



## BOOK REVIEWS



## Build Your Chunk Database

Kjell Arne Brekke

*Intensive Course Tactics 2* by George Renko, ChessBase (CD), \$29.95

Computer databases with exercises on tactics are possibly the best way to improve your tactics. The computer has obvious advantages over books in this respect. There is no need to look up answers at other pages, and no temptations to look at the next solution when you do. You can play the solution line on the board on the computer screen, without having to spend time setting up the position on the board. If you do not understand the solution, and think the combination can be refuted, you can test the proposed refutation against the computer. If you do have a computer and want to improve your tactics, acquiring a tactics CD is highly recommended. But since the benefits are obvious, there are many competing products. Among the competing products, are there particular reasons to choose the *Intensive Course Tactics 2* (ICT2) to be reviewed below? I'll return to this question below, but first I will describe the features of ICT2.



The database is supposed to be used with the ChessBase database program or programs like Fritz, Shredder or Junior, with the Fritz interface. If you do not already own one of those programs, a "light" version of ChessBase is included and can be used to access the database, so Fritz or ChessBase is not a requirement. Those who already are familiar with using databases in Fritz or ChessBase should have no problem, but if you are unfamiliar with such databases, there is more of a challenge. The instructions are, as usual, too brief to be really helpful and essentially only include instructions on how to install ChessBase light. On the other hand the challenge should not be overwhelming. You need to understand that the program you install is not the database but a program needed to read the database. To read the database, you open ChessBase light and choose "Open database" under the file menu. Then you need to direct the program to the CD or the location on the hard disk where you have copied the content.

The database is divided into four parts: Introduction, Intermediate Level, Advanced Level and Master Level. The introduction explains basic tactical ideas, with text and graphics. The three other parts contains databases with training exercises of varying difficulty. Within each level there are four

databases: Checkmate, Material, Draw and Exercises.

An example of an explanation of the basic tactical ideas is the following. The arrows in the diagram indicate the tactical idea graphically. You can also play through the combination using the arrows below the diagram or by clicking the moves in the text. The text also explains the idea.



The main part of the CD, however, is comprised of databases with tactical problems to solve. Note the easiest ones are classified as “Intermediate.” Actually, I expect that most club players will find these problems quite simple. To illustrate consider the following example. You are given 30 seconds to find the mating combination.



I solved the major part of these problems in about 10 seconds or less. On the other hand I also had some blind spots, that is, problems which took me 1-2 minutes to spot the solution, although these were supposed to be just as easy. I believe that most players at my level (class B) would have similar experiences. There are 740 mating exercises at this level, starting at problems like the above where the allocated time is 30 seconds, to problems where the allocated time is 90 seconds at the end of the database. Since most of the problems were of the type where I spotted the solution almost immediately, I could solve 5-6 per minute. With no blind spot I could have completed the mating database in a week spending 15 minutes per day. Due to my blind spots, however, it would actually take me about 25 or 30 minutes a day to complete in a week.

Compared to other tactical databases, this database has a relatively larger number of easy problems. The question is therefore if I were to spend 25 minutes a day for a week, solving tactical problems, what would be the most productive use of time, to work on one difficult problem for 25 minutes, or solving 100 easier problems in the same time? I find it much more fun to solve 100 problems than struggling solve one in the same amount of time, and it also help build my confidence that I know a bit or two about chess. My guess is also that solving many manageable problems rather than struggling with one hard one will have the largest impact on playing strength. This guess is based on my reading of some psychological research on what constitutes chess expertise, but then I should point out that I'm not a psychologist by training. I'll return to this research below, but let me first describe the rest of the database.

The advanced level is somewhat harder, and the master level provides the hardest problems. Even in the master level I found that the problems were not terribly difficult, compared to some of the other tactical databases I have seen. The combination here is mate in 7 moves at most, and at that, it is mostly

checking. In general, in this database I experienced fewer positions I could not solve in the allocated time than I had in other databases I have seen. An example from the master level is the problem below.



As pointed out above, I do think that psychological research on chess expertise indicates that it is better to spend a large part of the time solving many moderately challenging problems, rather than spending a lot of time on each position. I was surprised when I found this body of research, since I have seen so few references to it in chess literature. 1.Rh8+ Kxh8 2.Qc8+ Nd8+ [2...Kh7 3.Qc2+ Kh8 4.hxg7+ Nxg7 5.Qh2+ Nh5 6.Qxh5+ Qh6 7.Qxh6#] 3.Qxd8+ Kh7 4.Qh8+ Kxh8 5.hxg7+ Kh7 6.g8Q+ Kh6 7.Qg6#

The seminal study was conducted by de Groot, first published in 1947. He argued that he could find no significant difference between strong and weak players in the depth of or width of their calculations. He did however conduct one experiment where the differences between strong and weak players were dramatic: that is their ability to recall a position that has been shown for only a short period of time. In a modern replication of this experiment (Ferdiand Gobet and Herbert A. Simon, 2000: "Five Seconds or Sixty? Presentation Time in Expert Memory," *Cognitive Science*, Vol 24, pages 651-682) a position from an actual game was shown for a short time period to a set of players, in three groups according to ELO-rating. The stronger player had an ELO average of 2498, and when the position was shown for 1 second, these players on average reproduced 70% of the position, increasing to 90% when they studied the position for 2-3 seconds. For the weaker players with an ELO average of 1879 the average reproduction of the position was only 25%, and to reproduce the position with the 90% accuracy they needed 60 seconds. The intermediate group ("Experts" with ELO average 2121) needed 30 seconds to reproduce 90%. So why do strong amateurs need 20 times as much time to recall the position with the same accuracy as grandmasters? And more importantly, what does this tell us about what distinguishes a grandmaster from a strong amateur?

The major theory to explain this finding, known as the "chunking theory," was

developed later by Chase and Simon in 1973. (Simon is the one who received the Nobel price in economics for his theories of bounded rationality.) Chase and Simon argued that grandmasters have a large number of chunks of chess positions already stored in the long term memory. They estimated the number of chunks to 50 000, which still seems to be the main estimate. To see why this explains the experimental results, try to look for 1 second at the ten letters: “CHESSBOARD” and write them down at a piece of paper in the order given. Recalling the ten letters is a trivial task because the ten letters are already in the long term memory. Now, try to do the same with another sequence of ten letters: XJYGHEWQVJ” which is not in your long term memory already and thus much harder. Not only are we able to recall “Chessboard” but it may induce us to envision the geometric pattern of a chessboard, or trigger other associations. The same is true with the 50,000 chunks in the grandmasters memory.

Consider the first diagram above, taken from the introductory part of the database. Many players will here immediately recognize the theme of mating with a Knight on h6. The chunking interpretation is that the king position, with the bishop in the diagonal and the knight at e5, is already in the long term memory. And just like “CHESSBOARD” we know what the position means; i.e., the thematic idea of a double check along the diagonal and mating with the Knight on h6 will immediately come to mind. There is no effort required to create the idea, no calculations required to spot the idea, but calculations are required to check that it works. For example, if the rook on f8 is replaced by a Bishop, the final position would not be a mate. Thus calculations are still essential, but the chunks helps us to identify which lines to calculate. This is consistent with de Groot’s original claim that grandmasters do not calculate much deeper but somehow calculate lines with better moves.

De Groot’s original claim that grandmaster did not calculate deeper or wider than amateurs has been controversial. A paper by Gobet and Simon from 1998 responds to some of the critique (Ferdinand Gobet and Herbert Simon, 1998, “Pattern recognition makes search possible: Comments on Holding (1992).” *Psychological Research*, Vol 61, Pages 204-208) and argue that newer evidence suggest that grandmaster calculate slightly deeper but not much wider, but also that they are more capable of calculating deep when needed. However, they argue that a grandmaster’s better ability to calculate is related to the grandmaster’s large database of chunks. I believe that this is related to the discussion above where I argued that the calculation in the example problem from the introduction would be much easier when the basic idea is spotted.

I am not a psychologist by training, so I will make no further attempt to describe this body of research. Moreover I have found no studies focusing on how to apply this theory to improve chess training. Still, the theory does offer some rather surprising perspectives on what constitutes chess expertise, and it is tempting to speculate about the consequences for chess training.

First of all, the theory suggest that the best way to train you ability to calculate is to enhance the set of chunks in you long term memory, let me call it your “chunk database.” Theory suggests that if you manage to build a database with tens of thousands of chunks, you will calculate better moves and evaluate the

final position in the calculated line, better. Whereas training calculation in a manner that does not build your chunk database may actually not help to improve your calculations. So how do we build a large database?

First, you do not build a large database from a few essential positions. To build thousands of chunks, you have to study thousands of positions. There are no quick fixes. This is why such tactical databases like ICT2 are so useful; in ICT2 there are 1511 intermediate problems, 805 advanced problems and 559 master problems.

But it does not help to look at many position if the chunks do not remain in your long term memory; so what increases the likelihood that a piece of information will stay there? Again, as a non-expert, I have read some of the literature on memory. With a caveat that many of the studies I have seen concern recall, not storing information, my reading of the literature is still that it is unlikely that you will remember meaningless information. Many annotated games just lists alternative lines, with some brief comment or perhaps only a symbol like  $\pm$  at the end. It is unlikely that you will enhance your chunk database by just playing through such lines without grasping the idea. With tactical databases this is not an issue; the point of the combination is usually evident, being either a mate or a significant gain of material.

Secondly, the brain is more likely to store the information the more “actively” it is presented. Thus, listening to someone explaining a tactical idea is thus less productive than figuring out the combination on your own. Again, this is exactly what you do when you solve problems in a tactical database.

Now the question is whether to focus on easy problems or the more difficult problems. The most difficult problems involve the most calculation, but if I am right it is better to build chunks than to train calculations. Staring at a problem for 10 minutes without a clue about the solution and then having to look up the solution does not sound like the way to go about it. The first ten minutes may have no meaning even if you calculate a lot, and looking up the solution is passively receiving information.

I have argued that theory suggests that it is best to work on many moderately difficult problems than just a few challenges. But exactly how challenging should they be? Are the problems too easy when I can solve all the 1500 intermediate problems in about 7 -10 hours? Maybe some of these hours were spent mostly to reconsider chunks that were already in my long-term memory, or it may be that these chunks needed to be used to avoid being lost? On the other hand, some of the problems I did find hard, and maybe I would not be able to spot that many missing chunks had I been working with harder (and hence fewer) problems. Research would be needed to answer those questions, and hopefully the psychologist will undertake this research soon. Until then we will have to settle for the cruder speculation, but even these I think can be helpful. The chunking theory indicates that tens of thousands of chunks are needed to play really good, and it thus seems likely that to improve tactics and calculation it is necessary to study thousands of positions. (You probably also have to play many games and study many positional problems, but that is beyond the topic of

this review.) I have argued that the positions should be moderately challenging. There is no point in spending lots of time pondering on a position without spotting the idea.

ICT2 provides a large selection of problems, but at the same time most of them are manageable, so it is conceivable to solve all of them, maybe several times. For master players there may be too many easy problems, although there are still 1350 problems left if the easiest set is excluded. But for class B players and below, I think that this would be a good place to start building their chunk database.

---

[Order](#) *Intensive Course Tactics 2*  
by George Renko

---

 [TOP OF PAGE](#)

 [HOME](#)

 [COLUMNS](#)

 [LINKS](#)

 [ARCHIVES](#)

 [ABOUT THE  
CHESS CAFE](#)

[\[ChessCafe Home Page\]](#) [\[Book Review\]](#) [\[Columnists\]](#)  
[\[Endgame Study\]](#) [\[Skittles Room\]](#) [\[Archives\]](#)  
[\[Links\]](#) [\[Online Bookstore\]](#) [\[About ChessCafe.com\]](#) [\[Contact Us\]](#)

Copyright 2006 CyberCafes, LLC. All Rights Reserved.

"**The Chess Cafe**®" is a registered trademark of Russell Enterprises, Inc.