ChessCafe.com

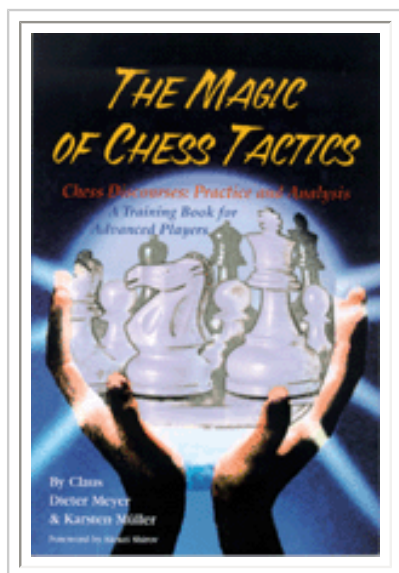**COLUMNISTS**

Endgame Corner
Karsten Müller

Freeze!

Professor Ingo Althöfer from Friedrich Schiller University Jena (Germany) has experimented with computer chess for a long time and he wanted to prove that the machines were much stronger when a human was allowed to choose from the best move options. As a rule he chose from the best options of two different programs and with this so called "3-Hirn" (Triple Brain), he played matches against international master Reefschläger (in 1989) and grandmasters Lutz (1995), Timoscenko (1996), and Yusupov (1997). One endgame from the Yusupov match especially caught his attention:

50.01 *Listen-3-Hirn - A.Yusupov*
Shuffle Chess Match, Jena 1997
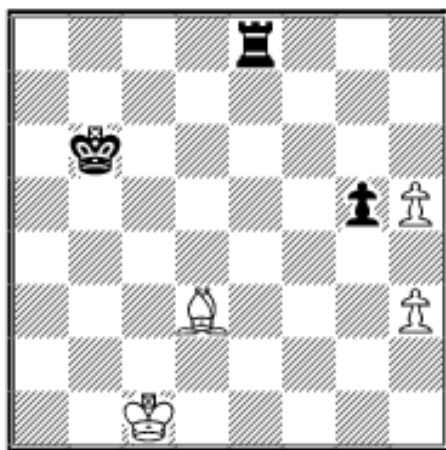
Is this position won as Yusupov had claimed? In order to find out Althöfer asked his Ph.D. student Eiko Bleicher to create a program (Freezer) similar to the Nalimov tablebases, but with the possibility to include additional rules to allow positions with more than 5 or 6 men. It has to be admitted that the idea is not completely new. To quote Stiller:

From a computational point of view, it might seem that the next logical step...should be the exhaustive solution of pawnless seven-piece endgames. In fact, in my opinion a more promising approach would be to follow up on the suggestions first made by Bellman...and solve endgames with multiple pawns and minor pieces. Such an approach would combine heuristic evaluation...with the exhaustive search techniques described here. Although the use of heuristics would introduce some errors, the result of such a search would...have considerable impact on the evaluation of many endgames arising in practical play.

Eiko did as he was asked and kindly allowed me to use his work. In short, I set the following rules for this endgame to prove my conjecture that it is drawn: The pawns are frozen. Black wins, if the bishop or the white pawns are taken

or White's king has to move on the b-file. Of course, with this method it can only be shown that certain positions are drawn. It is not clear which are won. The whole Freezer concept is especially good for positions where you already have previous knowledge and a conjecture. And the result confirmed my conjecture:

1...Kc5

Freezer claims that 1...Rd8 wins (Distance to Conversion according to my conditions 19 moves), but the reality check reveals this to be an illusion: 2.Kd2 Rd4 3.Ke3 Rh4 4.Be2 Rxh3+ 5.Ke4 Rh2 6.Kf5 Rxe2 7.Kxg5 and White draws. As this was the only "win" found by Freezer, it is now clear that the given position must be drawn.

2.Kd2 Kd4 3.Be2 Rf8 4.Bg4 Rf2+ 5.Ke1 Ke3 6.Be6 Rf8 7.Bd7 Kf3 8.Bg4+ Kg3 9.Ke2 Re8+ 10.Kf1 Re7 11.Bc8 Rc7 12.Be6 Rc2 13.Bg4 Rf2+ 14.Ke1 Kg2 15.Bd7 Rf7 16.Bg4 Re7+ 17.Kd1 Kg3 18.Kd2 Re8 19.Kd3 Kf4 20.Kd2 Re3 21.Kd1 Kg3 22.Kd2 Kf2 23.Bd7 Re5 24.Kc3! Rd5 25.Bg4 Ke3 26.Kc4 Rd8 27.Kc5 Ke4 28.Kc6 Ke5 29.Bd7 Kf6 30.Kd6 Kf7 31.Kc6 Ke7 32.Bg4 Rd2 33.Kc5 Kf6 34.Kc6 Ke5 35.Kc7 Rd6 36.Bd7 Ra6 37.Bg4 Kd5 38.Bf3+ Ke6
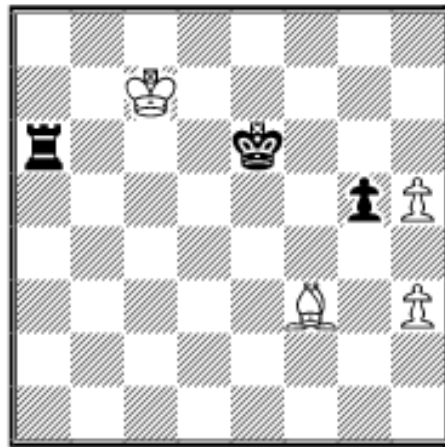
39.Bg4+?! now White's king is cut off on the b-file. 39.Kd8 avoids this according to Freezer. From now on I had to analyze without the help of Freezer as my condition that White's king is not allowed to use the b-file is not valid any more. **39...Ke7 40.Kb7 Rf6 41.Kc7 Rd6 42.Bf5** after 42.Kb7 the cut off mechanism works as follows: 42...Rh6 43.Kc7 Rf6 44.Kb7 Kd6 45.Kc8 Rf1 46.Be2 Rf8+ 47.Kb7 Rf2 48.Bd1 Rd2 49.Bg4 Rc2 **42...Rd5 43.Bg4 Rc5+ 44.Kb6 Kd6 45.Bf3?** probably already seeing the draw according to the 50-move rule, White allows a cut off on the a-file. 45.Kb7 still draws even ignoring the 50-move rule: 45...Rc7+ 46.Kb6 Rc5 47.Kb7 Rc3 48.Bf5 Rc7+ 49.Kb6 Rc3 50.Kb7. **45...Rc3 46.Bg4 Rb3+ 47.Ka5 Kc5 48.Ka4 Rb8 49.Bf3 Kd4 50.Ka5 Ke3 51.Bd5** and White claimed a draw according to the 50-move rule. But the position is now won: (51.Bg4 Kf4 52.Ka6 Kg3 53.Ka7 Rb4 54.Bf5 (54.Ka6 Kh4 55.h6 Rd4 56.h7 Rd6+ 57.Kb5 Rh6 58.Bf5 Kg3-+) 54...Kh4 55.Bg4 Rb2 56.h6 Rf2 57.Be6 Rf6 58.h7 Rh6 59.Bf5 Kg3 60.Kb7 Kf4-+) **51...Rh8 52.Bf7 Kf4 53.Kb5 Kg3-+**

The following analysis from *Fundamental Chess Endings* was confirmed by Freezer:

50.02 *A.Shirov* (2615) - *A.Fishbein* (2465)

Kerteminde 1991
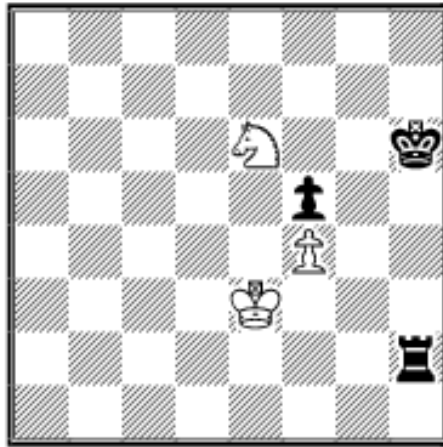
White is lost because his knight fails to reach its optimal post at e3 or g3 soon enough: **49.Nd4 Rh3+?** this is surprisingly a mistake, which is confirmed by Freezer: (49...Kg6 wins easily.) **50.Kf2 Kg6 51.Ke2?**

51.Nf3! draws as Freezer proves: 51...Kh5 (51...Rh8 52.Ne1 Kh5 53.Kf3 Ra8 54.Ng2 Ra3+ 55.Ne3 Kh4 56.Kf2=; 51...Rh1 52.Kg3 Kh5 53.Nd4 Rg1+ 54.Kf2 Rg4 55.Kf3 Kg6 56.Nc2=) 52.Kg2 Kg4 53.Ne5+ Kxf4 54.Ng6+ Kg4 55.Ne5+=
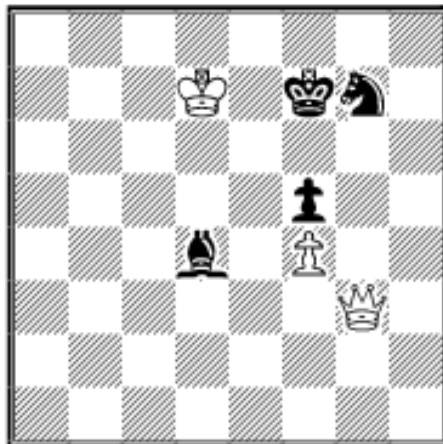
51...Ra3 52.Nc2 Ra2 53.Kd3 Ra4! forces White's king to occupy the knight's post. **54.Ke3 Rc4 55.Nd4 Rc3+ 56.Ke2 Rc5 57.Nf3 Kh5 58.Ne5 Rc3 59.Kf2 Kh4 60.Kg2 Rb3 0-1**

The next fortress was also confirmed by Freezer:

50.03 *V.Anand* **(2555) -** *J.Costa* **(2350)**
Biel-B 1988

88.Qb3+ Kg6!

88...Kf6? 89.Qb4 Ba1 (89...Ba7 90.Qa3 Bf2 91.Qb2++-) 90.Qa3 Bd4 91.Qd6++-

89.Qg8 89.Ke7 Bc5+ and White can't make progress. **89...Bf6 90.Kd6 Bh4 91.Qa8 Bf6 92.Qc6 Kf7 93.Qg2 Be7+ 94.Kd7 Bh4 95.Qh3 Bf6 96.Qg3 Bd4 97.Kd6 Bf6 98.Kd5 Be7 99.Qxg7+**

Anand's last joke and a draw was agreed. He was sure that his opponent wouldn't fall into the trap: 99...Kxg7 100.Ke6 Kg6 101.Kxe7 Kh5?? (101...Kg7=) 102.Kf6 Kg4 103.Ke5+-

The following position is surprisingly also drawn:

50.04 Instructive Example
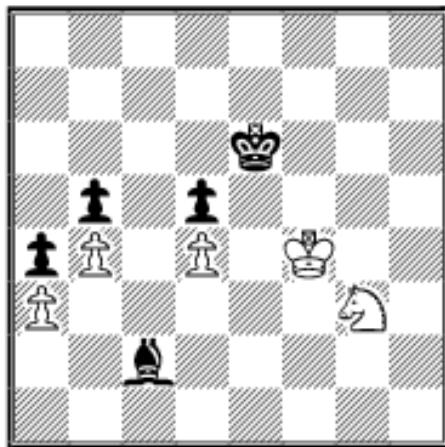
Freezer can not really prove this autonomously, but with its help I constructed the following main line: **1.Kg5 Bd3 2.Nh5 Be4 3.Nf6 Bd3 4.Ne8 Kd7 5.Ng7 Ke7 6.Nf5+ Ke6 7.Nh4 Bc2 8.Ng6 Be4 9.Ne5 Bc2 10.Nc6 Bb1 11.Nb8 Bd3 12.Na6 Ke7 13.Kg4** (13.Nc5 is met by 13...Bc2) **13...Kf6 14.Nc7** (14.Kf4 Bf1 15.Nc7 Bc4=) **14...Be2+**
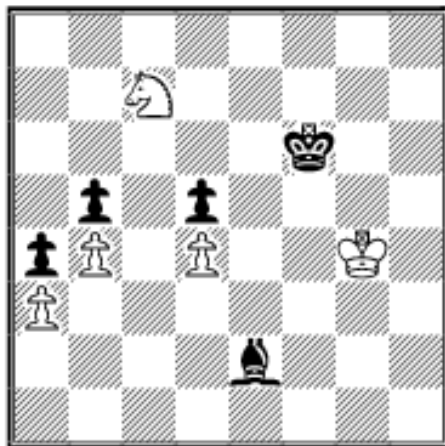
Now comes the point of Freezer's line (according to my faulty conditions, of course), but it unfortunately doesn't work as Black can sacrifice the bishop: **15.Kg3!?** White aims for zugzwang **15...Kf5 16.Nxd5 Ke4 17.Nc3+ Kxd4 18.Nxe2+ Kc4=** and Black escapes.

The next dance of Black's knight is quite fascinating as well:
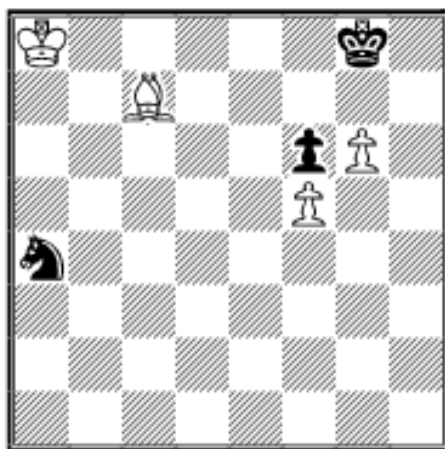
50.05

Freezer proves that White wins as the knight finds no safe harbor: **1.Kb7! Nc3 2.Kc6 Kg7 3.Kc5 Ne2 4.Kc4 Kh6 5.Kd3 Nc1+ 6.Ke4 Ne2 7.Ba5 Ng3+ 8.Kf4 Ne2+** (8...Nh5+ 9.Kg4 Ng7? 10.Bd2#) **9.Kg4 Kg7 10.Bb4 Nd4 11.Kf4 Ne2+** (11...Nc6 12.Bd6 Na5 13.Ke4 Nc4 14.Bc7+-) **12.Kf3 Nd4+ 13.Ke4 Ne2 14.Be1 Kg8 15.Ke3 Nc1 16.Bd2 Nb3 17.Kd3 Kg7 18.Bf4 Nc5+ 19.Kc4 Nd7 20.Bd6!** it is all about domination. **20...Nb6+ 21.Kd4 Na4 22.Bc7 Kg8 23.Ba5 Kg7 24.Bd8 Nb2 25.Be7 Na4 26.Kd5 Nc3+ 27.Ke6 Ne4 28.Ba3 Ng5+ 29.Ke7 Ne4 30.Bb2+-**

It is, of course, also possible to ask questions such as the following:

50.06
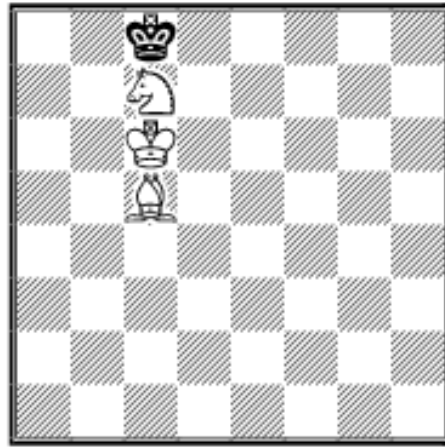
Is it possible to mate Black's king without using the traditional "W" maneuver (c7-d5-e7-f5-g7) of White's knight? So let's just not allow the knight to use the squares d5, e5, d4, e4 and see what happens. Freezer proves that White wins nevertheless: **1.Na6 Kd8 2.Nb4 Ke8 3.Nd3 Kf7 4.Kd6 Kf6** 4...Ke8 5.Bb6 Kf7 6.Bd8 Kg6 7.Ke6 and Black's king is firmly caught near the right corner h8. **5.Nf2 Kf5 6.Be3 Kf6 7.Bf4 Kf5 8.Be5 Kg6 9.Ke6 Kg5 10.Bd6 Kh4 11.Kf5 Kh5 12.Be7 Kh6 13.Nh3 Kg7 14.Ng5 Kh6 15.Ne6 Kh5 16.Ng7+ Kh6 17.Kf6 Kh7 18.Nf5 Kg8 19.Kg6 Kh8 20.Bd6 Kg8 21.Nh6+ Kh8 22.Be5#**

Please do not attempt to mate like this; use the well-known "W" maneuver instead!

I want to thank Professor Dr.Ingo Althöfer and Eiko Bleicher for allowing me to use their ideas and the Freezer program.

Sources:
Freezer program written by Eiko Bleicher

*Building Chess Endgame Databases for Positions with many Pieces using A-priori Information*, E.Bleicher, downloadable here as a PDF file.

13 Jahre 3-Hirn, Ingo Althöfer, Selbstverlag Jena 1998.

Multilinguar Algebra and Chess Endgames, Lewis Stiller, Games of No Chance, MSRI Publications, Vol. 29, 1996

Fundamental Chess Endings, K.Müller and F.Lamprecht, Gambit 2001.

Solution to last month's exercise
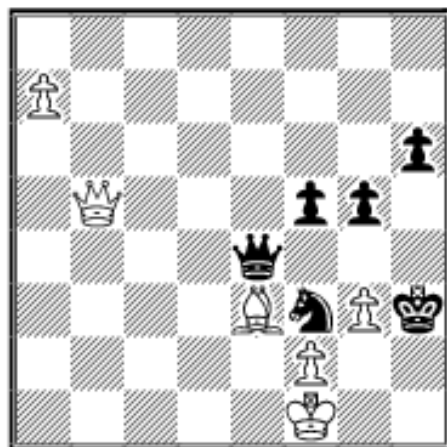
E49.01 *A.Morozevich* **(2756) -**
A.Beliavsky **(2654)**
German Bundesliga 00/01

Morozevich failed to find the narrow path:
52.a8Q? (52.Qb3! f4 53.gxf4 gxf4 54.Bd2
Kh4 55.Ba5=) **52...Qxa8 53.Qxf5+ Kh2**
and Black's attack prevailed: **54.Qe6
Qa1+ 55.Ke2 Kg2 56.Kd3 Qb1+ 57.Kc3
h5 58.Qd5 Qa1+ 59.Kc2 Qa4+ 60.Kc3 h4
61.gxh4 gxh4 62.Qg8+ Kf1 63.Qd5 Qa3+
64.Kc2 Ne1+ 65.Kb1 Qd3+ 0-1**