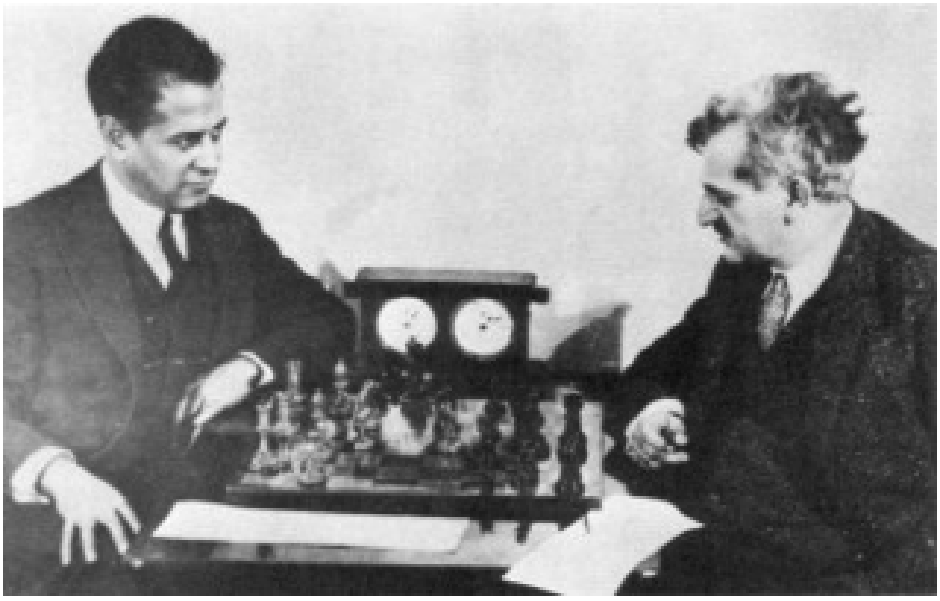

Figure 1: Hose Raul Capablanca (left) took the chess-crown from Emanuel Lasker, and passed it on to Alexander Alyochin. Each successful champion raised the state of the art of the game to a higher level with the last of which the best modern chess programs, however, successfully compete. However, is the machine-player really as smart as a human one? We argue that this depends on whether or not the human player can, — unexpectedly, for the machine, i.e. unexpectedly for its Programmer, — introduce new degrees of freedom in the policy (strategy and/or tactics) of the game. However, the Programmer is, first of all, a Scientist, while the Player is, first of all, a Competitor, and thus it is not a miracle that the machine finally wins. The Player should become a Scientist too, to start to see things more widely, even more philosophically, and the easiest way to cause a Player to become a Scientist is to cause a Scientist (a Mathematician, or a Psychologist, or even a System Theory Specialist) to become, to a degree, a Player. In other words, we call for a "scientific boldness" introduced into playing, while whether or not you win should not be immediate point.

kinds of weaknesses, allowing one to model, via the play, the human situations.

The competitive side will be, however, also respected, and based on some specific attempts appearing in our experiment we shall suggest a new dramatic version of chess.

Does the Chess Program really play without "nerves"? Sometimes we shall see the "iron machine" nervous, and sometimes even depressed!

In [2] and [3] Shannon lists four advantages of the machine over the human player:

1. Quick counting,
2. No mistakes (errors), just some program weaknesses,
3. Not lazy,
4. No nerves, i.e. no over or under estimations of its position.

For the last statement, a definition of nervousness seems to be required. A human is nervous when he is out of his usual logic, does not develop another stable one, and *thus* seeks solutions for the unexpected for him situations. The detailed experiment discussed below shows that in the sense of this definition, the programmers can give some nervousness to a machine by allowing it playing adventurously *when it has the impression (in our experiment, intentionally induced by us) that its opponent is a weak player.*

However, this possible nervous play is not the only problem of the program. We also show that if one succeeds, by some very unusual play, in taking the program out of its library, then, as a result of this, it is possible that the program will lose coordination of its figures and will start *and continue, for a long time,* to play much weaker than usual. Isn't this a typical *depression* state? When *defining* depression as *remaining* out of the program, we can say that in our experiments depression of the machine was often observed.

A description of our strategy in simple terms

It is very difficult to analytically describe the mutual coordination of the actions of the figures. Thus, for instance, considering figures of one color, let us assume that a Knight attacks square S of the board, and a Bishop

(or another Knight) attacks square T, and the Queen attacks both S and T. Now, let us remove the Queen. That the actions of each of the light figures were coordinated with that of the Queen does not mean that the light figures coordinate with each other, and several moves can be needed for obtaining such coordination. The situation with coordination, is not "transitive", i.e. not as "if a = c, and b = c, then a = b"; forced exchange the Queen can destroy the whole coordination.

The *specificity* of the situation under study (i.e. our strategy for White) is as follows:

1. White does not advance figures, letting them to be attacked by Black from distance, and the requirement of closeness of the figures of the opposite groups, for the battle to start, results in a situation in which the advance in space obtained by one side (Black) does not give to this side great advantage, unless Black is lucky to make mate. The latter is, however, not likely because of the confusion in the coordination of Black figures obtained during the *too free* advance of these figures. Thus, White is interested that the real fight should start close to its position.

Though the Program makes its first moves correctly, White is more (very) patient, and Black indeed soon demonstrates poor ability to correctly advance its forces (or create a firm position) in the too luxurious conditions given to it. Since the advanced black figures become poorly coordinated as a whole, and Black starts unjustified attacks that just help White to switch to a quick and easy development, the further play of White does not require high chess skills. (Thus my scores against the machine were drastically improved.)

2. The *initial position* that White reconstructs artificially and unexpectedly for Black, is just very suitable for pursuing the very simple and clear target of starting development only when the black figures are already close to the white figures. It sounds paradoxical, but if White had not any immediate trouble, it even can have an advantage at the initial stage of the *real battle* that thus starts. All this is somewhat similar to the case when one (an analogy for Black) is allowed to freely wave a long sward and attack another man, but if he does not hit him, he soon finds the opponent close to him comfortably operating with a knife. Some other "fight-type" analogies are suggested below in order to stress that the chess psychology is not something isolated and understandable only by professionals.

The role of the coordination of the figures

It is important to observe that when (as in a usual route of the game) Black is developed with difficulties, it also automatically/necessarily gradually develops *good coordination of its figures.* In terms of the fighting analogies, Black thus takes care to stay on the ground well. When it is developed (advanced) too quickly, then it has poor coordination of its figures, and the period of confusion of Black continues for significant time (the number of the moves). Early unjustified attacks of Black only enhance the coordination problem *that exists here anyway.* For instance, there is no early attacks in Game 6 below, and in several other given games it is also well seen that besides the early attacks, Black has a problem with the *coordination* of its figures.

The Program does not see how to use well the possibility of the free (or almost free) movement that White gives to it.

Let us start with the "laboratory notes and records" of our experiment and to the thoughts regarding its steps and results; a Diary of the experimentator. In order to feel the romanticism and beauty, the Reader is advised to play out at least some first 20–25 moves in the games considered. Games 1, 4, 5, 6, 7, 8, are, perhaps, most typical, but each of the given games is good evidence of the nervousness and/or depression of the Program in the context of our specific starting tactic-strategy. Specially note the "corrida"-version of chess, which is one of our final suggestions.

Some of the final games with the closed "tracks" of White Knights present the "Corrida" policy most clearly, and competitions between humans playing in such style against machine can be very interesting.

In general, the games presented in Section 2 give some rich experimental material for a programmer who would wish to find the strategy disadvantages and (mainly) the stability problems for such class of chess Programs as "KChess Elite 4" is. This program was chosen because it is a popular one, and because it otherwise (i.e. without the unexpected for it policy that we follow) usually *easily defeats me*; thus the effect is clear. The Reader is warned not to base himself on the exposing here that when taken out of its usual play, the Program is weak, and thus to conclude that the Program is weak in general; one should try this Program in regular games. (For me it is just strong.) Of course, the Reader is suggested to thus also try any other Program that he likes or that is available for him.

In fact, the choice of the program is not very important because, finally, our point is more psychological and educational than sportive, and one can enjoy analysing the unusual attempts with children who not neces-

sarily promise to become chess masters, just seek in chess a game of a wide intellectual scope.

From Alyochin's defence, to an Alyochin-type start, and then to the "Chess-Corrida": the Diary of the Experiment, and the thoughts on line

The observation

The following observation is not incidental. For a long time I have wanted to check a possible enhancement of the basic idea of Alyochin's defence (1. e4 Nf6; 2. e5 Nd5; 3. c4 Nb6; 4. d4 . . .) in which Black allows White to take the centre of the board, and then attacks this centre. The point of the defence is that it does not appear to be easy for White to hold the centre.

Undoubtedly, it is very satisfactorily to show to your opponent that his advantage mainly makes him awkward, and I decided to go further with this idea, giving the relevant *initiative* to White (which is generally natural) and letting *Black freely* create its centre. This is obtained by White starting with knight(s) and returning it (them) to the initial place, giving Black some free moves.

Of course, the chess-program (Black) does not know that this is the policy of White, and starts to play reasonably, i.e. takes the centre, not trying to get mate immediately. However when realising that White plays weakly, Black becomes to be confused in the sense that it cannot choose a correct (serious) plan of the game, and its minor unjustified attacks allow White to quickly advance in its development. Below, we shall analyse this in detail and formulate the things more precisely.

The problem of the Program is that Black can be correctly developed only while overcoming difficulties starting from the very beginning of the game, i.e. if White plays well (as expected).

The experiment

The "KChess Elite 4" program (free from the Internet for a limited time) plays much better than I do, especially in combinations that the Program finds or initiates much, much better than I can. Its debut library is also much better than that of mine. When I try to play while "doing my best", then for each case where I win, the program wins some 8–10 games.

However, after starting my psychological experiment, I was amazed to

see that I had a win or a draw much more frequently, being almost equal to the program. Observe in the following three "introductory" games, with only 4 "free moves" in each, the relatively weak play of Black (the Program) in the period of the "confusion".

The first game:
1. Ng1-f3 Ng8-f6 2. Nf3-g1 Nb8-c6 3. Ng1-f3 d7-d5 **4. Nf3-g1** e7-e5 5. d2-d3 Bf8-c5 6. e2-e3 o-o 7. Ng1-e2 Nf6-g4 8. h2-h3 Qd8-h4 9. g2-g3 Qh4-h5 10. Bf1-g2 Ng4-f6 11. Nb1-c3 Rf8-d8 12. Bc1-d2 a7-a6 13. g3-g4 Qh5-g6 14. Ne2-g3 d5-d4 15. e3xd4 e5xd4 16. Nc3-e4 Bc5-b4 17. Bd2xb4 Nc6xb4 18. Qd1-d2 Nf6-d5 19. a2-a3 Nb4-c6 20. o-o-o Nc6-e5 21. f2-f4 Ne5-c6 22. f4-f5 Qg6-h6 23. Qd2xh6 g7xh6 24. Ng3-h5 Kg8-h8 25. Rd1-e1 Nd5-e3 26. Rh1-g1 Nc6-e5 27. Nh5-f6 Ra8-a7 28.Ne4-g3 Rd8-d6 29. Ng3-h5 Bc8-d7 30. Bg2-e4 Bd7-a4 31. g4-g5 h6xg5 32. Rg1xg5 Ra7-a8 33. Re1-g1 Ne5-g6 34. f5xg6 f7xg6 35. Be4xg6 h7xg6 36. Rg5xg6 Rd6xf6 37. Rg6xf6 Ne3-f5 38. Rf6xf5 Ra8-g8 39. Rg1xg8+ Kh8xg8 40. Rf5-d5 c7-c5 41. Rd5xc5 Ba4-e8 42. Nh5-f6+ Kg8-f7 43. Nf6xe8 Kf7xe8 44. Rc5-c7 b7-b6 45. c2-c3 Ke8-d8 46. Rc7-h7 d4xc3 47. b2xc3 Kd8-c8 48. Kc1-d2 a6-a5 49. Kd2-e3 Kc8-b8 50. Ke3-d4 Kb8-c8 51. Kd4-d5 Kc8-d8 52. Kd5-e6 Kd8-c8 53. Ke6-d6 a5-a4 54. c3-c4 Kc8-b8 55. Kd6-c6 Resigns

The second game:
1. Ng1-h3, Ng8-f6 2. Nh3-g1, Nb8-c6 3. Ng1-h3, d7-d6 **4. Nh3-g1** Bc8-f5 5. Ng1-h3 Nc6-d4 6. d2-d3 Bf5xh3 7. g2xh3 Nf6-d5 8. Bf1-g2 Nd5-b4 9. Nb1-a3 Nb4-c6 10. o-o e7-e5 11. e2-e3 Nd4-e6 12. c2-c4 Ne6-c5 13. d3-d4 e5xd4 14. e3xd4 Nc5-a6 15. Rf1-e1+ Bf8-e7 16. Bc1-g5 f7-f6 17. Bg5-h4 o-o 18. Na3-c2 Rf8-e8 19. a2-a3 f6-f5 20. Bh4xe7 Re8xe7 21. b2-b4 Re7xe1+ 22. Qd1xe1 f5-f4 23. b4-b5 Qd8-g5 24. Qe1-e2 Nc6xd4 25. Nc2xd4 Na6-c5 26. Qe2-g4 Qg5-f6 27. Ra1-d1 Ra8-e8 28. h3-h4 Kg8-h8 29. h4-h5 g7-g6 30. h5-h6 g6-g5 31. Nd4-f5 Re8-f8 32. Rd1-d5 c7-c6 33. b5xc6 b7xc6 34. Rd5xd6 Qf6-a1+ 35. Bg2-f1 Nc5-e4 36. Rd6-d7 Qa1-b2 37. Qg4-f3 Qb2-e5 38. Rd7-e7 Ne4-d2 39. Qf3-e2 Qe5xe2 40. Bf1xe2 f4-f3 41. Be2-d3 Nd2-b3 42. Re7xa7 Nb3-c1 43. Bd3-c2 Rf8-d8 44. h2-h3 Nc1-e2+ 45. Kg1-h2 Rd8-b8 46. Nf5-d6 Ne2-d4 47. Nd6-e4 Nd4-e6 48. Ne4-f6 Rb8-b7 49. Ra7xb7 Ne6-f8 50. Rb7-b8 c6-c5 51. Rb8xf8#

The third game:
1. Nb1-c3 Nb8-c6 2. Nc3-b1 Nc6-b4 3. Nb1-c3 Ng8-f6 **4. Nc3-b1** d7-d6 5. Nb1-c3 Bc8-f5 6. d2-d3 e7-e5 7. e2-e4 Bf5-e6 8. Ng1-f3 Bf8-e7 9. g2-g3 o-o 10. Bf1-g2 c7-c5 11. o-o Qd8-a5 12. Bc1-d2 Qa5-a6 13. Nf3-e1 Nb4xa2 14. f2-f4 e5xf4 15. Bd2xf4 Na2xc3 16. b2xc3 Qa6-b6 17. Ra1-b1 Qb6-c7 18. d3-d4 c5xd4 19. c3xd4 Be6-g4 20. Qd1-d3 Bg4-h5 21. Ne1-f3 Ra8-c8 22. Rb1-b2 Bh5-g6 23. Nf3-h4 Qc7-d7 24. Nh4xg6 h7xg6 25. e4-e5 d6xe5 26. Rb2xb7

Rc8-c7 27. Rb7xc7 Qd7xc7 28. Bf4xe5 Qc7-a5 29. Be5xf6 g7xf6 30. c2-c3 Rf8-c8 31. Rf1-c1 Be7-a3 32. Rc1-c2 Rc8-e8 33. h2-h4 Re8-e1+ 34. Kg1-h2 Ba3-d6 35. c3-c4 Qa5-h5 36. Kh2-h3 Re1-d1 37. Qd3-e4 Kg8-h7 38. Bg2-f3 Rd1-e1 39. c4-c5 Re1xe4 40. Bf3xh5 Bd6-b8 41. Bh5-f3 Re4xd4 42. c5-c6 Bb8-c7 43. Rc2-b2 Kh7-g7 44. Rb2-b7 Bc7-b6 45. h4-h5 f6-f5 46. h5xg6 Kg7xg6 47. Bf3-e2 Rd4-d6 48. Be2-b5 Rd6-d8 49. g3-g4 f5-f4 50. Bb5-a6 f4-f3 51. Rb7xb6 a7xb6 52. c6-c7 Rd8-f8 53. c7-c8=Q Rf8xc8 54. Ba6xc8 b6-b5 55. Bc8-a6 Kg6-f6 56. Ba6xb5 f3-f2 57. Kh3-g3 Kf6-g5 58. Bb5-e2 f7-f5 59. g4xf5 Kg5xf5 60. Kg3xf2 1/2-1/2

Checking stability of seeing game targets, using the same program (the fourth game)

The next experiment was as follows. Moving *both* of its knights forward and back, White this time allows Black having not 4, but 6 first free moves. Then, after creation the problem for Black, I make several steps (not very few) of my own, and then, not being in any catastrophic situation, let the Program play *for both sides*, assuming that it makes some optimal moves, each time.

In view of the above observations, I was not surprised that White won, because I assumed that White's play should be just enhanced by the Program.

In fact, this assumption is not at all simple, and below, based on an example, I have to criticise the play of the program *for any side* in the case when the situation of one side is poorly understood by it. The interesting but difficult question of whether or not the ability of the Program to be stable in keeping its game targets can be checked, *using the program itself*, arises. This is the game.

The fourth game:
1. Nb1-c3 Ng8-f6 2. Nc3-b1 Nb8-c6 3. Nb1-c3 d7-d5 4. Nc3-b1 e7-e5 5. Ng1-f3 e5-e4 **6. Nf3-g1** Nf6-g4 7. h2-h3 Qd8-h4 8. g2-g3 Qh4-h5 9. e2-e3 Nc6-e5 10. d2-d4 e4xd3 11. c2xd3 Bf8-b4+ 12. Nb1-c3 o-o 13. Bf1-e2 Bb4xc3+ 14. b2xc3 c7-c5 15. Bc1-a3 Rf8-e8 16. d3-d4 c5xd4 17. c3xd4 Ne5-c4 18. Ba3-c1 Re8-e4 19. Be2-f3 Ng4xf2 20. Ke1xf2 Qh5-f5 21. g3-g4 Qf5-f6 22. Kf2-e2 Re4-e7 23. Bf3xd5 Bc8-e6 24. Bd5xe6 f7xe6 25. Ng1-f3 Re7-f7 26. Rh1-f1 Qf6-h6 27. h3-h4 Rf7-c7 28. e3-e4 Qh6-g6 29. Nf3-g5 Ra8-d8 30. h4-h5 Qg6-e8 31. Ra1-b1 Qe8-c6 32. Ke2-f3 h7-h6 33. Bc1-f4 h6xg5 34. Bf4xc7 Rd8-f8+ 35. Kf3-g3 Rf8xf1 36. Qd1xf1 Nc4-d2 37. Qf1-c1 Nd2xb1 38. Qc1xc6 b7xc6 39. Bc7-d8 Nb1-a3 40. Bd8-e7 Na3-b5 41. Be7-c5 Nb5-c3 42. Kg3-f3 Kg8-f7 43. Bc5xa7 Nc3xa2 44. Ba7-c5 Na2-c3 45. Bc5-b4 Nc3-b5 46. Kf3-e3 Kf7-f6

47. e4-e5+ Kf6-f7 48. Ke3-d3 g7-g6 49. h5-h6 Nb5-c7 50. Bb4-e7 Nc7-d5 51. Be7xg5 Nd5-c7 52. Kd3-c4 Nc7-b5 53. Kc4-c5 Kf7-g8 54. Bg5-e3 Nb5-c3 55. Kc5xc6 Kg8-f7 56. Be3-f2 g6-g5 57. Bf2-e3 Nc3-e2 58. d4-d5 Ne2-f4 59. Be3xf4 e6xd5 60. e5-e6+ Resigns

All the following games, except of the last one in Section 2.11, I again play by my own against Black up to the very end.

Another game with the too early black Queen attack and the following "depression"

In this game, I again let Black to have 6 "free moves". The too early switching the Queen to attack is a typical mistake of the Program in the "overdeveloped" state. But this time, an early Queen attack even led Black, *in a rather late stage (27th move),* to lose one of its Knights in order to save the Queen, which points at an unusual for it tactical weakness of the play of the Program that seems to remain for a long time because of the problems after the unusual start, — a case of the "depression" defined in Section 1.2.

A more general observation is that *the absence of serious targets prevents Black from developing the combination type initiatively-tensioned game in which the Program is much stronger than I am.* I would compare the Program with a human player having a sanguine-type psychological character. Such a person is energetic and patient in any work, even a very difficult one, but only while the proper targets are continuously given to (put before) him. (This giving is just what I do for the Program when I play normally from the very beginning, honestly "doing my best", and the Program shows its strength almost always defeating me.)

The fifth game:
1. Ng1-h3 Nb8-c6 2. Nh3-g1 Ng8-h6 3. Nb1-c3 Nh6-g4 4. Nc3-b1 e7-e6 5. Ng1-f3 Bf8-e7 **6. Nf3-g1** Be7-c5 7. e2-e3 Qd8-h4 8. g2-g3 Qh4-g5 9. Ng1-f3 Qg5-g6 10. Bf1-g2 o-o 11. o-o Nc6-b4 12. Nb1-a3 Qg6-f5 13.d2-d3 d7-d6 14. Nf3-d4 Bc5xd4 15. e3xd4 Nb4-c6 16. c2-c3 Ng4-f6 17. Na3-c2 Nc6-e7 18. Nc2-e3 Qf5-a5 19. b2-b4 Qa5-a6 20. c3-c4 Qa6-b6 21. Ne3-c2 Ne7-f5 22. c4-c5 Qb6-a6 23. a2-a4 Nf6-d5 24. b4-b5 Qa6-a5 25. Bc1-d2 Nd5-c3 26. Qd1-e1 d6xc5 27. Bd2xc3 Qa5-b6 28. d4-d5 e6xd5 29. Bg2xd5 Rf8-d8 30. Bd5-e4 Nf5-d4 31. Nc2xd4 c5xd4 32. Bc3-b4 Bc8-h3 33. Be4-g2 Rd8-e8 34. Qe1-d2 Bh3xg2 35. Kg1xg2 c7-c5 36. b5xc6 a7-a5 37. Bb4-a3 Qb6xc6+ 38. Kg2-g1 Ra8-a7 39. Ra1-c1 Qc6xa4 40. Rf1-e1 Ra7-a8 41. Ba3-b2 Re8xe1+ 42. Rc1xe1 Ra8-d8 43. Qd2-f4 Qa4-b4 44. Qf4-e5 g7-g6 45. Bb2-a1 b7-b5 46. Kg1-g2 Rd8-d6 47. Re1-e4 f7-f6 48. Qe5-e8+ Kg8-g7 49. Re4-e7+ Kg7-h6 50. Qe8-f8+ Kh6-h5 51. Re7xh7+ Kh5-g4 52. Rh7-h4+ Kg4-f5 53. Qf8-c8+

Kf5-e5 54. Rh4-e4+ Ke5-d5 55. Re4xd4+ Qb4xd4 56. Qc8-b7+ Kd5-e6 57. Ba1xd4 Rd6xd4 58. Qb7xb5 g6-g5 59. Qb5xa5 Rd4xd3 60. Qa5-a6+ Rd3-d6 61. Qa6-c4+ Ke6-f5 62. Kg2-f3 Kf5-g6 63. g3-g4 Rd6-d8 64. Qc4-e4+ Kg6-f7 65. Qe4-f5 Rd8-d6 66. Kf3-g3 Rd6-d1 67. h2-h4 g5xh4+ 68. Kg3-f4 Kf7-g7 69. g4-g5 Rd1-d6 70. Kf4-g4 h4-h3 71. Kg4xh3 f6xg5 72. Qf5-e5+ Rd6-f6 73. Qe5xg5+ Kg7-f7 74. f2-f4 Rf6-g6 75. Qg5-e5 Rg6-e6 76. Qe5-d5 Kf7-e7 77. Kh3-g4 Re6-d6 78. Qd5-c5 Ke7-d7 79. Kg4-g5 Rd6-c6 80. Qc5-b5 Kd7-c7 81. f4-f5 Kc7-d6 82. f5-f6. Resigns

This time White returns to the initial position only at its 8th move, though in a more nontrivial manner

It appears possible to come to the initial position even later, — at the eighth move, though in a less trivial manner, so that the play of Black at this period is somewhat less free (I shall call below such a start as that of "almost free moves"). The following game illustrates that in such a case the Program can play not adventurously, but very indecisively.

This experiment even suggests reconsidering the opinion that a machine already plays better than a human player does. If I succeed in finding a *successful psychology* against the Program which formally (usually) much stronger than me, — why cannot a master find something relevant against the machine that once defeated him? Finally, we have a player against a programmer, both humans, and the player has to be not just a strong competitor but also a psychologist, — against the scientist.

Furthermore, the question of which machine is the strongest also becomes open, while it is not checked whether or not such additional "psychological" degrees of freedom can be used in chess programming.

The sixth game:
1. Ng1-f3 d7-d5 2. Nf3-g5 Nb8-c6 3. Ng5-f3 Ng8-f6 4. Nf3-g1 e7-e6 5. Ng1-f3 Bf8-e7 6. Nf3-h4 o-o 7. Nh4-f3 d5-d4 **8. Nf3-g1** Nf6-e4 9. d2-d3 Ne4-f6 10. g2-g3 Nc6-b4 11. a2-a3 Qd8-d5 12. Ng1-f3 Nb4-c6 13. Bf1-g2 Nf6-g4 14. o-o Qd5-b5 15. Nb1-d2 Rf8-d8 16. Nd2-b3 f7-f6 17. e2-e3 d4xe3 18. Bc1xe3 Nc6-e5 19. Nf3xe5 Ng4xe3 20. f2xe3 f6xe5 21. Qd1-f3 Rd8-f8 22. Qf3-e4 Be7-f6 23. a3-a4 Qb5-b6 24. a4-a5 Qb6-d6 25. Nb3-d2 g7-g6 26. Nd2-f3 Qd6-c5 27. c2-c3 Qc5-b5 28. b2-b4 Bc8-d7 29. d3-d4 Bd7-c6 30. Qe4-c2 e5-e4 31. Nf3-e5 Bf6xe5 32. d4xe5 Rf8xf1+ 33. Ra1xf1 Qb5xe5 34. c3-c4 a7-a6 35. Qc2-f2 Ra8-d8 36. Qf2-f7+ Kg8-h8 37. Qf7-e7 Rd8-g8 38. Rf1-f7 Rg8-g7 39. Qe7-d8+ Rg7-g8 40. Rf7-f8 Qe5-a1+ 41. Bg2-f1 Qa1-g7 42. Rf8xg8+ Qg7xg8 43. Qd8-f6+ Qg8-g7 44. Qf6xe6 Qg7-d7 45. Qe6xd7 Bc6xd7 46. Bf1-g2 Bd7-c6 47. Kg1-f2 Kh8-g7 48. g3-g4 g6-g5 49. Bg2-f1 Kg7-f6 50. b4-b5 a6xb5 51.

c4xb5 Bc6-d5 52. a5-a6 b7xa6 53. b5xa6 Kf6-e5 54. a6-a7 h7-h6 55. Bf1-a6 c7-c5 56. Kf2-e2 Bd5-a8 57. Ke2-d2 Ke5-d5 58. Kd2-c3 Kd5-c6 59. Ba6-c8 Kc6-b6 60. Kc3-c4 Kb6xa7 61. Kc4xc5 h6-h5 62. g4xh5 g5-g4 63. Bc8xg4 Ba8-d5 64. Kc5xd5 Resigns

Again 8 almost free moves, but with a "drawing experiment" and the resulted strong depression in the play of Black

Let us add an element of art to our strategy. The *symmetric loops* (of a leaf form), the same on each side, right and left, tracked by white Knights before recreating the initial position, make some magic influence on the Program. The whole play of Black is very weak, as if Black continues to think what those symmetric loops by white Knights meant, and remains non-concentrated. Black forgets about the necessity to finish developing of its figures, and, at a stage, White becomes better developed.

Feeling this time very early that my position is already sufficiently strong, I was even not sure in my 13. Nf3xe5, considering instead developing some pressure in the centre, but Black soon loses an exchange, becoming inferior in the material. That is, the simple persistent tactic of White *of exchange and simplification* was the best one here too, keeping the advanced Black very confused. (See also Section 2.11.) This is the game.

The seventh game:
1. Ng1-h3 Ng8-f6 2. Nh3-g5 Nb8-c6 3. Ng5-f3 d7-d5 4. Nb1-c3 d5-d4 5. Nc3-b5 a7-a6 6. Nb5-a3 Bc8-f5 7. Na3-b1 Qd8-d5 **8. Nf3-g1** Nc6-b4 9. d2-d3 o-o-o 10. a2-a3 Nb4-c6 11. Ng1-f3 Nf6-g4 12. h2-h3 Ng4-e5 13. Nf3xe5 Nc6xe5 14. Bc1-f4 Ne5-g6 15. Bf4-g3 Qd5-b5 16. b2-b3 Ng6-e5 17. Bg3xe5 Qb5xe5 18. Nb1-d2 Qe5-a5 19. e2-e4 Bf5-d7 20. Bf1-e2 Qa5-g5 21. Be2-g4 Kc8-b8 22. Bg4xd7 Qg5xg2 23. Qd1-f3 Qg2xf3 24. Nd2xf3 Rd8xd7 25. Nf3-e5 Kb8-c8 26. Ne5xd7 Kc8xd7 27. f2-f4 f7-f6 28. Ke1-e2 e7-e5 29. f4-f5 g7-g6 30. Ra1-f1 Bf8-e7 31. Rh1-g1 g6xf5 32. Rf1xf5 Kd7-e6 33. Rg1-g7 Rh8-c8 34. Rg7xh7 Be7xa3 35. h3-h4 Ba3-c5 36. h4-h5 Bc5-a3 37. h5-h6 Ba3-d6 38. Rh7-g7 Rc8-e8 39. h6-h7 Re8-h8 40. Rf5-h5 Bd6-f8 41. Rg7-g8 Rh8xh7 42. Rh5xh7 Bf8-a3 43. Rh7xc7 b7-b6 44. Rc7-c6+ Ke6-f7 45. Rg8-a8 Ba3-c5 46. Ra8xa6 Kf7-g6 47. Rc6xb6 Bc5xb6 48. Ra6xb6 Kg6-g5 49. b3-b4 Kg5-g6 50. b4-b5 Kg6-g5 51. Rb6-c6 Resigns

Figures 2 and 3 illustrate the key points.

In Figure 2, we have White's initial position "recovered" after 8. Nf3-g1 Nc6-b4, before the forced answer d2-d3. Observe poor coordination of the Black figures; this team does not really know what to do.

In Figure 3, we have the position before 25. Nf3-e5 Kb8-c8. That the

Figure 2: The seventh game. The recovered initial White's position, after the leaf-form two-sided loops Ng1-h3-g5-f3-g1 and Nb1-a3-b5-c3-b1. White's move; it will be d2-d3. Coordination of black figures is poor, and though the pawn at d4 is an unpleasant one, they do not form any real dagger.

move Nf3-e5 puts Black in a concrete trouble is not the point. The point is that White is already *better developed*, which is obtained by very simple, natural moves, starting from the position in Figure 2. Because of the better development, one can objectively (i.e. disregarding the concrete trouble caused by Nf3-e5) prefer the position of White, despite the lack of a pawn. For instance, White can organize a pressure on the Queen-side.

Some more general observations on line

1. The seventh and some other games, suggest that one can influence the character of the play of the program in some way by some such art-motives as the symmetric loops of the initial tracks of white knights are. The Programmers, even Shannon himself, hardly thought about such unusual possibilities of creating different levels of confusion of programs. If the Program has its own feeling of art, i.e. some logical impressionability to symmetry and systematicness, this impressionability is a primitive one. The symmetry of the initial Knights' tracks would hardly confuse a human player.

2. I start to notice that in the foreground of *competition* discussed in Section 2.1 is more weakly exposed in my psychological play against a machine. The

Figure 3: The *same* game after 17 moves. Though White lost a pawn, it is better developed. The black pawns' configuration is absolutely unchanged during these 17 moves. The pawn remaining on e7 especially well shows the confusion in the plans of Black during all of the 25 moves passed. If this pawn were to be at e6, Ne5 would not be a great problem. It seems that during these 17 moves Black mainly tried to coordinate its forwarded figures, forgetting about the development of the others. White's simple policy of expelling these forwarded figures and exchanging them made the *programming* target of their coordination *unrealisable* for the Program, and the depression of Black becomes deeper. The initial taking the Program out of its debut library means a very serious decomposition of the power/play of the Program that did not succeed in closing its "hand" (see Figure 2 again) into a fist.

psychological "Why?"s are more interesting than the competition problems. The focus is much more scientific. However, let us return to the experiment. Of course, there were games in which Black played well (stood firmly in its library) also in the context of the unusual start and I was quickly defeated. Since, however, the Program generally is a much stronger player than I am, none of my failures can be surprising. Let me thus continue only with the cases in which the Program clearly falls out of its main library, which is the possibility in focus.

A game with very early (wrong) decision of the Program that White is a very weak player

The following game is a striking example of Black's switch to a not serious sub-library and tends to quickly give mate. The move 2.. . . Nb4 demonstrates the Program's extremely (surprisingly) early decision that White is very weak. The punishment comes quickly, even for the very careful style of White. Observe the ignorance by Black of the necessity of castling for its King.

The eighth game:
1. Ng1-h3 Nb8-c6 2. Nh3-g1 Nc6-b4 3. Ng1-h3 Ng8-f6 4. Nh3-g1 d7-d6 5. Ng1-h3 Bc8-f5 6. Nb1-a3 Nf6-e4 7. Nh3-g1 e7-e5 8. Ng1-f3 Bf5-e6 **9. e2-e3** Nb4xa2 10. Bf1-e2 Na2xc1 11. Ra1xc1 Be6-g4 12. o-o f7-f5 13. h2-h3 Bg4-h5 14. d2-d3 Ne4-g5 15. Nf3xg5 Bh5xe2 16.Qd1xe2 Qd8xg5 17. f2-f4 Qg5-g6 18. f4xe5 d6xe5 19 .Qe2-f3 Bf8xa3 20. b2xa3 Qg6-g5 21. Qf3xf5 Qg5xe3+ 22. Kg1-h1 Ke8-d8 23. Rc1-e1 Qe3-g3 24. Re1xe5 c7-c6 25. Qf5-e6 Qg3-g6 26. Qe6-e7+ Kd8-c8 27. Rf1-f7 Qg6xf7 28. Qe7xf7 b7-b6 29. Re5-e7 Rh8-d8 30. Re7-c7+ Kc8-b8 31. Rc7-b7+ Kb8-c8 32. Qf7-c7# 1-0

Back to the initial "art-tracks" by white knights, now performed in parallel; Black plays better but its advantage in the development disappears quickly (perhaps, the only game when I played satisfactorily)

This was a difficult game, showing that 8 "almost free" moves are close to the boundary of the unusual "generous" strategy that can be chosen by White.

The ninth game:
1. Ng1-f3 Ng8-f6 2. Nb1-c3 Nb8-c6 3. Nf3-g5 e7-e5 4. Nc3-b5 h7-h6 5. Ng5-h3 a7-a6 6. Nb5-a3 d7-d5 7. Nh3-g1 Nf6-e4 **8. Na3-b1** Bf8-c5 9. e2-e3 Qd8-h4 10. g2-g3 Qh4-d8 11. Bf1-g2 o-o 12. d2-d3 Ne4-f6 13. Nb1-d2 Bc8-g4 14.

f2-f3 Bg4-e6 15. Nd2-b3 Nf6-d7 16. Nb3xc5 Nd7xc5 17. Ng1-e2 Nc6-b4 18. o-o Be6-f5 19. a2-a3 Nb4-c6 20. e3-e4 d5xe4 21. d3xe4 Bf5-e6 22. Bc1-e3 Qd8-e7 23. Ne2-c3 Ra8-d8 24. Qd1-e2 Nc6-d4 25. Be3xd4 e5xd4 26. Nc3-d1 d4-d3 27. c2xd3 Nc5xd3 28. Nd1-f2 Qe7-c5 29. Kg1-h1 Nd3-e5 30. Ra1-c1 Ne5-c4 31. b2-b3 Qc5-e3 32. Qe2xe3 Nc4xe3 33. Rf1-e1 Ne3xg2 34. Kh1xg2 Rd8-d7 35. b3-b4 Rf8-e8 36. h2-h4 Kg8-f8 37. g3-g4 Re8-d8 38. f3-f4 Be6-b3 39. e4-e5 Bb3-e6 40. f4-f5 Be6-d5+ 41. Kg2-g3 Bd5-c6 42. g4-g5 h6xg5 43. h4xg5 Rd7-d5 44. Kg3-g4 Rd5-d2 45. Rc1-d1 Rd2xd1 46. Re1xd1 Rd8xd1 47. Nf2xd1 g7-g6 48. f5xg6 f7xg6 49. Nd1-c3 Kf8-e7 50. Nc3-d1 Ke7-e6 51. Kg4-f4 Ke6-d5 52. Nd1-e3+ Kd5-e6 53. Ne3-c2 Ke6-d5 54. Nc2-e3+ Kd5-e6 55. Ne3-c2 Ke6-d5 56. Nc2-e1 Kd5-c4 57. Ne1-f3 Kc4-b3 58. e5-e6 Kb3xa3 59. Nf3-e5 Bc6-b5 60. Ne5xg6 Ka3xb4 61. Ng6-e5 Bb5-a4 62. g5-g6 c7-c5 63. g6-g7 Resigns

White returns to the initial position only at the 10th move, the position soon appearing is closed and simple. In general, Black plays well, and due to its very clear defence targets, White plays satisfactorily. The game becomes "usual", but having already many figures exchanged, White succeeds to achieve a draw. Ten "almost free" moves are considered to be the maximum for any reasonable experiment with this game

In the following tenth game we "jump over" the period of the uncertainty, i.e. over all the positions that for the Program are without any "best move". For the 10 "almost free" moves given to Black, the period of its uncertainty and depression already become irrelevant. As a rule, Black has the time to be normally developed and to organise a crucial attack.

In terms of the time functions ("in other words"), we can say that while in the previous games, there is a "singularity" in development of the game at the moment when White started to play normally, in the game with the maximal number of strange moves, the development of the game becomes "smooth", almost as in a usual game (no real "shock" for Black).

Though also in the present game there is no very serious "cavalry" attack of Black, helping White as usual, on the whole the advance of the black figures, occurring during these 10 moves is systematic, very massive, and we come to a sufficiently closed and "well-defined" position in which Black successfully tries to increase the pressure, while White has the simple usual defence targets, which helps it to play sufficiently well in order to achieve a difficult draw. As usual, in order to simplify the situation, White tends to exchange the figures, and, fortunately, the position becomes open too late

for Black to show its combinational force.

The tenth game:
1. Nb1-c3 Ng8-f6 2. Nc3-b5 Nb8-c6 3. Ng1-f3 a7-a6 4. Nb5-a3 d7-d5 5. Na3-b1 e7-e6 6. Nf3-h4 Bf8-d6 7. Nh4-f3 o-o 8. Nf3-g1 Nc6-b4 9. Nb1-c3 d5-d4 **10. Nc3-b1** Nf6-e4 11. d2-d3 Ne4-c5 12. Ng1-f3 e6-e5 13. g2-g3 Bc8-g4 14. Bf1-g2 f7-f5 15. o-o Bg4xf3 16. e2xf3 Qd8-d7 17. a2-a3 Nb4-d5 18. Nb1-d2 Qd7-f7 19. Nd2-b3 Nc5xb3 20. c2xb3 f5-f4 21. Rf1-e1 f4xg3 22. h2xg3 Qf7-f5 23. Qd1-d2 c7-c5 24. Re1-e4 Rf8-f7 25. Qd2-g5 Ra8-f8 26. Qg5xf5 Rf7xf5 27. Bc1-d2 b7-b6 28. Ra1-c1 Bd6-c7 29. Rc1-e1 b6-b5 30. Kg1-f1 Rf5-h5 31. g3-g4 Rh5-h4 32. Bd2-g5 Rh4-h2 33. Kf1-g1 Rh2xg2+ 34. Kg1xg2 h7-h6 35. Bg5-d2 Nd5-f6 36. Re4xe5 Bc7xe5 37. Re1xe5 Nf6-d7 38. Re5-d5 Nd7-f6 39. Rd5xc5 Rf8-e8 40. Kg2-f1 Re8-f8 41. Rc5-c6 Nf6-d7 42. Rc6xa6 Nd7-c5 43. Ra6-b6 Nc5xb3 44. Bd2-b4 Rf8xf3 45. Rb6xb5 Rf3xd3 46. Kf1-e2 Nb3-c1+ 47. Ke2-f1 Rd3-d1+ 48. Kf1-g2 Kg8-h7 49. a3-a4 Nc1-d3 50. a4-a5 Nd3xb2 51. a5-a6 Rd1-a1 52. Bb4-a5 d4-d3 53. a6-a7 d3-d2 54. a7-a8=Q Ra1-g1+ 55. Kg2xg1 d2-d1=Q+ 56. Kg1-g2 Qd1xg4+ 57. Kg2-h1 Qg4-c4 58. Qa8-d5 Qc4-f1+ 59. Kh1-h2 Qf1xf2+ 60. Qd5-g2 Qf2-h4+ 61. Qg2-h3 Qh4-e7 62. Qh3-f5+ g7-g6 63. Qf5-e5 Qe7-h4+ 64. Kh2-g1 Qh4-g4+ 65. Kg1-h1 Qg4-h3+ 66. Qe5-h2 Qh3-f1+ 67. Qh2-g1 Qf1xb5 68. Qg1-a7+ Kh7-g8 69. Qa7-a8+ Kg8-f7 70. Qa8-f3+ Kf7-e6 71. Qf3-e4+ Ke6-d7 72. Qe4-d4+ Kd7-c8 73. Qd4-c3+ Nb2-c4 74. Ba5-b4 g6-g5 75. Qc3-h3+ Qb5-d7 76. Qh3xh6 Qd7-b7+ 77. Kh1-h2 Qb7xb4 78. Qh6xg5 Qb4-d2+ 79. Qg5xd2 Nc4xd2 80. 1/2-1/2

Another such game; the helpful role of the tracks of white Knights suggests a new ("corrida") variant of chess

The next *game* also employing 10 "almost free moves" is somewhat different, because the long tracks of white knights "psychologically" caused Black to organize a sufficiently serious attack, and I was again lucky with a difficult draw. The role of the knights tracks will lead us to a constructive suggestion of a new version of chess.

The eleventh game:
1. Ng1-h3 Nb8-c6 2. Nh3-f4 Ng8-f6 3. Nf4-d3 d7-d6 4. Nd3-f4 e7-e5 5. Nf4-h3 h7-h6 6. Nh3-g1 Nc6-b4 7. Nb1-a3 Bc8-e6 8. Na3-b1 Nb4xa2 9. Ng1-f3 Be6-d5 **10. Nf3-g1** Bf8-e7 11. Ng1-f3 Na2xc1 12. Qd1xc1 o-o 13. d2-d3 Bd5xf3 14. e2xf3 Nf6-d5 15. Nb1-c3 Be7-g5 16. Qc1-d1 Nd5xc3 17. b2xc3 Qd8-d7 18. g2-g3 Qd7-c6 19. c3-c4 b7-b5 20. c4xb5 Qc6xb5 21. Bf1-g2 Qb5-b4+ 22. Ke1-e2 Bg5-f6 23. Rh1-e1 e5-e4 24. Ra1-b1 e4xd3+ 25. Qd1xd3 Ra8-e8+ 26. Ke2-f1 Re8xe1+ 27. Rb1xe1 Bf6-c3 28. Re1-d1 Rf8-e8 29. Kf1-g1 Re8-e1+

30. Rd1xe1 Bc3xe1 31. f3-f4 Qb4-d2 32. Bg2-e4 Be1xf2+ 33. Kg1-g2 Qd2xd3 34. Be4xd3 Bf2-d4 35. Kg2-f3 a7-a5 36. Kf3-e4 Bd4-g1 37. h2-h3 a5-a4 38. Bd3-c4 a4-a3 39. g3-g4 c7-c6 40. Bc4-a2 d6-d5+ 41. Ke4-e5 Bg1-e3 42. f4-f5 Be3-c5 43. Ba2-b3 d5-d4 44. Bb3-a2 Kg8-f8 45. Ba2-b3 Kf8-e7 46. Bb3-a2 Bc5-b6 47. Ba2-b3 Bb6-a7 48. Bb3-a2 c6-c5 49. h3-h4 Ba7-b8+ 50. Ke5-d5 Bb8-d6 51. g4-g5 h6xg5 52. h4xg5 Ke7-d7 53. g5-g6 f7xg6 54. f5xg6 Bd6-e7 55. Ba2-b3 Be7-f8 56. Bb3-a2 Bf8-d6 57. Ba2-b3 Bd6-e7 58. Bb3-a2 Be7-f8 59. Ba2-b3 Kd7-e8 60. Kd5-e6 Bf8-e7 61. Bb3-a2 Be7-d8 62. Ba2-b3 Ke8-f8 63. Ke6-d7 Bd8-e7 64. Bb3-a2 c5-c4 65. Ba2xc4 Be7-g5 66. Bc4-a2 Bg5-f4 67. Ba2-b3 Bf4-h2 68. Bb3-a2 Bh2-g3 69. Ba2-b3 Bg3-f2 70. Bb3-a2 Bf2-e3 71. Ba2-b3 Be3-g1 72. Bb3-a2 Bg1-f2 73. Ba2-b3 Bf2-g3 74. Bb3-a2 Bg3-e1 75. Ba2-b3 Be1-d2 76. Bb3-a2 Bd2-g5 77. Ba2-b3 Bg5-e3. 1/2-1/2

I tried to realize the idea of 10 "almost free moves" in some more games, but early attacks of Black often become crucial. After a dozen of games, I concluded that 10 such moves is really the *maximum* against this Program.

Probably, for chess on more than 64 squares, and more figures involved, the number of the strange moves might be increased, and, probably, there should be a connection here between these figures/numbers, "10" and "64", of which the first is close to length of the line of the board, i.e. to the square root of the area, if to simplify the things.

Considering that the long initial tracks of White Knights bother Black to confidently develop initiative, and that for a larger board there would be more place for such tracks, one can suggest, say 10x10 board with 4 knights (make the knights "double" at each side) instead of 2 for each side, two more pawns for each, and all the rest as usual. (Or, at least, 8x10 with the same number of figures as now.) Such a game at the initial stage would look for White like a Corrida Bullfight, if White is obliged to return to initial position. Seems to be interesting even for a competition.

Some other attempts of the "generous" start, and the "principle of symmetry" for the two-side play of the Program in the confusion state

I also tried some other "generous" (or half-generous) starts, not based on the "dance" of the white Knights. All of them were less elegant as regards the basic idea, and I would not recommend them for such an experiment.

In one of them, White started with d3 and then Qd1-d2-d1-d2 ... Soon, one of the moves Qd1-d2 was responded to by Black by the unexpected Ng8-h6. The next move of this Knight to the square g4 explained all, — the sweetness of the square f2 was prevailing, and Black just used that the

Queen at d2 does not let Bc1xh6. I found this "killing straightforwardness" of Black unattractive.

Another attempt was b3 and g3 and then Bc1-b2-c1 ... and Bf1-g2-f1 ... This led to a mostly very difficult (and thus non-recommended) game, and at a certain stage to a very difficult to evaluate position in which White had two light figures against Rook and two pawns of Black.

Last, but not least, I returned to the idea of the fourth game (Section 2.3) and was trying to let the Program play for both sides, but now *immediately* after the reconstruction. My impression is that in such positions my patient approach is better for White than the energetic play of the Program for both sides. The Program makes White too active, which is not justified by its poor development, and I observed that White sometimes quickly gets into trouble.

This means that the Program has a "two sided" problem in estimating the strange position, i.e. for the Position of Black already confused, the program does not play well for either side. This is not strange, in fact, because the Program thinks also for both sides, and it is not so important which side of the board belongs to it.

However, let us be complimentary to the Program and show its following "successful" game, where Autoplay was used starting from the seventh move, causing White to win in a rather combinatory play, not in my style. This is the "successful" game.

Twelfth game:
1. Ng1-f3 d7-d5 2. Nf3-g1 Ng8-f6 3. Nb1-c3 d5-d4 4. Nc3-b1 Nb8-c6 5. Nb1-a3 e7-e5 **6. Na3-b1** Nf6-g4 7. f2-f3 Ng4-f6 8. e2-e4 Bf8-e7 9. Bf1-b5 o-o 10. Bb5xc6 b7xc6 11. Ng1-e2 Bc8-e6 12. o-o Ra8-b8 13. d2-d3 c6-c5 14. f3-f4 Qd8-d6 15. f4xe5 Qd6xe5 16. c2-c3 Be7-d6 17. Bc1-f4 Qe5-h5 18. c3xd4 Be6-g4 19. Nb1-c3 Rb8xb2 20. Bf4xd6 c7xd6 21. Qd1-c1 Rb2xe2 22. Nc3xe2 Bg4xe2 23. Rf1-f5 Qh5-g4 24. Rf5-g5 Qg4-h4 25. d4xc5 d6xc5 26. Rg5xc5 Be2xd3 27. Rc5-c8 Qh4xe4 28. Rc8xf8+ Kg8xf8 29. Qc1-a3+ Kf8-e8 30. Qa3xa7 Qe4-e5 31. Ra1-c1 Bd3-f5 32. Qa7-a8+ Ke8-e7 33. Qa8-a7+ Ke7-f8 34. Qa7-a8+ Nf6-e8 35. Rc1-d1 Bf5-g4 36. Rd1-b1 Bg4-d7 37. Kg1-h1 Bd7-f5 38. Rb1-d1 Bf5-c2 39. Rd1-f1 f7-f5 40. Qa8-d8 Qe5-e2 41. Rf1-g1 Qe2-d3 42. Qd8-h4 Ne8-f6 43. Qh4-f2 Bc2-d1 44. Rg1-f1 Bd1-g4 45. Rf1-c1 Nf6-e4 46. Rc1-c8+ Kf8-f7 47. Qf2-a7+ Kf7-g6 48. Rc8-c1 Bg4-d1 49. Rc1-c6+ Ne4-f6 50. Rc6-c7 Qd3-f1+ 51.Qa7-g1 Qf1xg1+ 52. Kh1xg1 Nf6-d5 53. Rc7-d7 Nd5-e3 54. Kg1-f2 f5-f4 55. g2-g3 Ne3-g4+ 56. Kf2-g1 f4xg3 57. h2xg3 Bd1-c2 58. Rd7-d2 Bc2-b1 59. a2-a4 Ng4-e5 60. Rd2-d6+ Kg6-f5 61. a4-a5 Kf5-g4 62. Kg1-f2 Ne5-d3+ 63. Kf2-g2 Nd3-c1 64. Rd6-d4+ Kg4-f5 65. a5-a6 Nc1-e2 66. Rd4-b4 Ne2-c3 67. a6-a7 Bb1-a2 68. Rb4-d4 Nc3-b5 69. a7-a8=Q Nb5xd4

70. Qa8xa2 Kf5-e5 71. Qa2-g8 Nd4-e6 72. Qg8xh7 g7-g5 73. Qh7-d3 Ke5-f6 74. Kg2-f3 Kf6-e5 75. Kf3-g4 Ne6-c5 76. Qd3-f5+ Ke5-d4 77. Kg4-f3 Kd4-c4 78. Kf3-e3 Nc5-b3 79. Qf5xg5 Kc4-b4 80. g3-g4 Nb3-c5 81. Qg5-d5 Nc5-a6 82. Ke3-d4 Resigns

An overview

The general impressions are as follows:

The effectiveness of the psychological start is increased by the number of "almost free moves" given to Black. This is natural since the basic idea is to start the development of White using the closeness of Black, and in order to be really close, the black figures need a sufficient number of moves. However, with the increase in the number of "almost free moves" it becomes easier for Black to start an attack and thus to force White to stop being generous. Thus, the tactic of White is to carefully watch the threats of Black while still making it possible to "invite" Black to be closer.

For this Program, this tactic cannot continue for more then 10 moves, and not only because there are more and more possibilities for Black to start an attack. The point is also that after so many moves, the closely approaching Black already succeeds in coordinating its figures.

Discussion and conclusions

On the concept of the "best move"

Though the Reader can assume that the following argument is "put forward" by the very unusual game situation in focus, the point raised is rarely discussed, and it is indeed worth stressing that the concept of "best move" lacks many aspects that are just needed in order to see the game in a wide context.

In his commentaries on the games of grandmasters [5], Anatoly Karpov says several times: *"The game enters the stage of unobservable complications"*, and it seems to be important here also to consider the problem of the use of the concept of the "best move", because apart from the rare cases when the Program obviously waits for (anticipates) a typical elementary mistake, it should be seeking the "best move".

My general old observation (impression) on chess, further supported by the present investigation, is that most chess positions have no "best move". The logical problem is that we can point at the "best move" in an *understood* position, but this understanding will be never complete until we see/find

this "best move". Though the concept "best move" is applicable to many positions, this quite objective "faulty logical circle" makes, in general, chess strategy not quite deterministic; the chess position usually is some poorly defined situation, not adjusted to any standard optimisation in terms of unique functions. The decision that a move is good (signed as "!" or "!!") is sometimes justified by the final victory, but the decisions are sometimes changed by later analysis. (Some such examples are found even in classical games.)

Of course, the development of the art of chess is naturally done via well-analysed positions with best moves found *post factum*. However, the "number" of the chess positions having the "best move", compared to the positions not having it, seems to be something like the power of a countable set compared to that of a continuum. That is, we can have as much as needed of positions with a best move, helpful for any didactic chess-learning, but these positions are extremely rare among all the possible positions.

I think that clear understanding that there is no any "best move" in many positions belongs to Lasker. That is, his so-called "psychological" approach was, first of all, based on this correct *scientific observation*.

Summary and questions

1. We have generalised Alyochin's defence to an *Alyochin-type start*, giving in it initiative to the unusually playing White. Based on our experiment, we see such a strategy as a disarming the opponent (the Program), in the sense that it can take the program out from the "library", and make it confused for a long time because of having the wrong impression about your real strength, and because of difficulty in returning to the library sufficiently quickly. Most paradoxically, such a passive defence of White often does not seem to be *objectively* weak, because the undeveloped position of White *finally* aids (via simplicity of the targets, and the confusion of Black) further development. The sixth game demonstrates that the taking Black out of the library does not necessarily cause unjustified attacks, just a very indecisive play. During the easy development (advance) Black does not take care about good coordination between all of its figures. This is contrary to the case of usual play when good coordination is dictated by the understood continuous pressure (or resistance) of White.

Of course, these observations might be incorrect for a stronger program, but the fact is that a programmed *machine can* show clear signs of nervousness, i.e. unjustified early attacks, and also depression, i.e. unusually weak play *for many moves* after it is taken out from its library, and the fact is

that my scores against the program were strongly improved.
2. How stable is the use of the (serious) internal library by the program, and how to check this stability most simply? In which cases can we check the stability by asking the program to play, starting from a particular moment, for both sides?
3. The conclusion that machine is stronger than human player has to be reconsidered, since the psychology can "improve" the human player. Since inclusion of the "psychology" into a program is, in principle, also possible, the conclusions re relative strengths of different programs should be then also reconsidered.
4. Is the assumption that a Program can be troubled by symmetry of the opponent's constructions correct?
5. Considering that for a larger board there would be more place for initial confusing tracks of white Knights, we suggest 10x10 board chess game, the "Chess Corrida Bullfight", with 4 knights instead of 2 for each side (or 8x10 with the same figures as now), in which White is *obliged* to at least once reconstruct its initial position, and, optionally, perform at least one loop with at least one of the knights.

Emanuel Gluskin
Kinneret College in the Jordan Valley (Sea of Galilee)
15132 Israel
gluskin@ee.bgu.ac.il
http://www.ee.bgu.ac.il/~gluskin/

References

[1] *Encyclopedia Britannica*. 1967. Vol. V, Chicago. William Benton, p. 457.

[2] C. Shannon. 1956. "Chess playing machine", *The World of Mathematics*, vol. 4, p. 2124.

[3] C. Shannon. 1950. "Programming a computer for playing chess", *Phil. Mag.*, vol. 41, p. 256.

[4] C. Shannon. 1955. "Game playing machines", *Journal of the Franklin Institute*, vol. 260, no. 6, p. 447.

[5] A. Karpov, Y. Gik. 2002. *Chess Kaleidoscope*, Pergamon Russian Chess, New York, 2002.

Board Games Studies was first published in 1998, an initiative inspired by the colloquia on board games held at Leiden University, the Netherlands, in 1995 and 1997. Five institutions affiliated themselves with the journal: the Institut für Spielforschung und Spielpädagogik in Salzburg, the International Institute for Asian Studies in Leiden, the Russian Chess Museum in Moscow, the British Museum in London, and the Department of Computer Science at the University of Maastricht. The journal, which was published by CNWS Publications in Leiden on a yearly basis, was partially funded through the assistance of patrons and boasted a modern layout, trilingual summaries and color plates. The broad ambition of this journal required a continuous commitment from the editors, who reviewed contributions in German, French and English, provided translations of summaries for each article and, in several cases, collaborated extensively with authors to develop manuscripts that were to the academic standards of the publication. The journal had a trial run of three years, after which the format, content and review process was evaluated. The authors of the articles integrated wide-ranging literature necessary for a comprehensive understanding of particular games. Contributions from different disciplines — including psychology, computer science, philology, classical archaeology and history — allowed for a better historical and systematic understanding of board games to emerge. Starting in 2000, a section with a translation of primary sources was added. Book reviews and research notes further complemented the multi-facetted contents. Its first ambition, to serve as a platform for the publication of board games research, was met quickly, while gradually the journal gained prominence among researchers by publishing seminal historical overviews. The colloquia continued from 1995 onwards, moving from a biennial to a yearly schedule. The host institution was expanded beyond Leiden to universities and museums throughout Europe as well as Jerusalem, Philadelphia and, in 2013, the Azores. The colloquia continue to gather an enthusiastic group of scholars, players and collectors. Despite the institutional affiliations and a group of patrons, the production of the journal became financially and logistically problematic with CNWS no longer able to serve as a publisher. Reluctantly, the paper version of the journal was discontinued after volume 7 was published in 2004. The possibility of an online version of the journal had been explored with the online publication of the first issues, a decision that greatly assisted the dissemination of knowledge accumulated in those early volumes. The next step, an online journal that operates again as a platform for recent board games research, was not far away but required the skills and enthusiasm of previous and new editors to materialize. In these last fifteen years, the study of board games has gained momentum and this journal will not only showcase new results but, most of all, will encourage and publicize the work of the dedicated researchers in this field.

Alex de Voogt

To the authors

Board Game Studies is an academic journal for historical and systematic research on board games. Its object is to provide a forum for board games research from all academic disciplines in order to further our understanding of the development and distribution of board games within an interdisciplinary academic context. Articles are accepted in English, French, and German and will be refereed by at least two editors under the final responsibility of the Editorial Board. Please send your contributions in any editable format (Word, LaTeX, rtf, ...) with a matching PDF file. Please send all the illustrations in separate files.

Send all mail to the managing editor:

Jorge Nuno Silva
História e Filosofia da Ciência
Faculdade de Ciências
Campo Grande, C4
1749-016 Lisboa
PORTUGAL

Contacts

Associação Ludus
Board Game Studies Journal
R. da Escola Politécnica, 56
1250-102 Lisboa
PORTUGAL

email: bgsj@ludus-opuscula.org
URL: bgsj.ludus-opuscula.org

Table of Contents