Think Like a Super-GM

By

Michael Adams
Philip Hurtado

Contents

Publisher's Foreword

This is a chess book unlike any other. Even the authors have had a hard time summarizing the content, producing no less than six mini-introductions between them! You will 'meet' the two co-authors soon enough, as each author has written his own introduction. Michael (Mickey) Adams obviously needs no introduction – there are not many individuals in the world who can rival his credentials as a chess player. The name of Philip (Phil) Hurtado will be less recognizable to most readers, but Phil's creative vision and scientific knowhow kickstarted this project and remained instrumental throughout. The main purpose of this foreword is to offer the reader a clear summary of what you can expect from this book.

If I had to summarize this book in just a few words, I would say: "Puzzle book meets *The Master Game* meets Science." (By the way, neither Phil nor Mickey has ever mentioned *The Master Game* as a source of inspiration for the project – but it was the first point of reference that came to my mind when I heard about the format of the book.)

For those who don't know, *The Master Game* was a BBC production of televised tournaments involving grandmasters and other strong players, which ran from 1976-1983. What made the production uniquely compelling was that, immediately after each game had ended, the producers made audio recordings of the players as they reproduced their thought processes out loud. Thus, in the final production, the television audience would watch the games unfold while listening to the thoughts of the players, as if in real time. The series was also turned into books, which I had on my shelf as a kid – and although I was too young to watch the shows when they were originally broadcast, I remember seeing a few of them on VHS tape when I was older. Whether in video or book format, I always found it fascinating to follow the thoughts of the players.

So how do these three elements of puzzles, recorded thought processes and science come together? Essentially, Phil designed a grand science experiment to analyse the performance of different chess players of varying abilities when solving a selection of puzzles, and successfully persuaded Mickey to partner up in the project. Phil recorded players' thoughts and, with the players' permission of course, included a selection of them under the solutions for each puzzle, giving the reader a fascinating glimpse into the mental processes of each solver. Phil also meticulously recorded the moves chosen, time taken and much more for each solver, with a view to analysing the mass of data and using the scientific method to draw conclusions about what exactly separates the strongest chess players from everyone else. Along the way, Mickey's involvement increased and the project evolved into something even more special than was originally envisaged.

Here is a breakdown explaining what you can expect in each of the main parts of the book.

Puzzle Section

The largest section of the book consists of forty puzzles of varying difficulty. You are invited to solve each puzzle, writing down your next move plus any supporting variations, as well as your evaluation of the position. So far, this sounds much like any other puzzle book. However, this book does not merely contain a standard solution. Instead, under the solution section for each puzzle you will find:

1) The detailed thought processes of several players of varying playing strengths – from near-novice players, through to club players, IMs and GMs, and finally Michael Adams himself

During breaks in editing, I solved several of the puzzles myself – partly for my own training as a player, and also to be able to gain a better experience of this book from the reader's perspective. Later, as I edited the corresponding solution sections, I found it fascinating to compare my thinking to that of the featured solvers. Every reader's experience will be different, but mine revealed the following insights:

➢ At my best, I was able to solve some of the most difficult positions – perhaps not with quite the same efficiency and precision as Mickey and the other top GMs, but still in a way that confirmed I am capable of performing well in certain types of position.

➢ For other puzzles, by some combination of intuition and calculation, I was able to select the best move, but comparing the thought process of Michael and other top players highlighted gaps in my analysis and general chess understanding. I may have chosen the right move, but the process by which I got there fell far short of Mickey's level. The ability to follow the exact thought process of Mickey and other strong GMs was a real eye-opener in terms of the kinds of details I can improve on.

➢ At my worst, there were a few puzzles where I concentrated hard but completely failed to hit upon the right idea – giving me a clear idea of the types of position where my play needs to be improved. Again, it was illuminating to see how quickly Mickey and other leading GMs were able to get right to the crux of certain positions which I struggled with.

In short, the ability to compare my own thought process with that of weaker, equal-strength and stronger players was something I found incredibly illuminating, and has significantly increased my awareness of my own strengths and weaknesses as a player. I have no doubt that the readers will find this process to be just as interesting and beneficial as I did.

2) A "Deeper Analysis" section by Michael Adams

Once the thought processes of the various players have been presented, Michael then provides a comprehensive solution to the puzzle. Each solution contains the obligatory engine analysis of course – but more importantly, Mickey's personal insights, including his reflections on the few puzzles where his own solution was not the best.

3) Post-Solution section

Following the analysis section by Michael, you can find the scoring system for that puzzle, followed by a few final reflections about the puzzle from both of the authors. What made the position challenging? What were the most common errors in thinking among the panel of solvers? What does the Super-GM regard as the defining features of the position? And what were the key attributes which enabled the strongest players to find the best solution where others failed?

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By now you can see why there are only forty puzzles! The solutions are massively expanded by the inclusion of the thought processes of numerous players. This is of tremendous value to the reader in my opinion – and few (if any) other puzzle books have offered such a feature.

This much alone would have made the book a valuable addition to chess literature – but there's more to follow.

Bonus Puzzle Section

Essentially this is more of the same. These eight additional puzzles are positions which, in the authors' opinion, were ultimately not quite suitable for the main puzzle section, but which nevertheless contain a great deal of instructive content. They are presented in the same way as the main puzzles, with solver commentaries and Michael's detailed analysis included in every solution.

Conclusions from the Puzzles

The book's title *Think Like a Super-GM* was not just a sales pitch or 'clickbait' – the authors really have left no stone unturned in trying to unravel the mystery of what separates the thinking of elite players from the rest of us. I think Phil was really in his element in this section, channelling what I will cheekily refer to as his 'Mad Scientist' persona to crunch the numbers and draw on the data to shed light on matters such as:

➢ **The importance of the candidate move**
➢ **Why do the strongest players devote most of their thinking time to checking the consequences of the best move after they have already found it?**
➢ **"How many moves can you think ahead?"** is a question that you will probably roll your eyes at – but Phil has nevertheless drawn on the experimental data in an attempt to answer it for players all the way up to Mickey's level.

Once Phil has finished shining the scientific spotlight on these and other questions which the experimental data helps to answer, it is Michael's turn to offer his conclusions in a section entitled **Grandmaster Secrets**. Here, the Super-GM offers what I found to be some highly instructive insights into what he sees as the key attributes which enabled him and the other grandmasters to consistently outperform lesser players in the puzzle test. Once again, having every player's

thought process available proved invaluable here, as Mickey was able to illustrate his points by revisiting several puzzles and recapping the exact reasons players gave for choosing or rejecting certain moves.

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We would certainly have been proud to publish the book if it ended here, but the authors had one more ace up their sleeve.

The Eyetracker Experiment

The idea for this actually came from Mickey after he watched a sports documentary involving laboratory testing of an athlete's eye moments while performing. Mickey mentioned the idea to Phil and, in not much more than the blink of an eye, the experiment was arranged in a suitably equipped testing facility.

Simply put, the eyetracker experiment used sensors to follow the eye movements of Michael and other players as they solved chess puzzles in real time. The technology is so precise that it was able to pinpoint the exact squares on which players' eyes were focused at all times. Once the player had finished solving each puzzle, at the touch of a button the lab technicians produced a 'heat map' for that puzzle, offering a vivid, visual representation of the areas of the board that received the most attention from that solver. Comparing Mickey's eyetracking and heat maps to those of the other players offered yet another means of looking inside the mind of a Super-GM and comparing Mickey's thinking process with players at lower rating levels.

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Summing up, this is a remarkable book with many unique features. With Mickey's superlative chess ability alongside Phil's scientific and data-analysing acumen, we could hardly have wished for two more suitably qualified authors for this project. The ability to think like a Super-GM is something only a select few players will ever acquire, but this book does offer a number of unique insights which help to uncover the mystery of how such players perform as well as they do. I hope you will enjoy solving the puzzles and comparing your thoughts to those of Mickey and the other solvers. With the further insights gained from Phil's data analysis and Mickey's expert conclusions, I am quite sure you will find yourself thinking about chess in completely different ways from before – taking you, if not all the way to Super-GM level, then at least a healthy step in that direction.

Andrew Greet
Editor, *Think Like a Super-GM*
December 2021

Chapter 1.2

Introduction by Michael Adams

I didn't know Phil before he sent an email via my website, enquiring if I would be interested in collaborating on a book. Having been intrigued by his idea, we had a long chat on the phone, and I was excited to join the project. Part of the initial appeal for me was that working with a co-author seemed less daunting than taking on an entire book project personally, but subsequently I became so interested in the subject that my input expanded considerably.

I was attracted to the book's concept for a few reasons, such as the fact that the majority of the test positions to be solved in the book were chosen by Phil. I thought these examples would be more useful for most readers, as opposed to material that a stronger player would themselves judge instructive. I felt this aspect important, as when talking socially with lower-rated players about my games, or theirs, I am frequently surprised – both by the, to me, difficult concepts that they understand, and by other areas where their understanding seems surprisingly lacking from my point of view. There are lots of books where GMs give their views on what they think other players need to know, but these may not always ask the questions people want answered.

An additional attraction of this project was the way in which the puzzles were recorded, where you can observe participants' thinking in real time, as they give their opinions, judgements and calculations about the position. I found these highly revealing, and subsequently enjoyed spending time reflecting on many of these comments.

Phil's distinguished academic career contrasts rather with mine. I headed off to the World Junior Championships in Australia in 1988, after doing my exams at sixteen. Professional chess seemed a lot more appealing than heading back to school, and I never really returned to my studies. Despite our different educational backgrounds and playing strengths, there was quite a bit of overlap in the key themes that Phil and I identified when analysing the results. (We initially wrote those sections independently, and only later compared our thoughts.)

I am particularly happy that after a lot of calculation, Phil has supplied an answer, albeit with some caveats, to the tricky question "How many moves ahead can a Grandmaster see?" If I had a pound for every time I have been asked this question I would have retired long ago – although as I've never had the slightest idea about even a ballpark answer until now, perhaps justice was done.

To bring the project to a conclusion, I expanded considerably on the written material, reviewed the eyetracker footage and carried out final editing on most of the book. Phil spent a lot of time on his main responsibilities: fine-tuning the scoring system; compiling and analysing the puzzle data; and crunching the numbers to draw conclusions, such as to the question noted above. We both added a lot of content to sections that are not attributed to a main author.
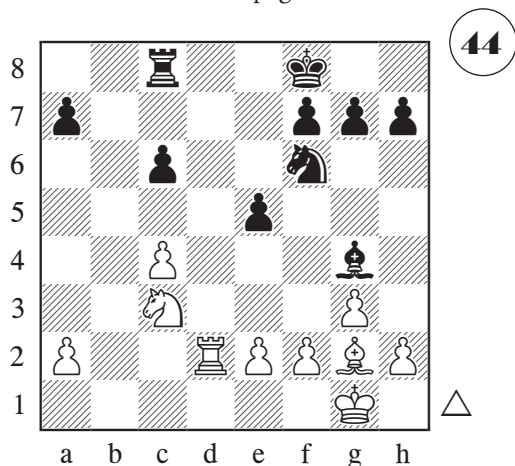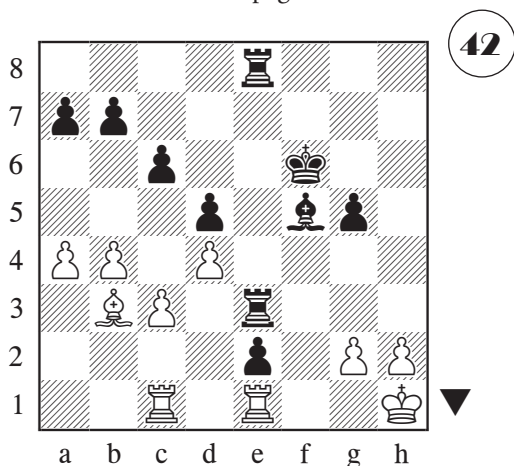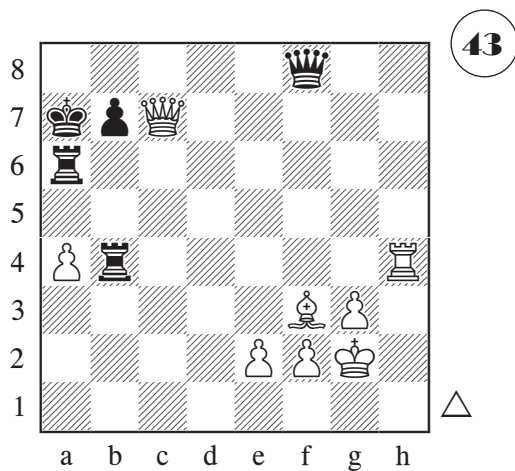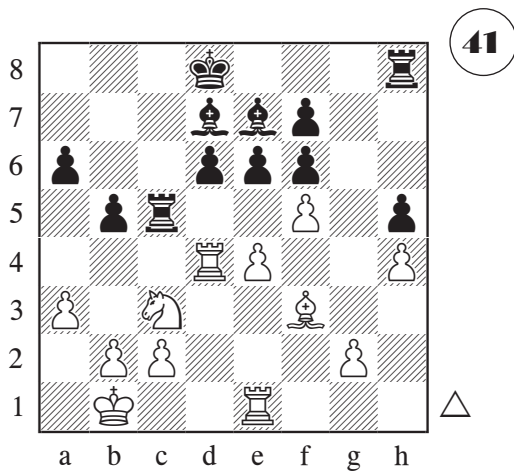
Earlier on in the process, I had suggested the idea of introducing the extra variable of monitoring participants' eye movements as they solved the puzzles. Phil also found the idea interesting, and he was able to set up an appropriate experiment. This was a fascinating day to take part in, as, in addition to analysing my own results and those of others, it was intriguing to observe others thinking in real time. It was also absorbing to inspect the areas of the board that other players spent a long time focusing on.

I solved the puzzles in June 2019 and, in my next event a month later, won the British Championship for the seventh time. I hope this book will help you towards similarly satisfying results in the future.

Michael Adams
Taunton, December 2021

Positions 41-44

The Fab Forties

41

White to play – Level 7
Solution on page 320

42

Black to play – Level 6
Solution on page 327

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White to play – Level 7
Solution on page 334

44

White to play – Level 8
Solution on page 339

Bonus Puzzle 44 – Super-GMs evaluate better

Philip Hurtado
Elo 1924

00:15 I have my rook on the open file. That is good.

00:25 My bishop on g2 is also good, putting pressure on c6.

00:30 Black is pointing with his bishop at my e2-pawn.

00:45 I have to be careful with 1...♖b8 and ...♖b1†.

01:00 Black will definitely want to activate his rook.

02:00 1.♖d6 might be dangerous because of ...♖b8. I could play 1.h3 and then 2.♖d6 with a slight advantage.
Also 1.c5 looks good, as it stops Black's pawn from running away. I am definitely better here.
The plan of h3, g4 and g5 is also good. But 1.h3 ♗e6...

05:00 I think 1.c5 is great. It will look after my rook when it lands on d6.
Also 1.♖b2 with the idea of ♖b7 looks promising. Not 1.h3. I don't want his bishop to improve its position.

08:00 My candidate moves are either 1.♖b2 or 1.c5.
I think I'll go for 1.c5 because then 2.♖d6 can attack the weak c-pawn.
Oh no! If 1.c5 ♘d7. Oh, but I have 2.♘a4 – although my knight would be out of play there. Maybe the best move is 1.♖b2 after all.

10:00 I play **1.♖b2** with some advantage.

Evaluation: +0.35

Nathanael Paul
Elo 1993

00:30 First impression is that the game is very level. Although White's rook is on the open d-file and Black's rook is more passive.

01:15 Black has a more active bishop. 1.♖d6 forcing Black's bishop to go passive on d7 or else play his pawn to c5.

01:40 If 1.♖d6 ♖b8 he loses a pawn.

02:30 1.♖d6 ♗d7 holds things together but Black gets tied up a bit. And I can play 2.c5 to defend the rook against an eventual ...♔e7. (Goes into deep thought.)

04:15 1.♖d6 ♗d7 2.♘e4 ♘xe4 3.♗xe4 ♔e7 4.c5 and White has a pleasant position, leaving Black very passive.

06:10 1.♖d6 ♗d7 2.♘e4 ♔e7 Hitting the rook. 3.♘xf6 ♔xd6 4.♘xd7 ♔xd7 5.♗h3†!

08:00 However, after that whole line we have equal pawns, and Black's king is closer to the pawns, and might actually be winning.

08:55 So: 1.♖d6 ♗d7 2.♘e4 ♔e7 3.c5 and if Black plays 3...♘e8, I can either retreat or play 4.♖xd7 ♔xd7 and 5.♗h3†.

09:45 In this case White has a better knight and an outpost as well as pressure.

11:05 **1.♖d6** is my move.

Evaluation: +0.6

> **Keith Arkell**
> Elo 2429

00:30   White would like to take the b-file in this position. The d-file can be controlled by the king.

01:00   Black would like to play 1...♖b8 himself and then move his king towards the d-file. So 1.♖b2 is screaming to be played.

02:10   1.♖b2 ♗e6 2.c5. If 1.♖d6 ♖b8? I just take his pawn in broad daylight.

02:30   My candidate moves are: 1.♖b2, 1.♖d6. In a rapid. I'd probably have played 1.♖b2 by now.

03:30   **1.♖b2** seems to give better long-term play for White.

Evaluation: +0.6

> **Michael Adams**
> Elo 2701

00:20   I guess I can play 1.♖d6, or 1.c5, to fix the weakness on c6.

01:50   If 1.♖d6 ♗e6 2.c5 ♘d7 3.♘a4 ♔e7 4.♗xc6 ♘xc5! might be better for Black. Or 4.♖xc6 ♖xc6 5.♗xc6 ♗xa2.

03:00   If 1.c5 ♘d7 the position is not so great for White. Black's king is nearer to the centre and his minor pieces are all good.

03:50   1.c5 ♘d7 2.♘e4!? ♔e7 I don't like this too much for White either.

04:30   White could also play 1.♖b2 ♖c7.

05:00   1...♖c7 is probably the best response.

07:30   Maybe 1.c5 ♘d7 2.♘a4 ♔e7. Not so easy to play for either side.

09:15   1.♖b2 ♖c7 2.c5 ♘d7 3.♘a4
          Overall, if I had this position, I would prefer to be Black.

11:00   Of all the candidate moves (1.c5, 1.♖d6, 1.♖b2), 1.♖b2 is probably the safest option. Black's side is easier to play. It is easier to find natural moves for Black such as ...♗e6, ...♘d7, ...♔e7 with lots of clear ways to improve his position. However, the position should be pretty equal with accurate play.
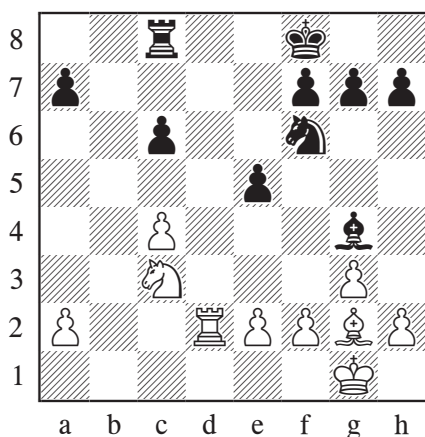   **1.♖b2**

Evaluation: 0.0

Detailed Analysis by Michael Adams

Zhang Di – Georg Meier

Internet (rapid) 2019

1.d4 e6 2.c4 ♘f6 3.♘f3 ♗b4† 4.♗d2 ♗xd2† 5.♕xd2 0–0 6.♘c3 d6 7.g3 ♘c6 8.♗g2 e5 9.0–0 ♗g4 10.dxe5 ♘xe5 11.♘xe5 dxe5 12.♖fd1 ♕xd2 13.♖xd2 ♖fd8 14.♖ad1 ♖xd2 15.♖xd2 c6 16.b4 ♔f8 17.b5 ♖c8 18.bxc6 bxc6

Initially this position looks quite pleasant for White, with a handy fianchettoed bishop, and the more active rook. However, on closer inspection this is not the case. Although the pawn on c6 looks weak, in fact both c-pawns are roughly equally vulnerable. If these pawns get swapped, the fact that the black monarch is more centralized and has an easy route into play means it is going to get active first, which will be an important factor. Black has several useful, obvious moves available to improve his position, and could constructively continue with ...♗e6, ...♘d7 or ...♔e7 if given time to do so. White, in contrast, has to grapple with some tough decisions.

19.♖b2

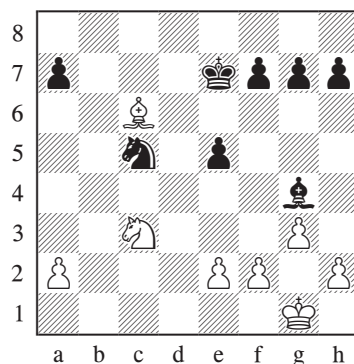This natural move was played in the game. There are two other main tries:

19.c5 ♔e7 20.♖d6 ♘d7

White's c-pawn is also not safe, even though it is no longer on a light square.

21.♖xc6

21.♘e4? doesn't protect the pawn as Black can play 21...♘xc5 anyway.

21...♖xc6 22.♗xc6 ♘xc5

White's king is rather remote from the action compared to its counterpart, so White must fight for a draw.
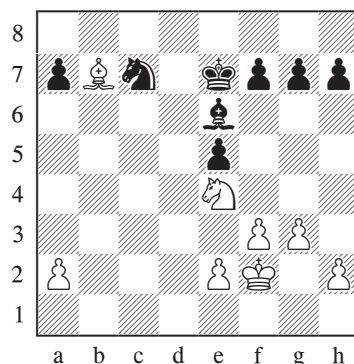
23.f3 ♗e6 24.♔f2 ♔d6 25.♗a8 ♘a6!?

This still feels uncomfortable for White, for instance:

26.♗b7

26.♔e3? ♘b4 27.a4 ♔c5∓

26.♘b5†? ♔c5 27.♘xa7 ♔b6 28.♘c6 ♘c7–+

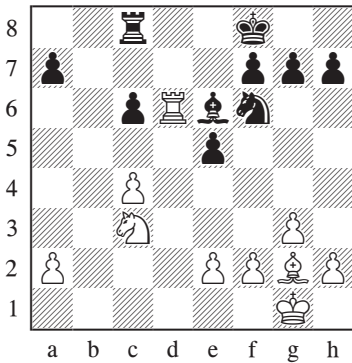**26...♘c7 27.♘e4† ♔e7**

28.a4

28.a3 ♘b5∓

28...f5 29.♘c5 ♔d6∓

White should hold, but Black would still have some practical chances.

19.♖d6!?

In the end I decided that this simplifying line is the most practical route to a draw, but it requires precise planning.
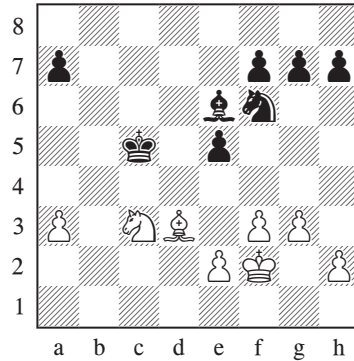
19...♗e6

20.♖xc6

20.c5?! is less precise in view of 20...♘d7 and now:

a) 21.♖xc6 ♖xc6 22.♗xc6 ♘xc5 with good chances for Black.

b) 21.♗xc6 ♘xc5 is still awkward, with ...♔e7 coming.

c) 21.♘a4 ♔e7 22.♖xc6 (22.♗xc6? ♘xc5–+) 22...♖xc6 23.♗xc6 ♗xa2 The passed a-pawn is so strong that Black has great winning chances.

20...♖xc6 21.♗xc6 ♗xc4

The black king is on a fast track to c5 so White must be careful. Still, this is perhaps the best outcome for White from the initial position, which was difficult to defend. A logical continuation would be:

22.♗b5 ♗e6 23.a3 ♔e7 24.f3 ♔d6 25.♔f2 ♔c5 26.♗d3

White should hold, especially since 26...♔d4 can be met by 27.♘b5†.

19...♖c7!

This is stronger than 19...♗e6 20.♖b7 ♗xc4 21.♖xa7 ♘d5 22.♘e4 ♖c7 23.♖xc7 ♘xc7 24.♘d2 ♗xa2 25.♗xc6= when White is out of danger.

Despite Black's passive rook, it is far from easy for White to secure a draw. The control of the b-file by White's rook isn't very important, as it just looks at open territory.
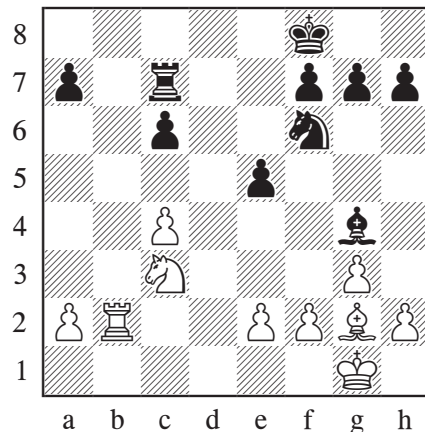
20.f4

This opens a path for the king but damages the kingside pawns.

20.♘e4 ♘d7 21.f4 ♔e7 22.♔f2 ♗e6 23.♘d2 f5 is not simple for White.

20.♖b4 ♘d7 21.♖a4 ♗e6 22.♖a6 ♗xc4
23.♖xc6 ♖xc6 24.♗xc6 ♔e7 again leads to
issues with the black king getting active.

20.♗e4!

This surprising move is best. The fact that
the bishop should be rerouted from the
active diagonal to a purely defensive role is
a clear sign that White is on the back foot.
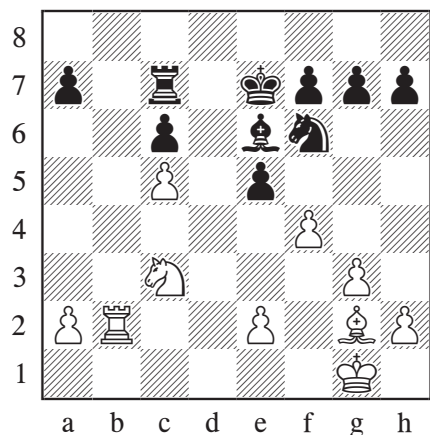
20...♗e6 21.♗d3

It seems unnatural and a bit depressing to
give the bishop such a passive role. However,
it does seem reasonably effective. For
instance:
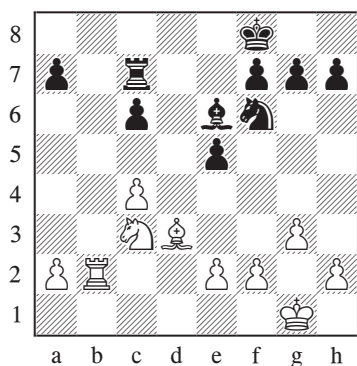
21...♘d7 22.♘a4 ♔e7 23.f3=
Intending ♔f2-e3.

20...♗e6 21.c5 ♔e7

21...♘d7!? was also promising.

22.e4?

The pawn doesn't belong here, as it impedes
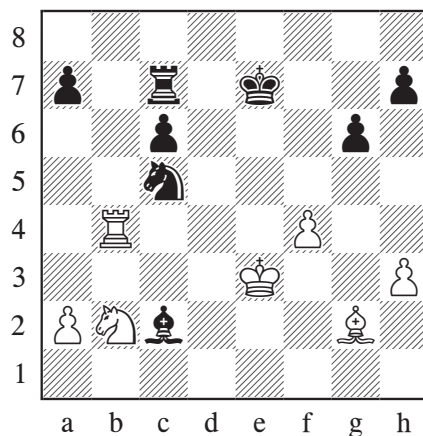White's bishop.

22.♘e4 is better.

22...g6

22...♘d7!? was worth considering again.

23.h3 exf4

Black has good options on every turn, such
as 23...♘d7!? 24.♘a4 h5.

**24.gxf4 ♘d7∓ 25.♘a4 f5 26.exf5 ♗xf5
27.♔f2 ♘f8 28.♗e3 ♘e6 29.♖b8 ♗c2
30.♘b2 ♘xc5 31.♖b4**

It's worth reflecting on how redundant the
white rook turned out to be, despite appearing
actively situated. Georg went on to convert the
extra pawn:

**31...♗f5 32.♖c4 ♘e6 33.♖xc6 ♖xc6 34.♗xc6
♗xh3 35.♘c4 ♗f5 36.♘e5 ♔d6 37.♗e8
♘c7 38.♗f7 ♘d5† 39.♔f3 ♔c5 40.♗g8
♘f6 41.♗f7 ♗e4† 42.♔g3 ♗d5 43.♗xd5
♘xd5 44.♔g4 a5 45.♘d7† ♔b4 46.f5 ♘e3†
47.♔f4 ♔xf5 48.♘f8 ♗a3 49.♘xh7 ♔xa2
50.♘f8 ♘e7 51.♔e4 a4 52.♘e6 a3 53.♔d3
♔b1 54.♘d4 a2 55.♘b3 ♔b2 56.♔c4 g5
0–1**

Indicative Scoring for Puzzle 44

Best Move	Score	Michael's Comments
1.♖b2	10	Taking control of the b-file.
1.♖d6	10	Looking to simplify.
1.c5	9	Gets the white pawn off a light square where it is vulnerable.

Puzzle Commentary by Phil

That Super-GMs evaluate better is a fact which has been demonstrated throughout this book. The stronger a player is, the closer their evaluations are to those of Stockfish. Of all the participants in these puzzles, Michael Adams was the one who gave the overall closest evaluations to that of the chess engine. In this particular puzzle, players rated under 2100 thought unanimously that White was better. Many strong players, including Juan Reyes and Keith Arkell, also thought that White was better, both evaluating the position with +0.6. The first player to recognize that the position was easier to play for Black was Michael. The game continuation and Michael's analysis provide convincing evidence for this.

Adams Insight

At first it's natural to think White must be comfortable, but after further contemplation you should become aware that this is more optical than real. Realizing when a position looks better than it is, and that you have to be careful, is an important skill, and also nearly always the first step to limiting the damage. If you don't sense the danger, you can't mitigate the risk.

Initially, the most obvious features of the position are that White's rook is more active and the bishop on g2 eyes the pawn on c6. Further contemplation shows that the knight on c3 is not well placed though. Taking a look at the black forces, the rook is not too active, but it is useful defensively. Black's minor pieces both have solid squares to head to, and have active roles to undertake working together harmoniously. Additionally, both of White's queenside pawns can be targeted. The key factor that tips the scales in Black's favour is that his king is ready to enter the game, and is clearly superior to its counterpart. Black also benefits practically from the fact that he has several simple options available to improve the position, and his next few moves are clear, whereas the way forward for White is a lot murkier. Weighing up these factors, together as a whole, shows why White is the player who should be more cautious here.