



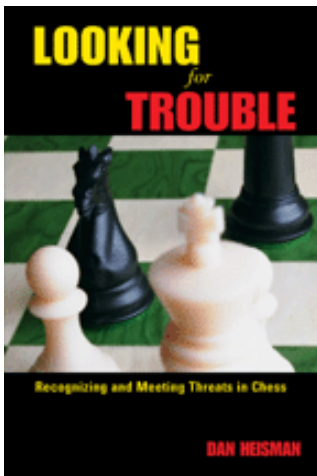
The Theory of Chess Improvement

Quote of the Month: *Even if they were born with incredible intellectual gifts, it still required about 8,000 practice hours to realize those gifts.* – Kenneth A. Kiewra Ph.D. and Thomas O'Connor Ph.D. in “Developing Young Chess Masters: What are the Best Moves,” *Chess Life*, May 2005.

COLUMNISTS

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Improvement at chess and similar activities consists of adding positives or subtracting negatives. It's as simple as that – and yet the ramifications are enormous. This simple idea suggests the following:

The Theory of Chess Improvement

Definitions:

- Learning new ideas and chess patterns are examples of *adding positives*.
- Identifying your mistakes and misconceptions, and taking steps to minimize them are *subtracting negatives*.

To achieve improvement, your efforts must include a *balance* of:

- A) theory and practice, and
- B) adding positives and subtracting negatives (within your theory or study).

“A” states that you must achieve some balance between theory and study and practice and play (see the Novice Nooks [The Road to Carnegie Hall](#) and [An Improvement Plan](#).) By “some balance” I don’t necessarily mean a perfect 50-50 division in time spent, but rather a sufficient ratio to address your study and practice needs. If you study and don’t play, you can’t apply what you are learning; and if you play but don’t study, you are likely to keep making the same mistakes repeatedly. In order for chess improvement to be effective you should first learn something, apply what you learn by playing, learn from your mistakes during play, and then repeat the process as much as possible to provide maximum effectiveness.

“B” states that your theory and study time must consist of *both* learning new ideas and patterns, and also eradicating your mistakes and misconceptions. If you study in such a way as to mostly add positives or only subtract negatives, you will eventually get diminishing returns on your time. When you reach a “roadblock” it is usually because you have to rebalance your efforts.

The above ideas are very important. For example, they help explain why you

can't get better by just studying chess books. To improve you need both practice (slow games and some fast) and theory (adding new ideas and patterns, and identifying and minimizing mistakes). *Forgoing any ingredient can cause a lack of progress, and continuing to focus on one element will result in little progress.* At many points in their career, a player needs to subtract negatives in order to improve. That is why all good players either took extensive lessons or had strong chess friends to help them.

Let's consider what it means to add a positive or subtract a negative in more detail.

Adding a positive means that you learn a new principle or new pattern (opening, tactical, endgame, etc.), or read an annotated game, or possibly even discover a better way to manage your time or your thought process.

Subtracting a negative means that you replace a misconception or a bad thought process with something better or more correct; for example, if you think that all pieces, *on the average*, are worth exactly an integer multiple of a pawn (bishops/knights=3, rooks=5, queens=9), then that is no more correct than thinking everyone in your town is exactly an integer multiple of a foot tall! Sure, those numbers are easy for a beginner to remember, but they are not at all the actual averages. So, on the average, trading a bishop and a knight for a rook and a pawn is a mistake because bishops and knights are both worth *slightly more* than three pawns (on the average)!

Or suppose you play too fast because you don't have a good thought process, or you never realized that pacing yourself to use almost all of your time is a better way to manage your time. Then once you achieve a better thought process or attain proper pacing, you are subtracting a negative (playing too fast) and replacing it with something superior. You get better.

Interestingly, the "Hall of Shame" study book that I suggested in [The Case for Time Management](#) differs from all other chess study books in that it emphasizes the subtraction of negatives, while almost all other books and videos emphasize the addition of positives.

So the more you can subtract negatives *and* add positives the better off you are. But not all negatives and positives are of equal value.

You get a much bigger impact from adding large positives (such as learning commonly occurring tactics; better analysis methods; and proper time management) than you do from small positives (like a new 12th move in a given opening). It only stands to reason that improving things you do on each move (your analysis, time management, and evaluation skills) get a much bigger bang for the buck than improving things that occur occasionally (how to mate with a bishop and a knight against a king).

Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime.

I teach my students how to add positives by themselves, so they can study and absorb new information efficiently. But I concentrate most of our lesson time on subtracting negatives, which is much harder for students to do by

themselves. One negative they *can* subtract without my help is to look up each opening after they play a game and find out what they would do differently the next time that sequence is played. But for most other negatives, such as time management or thought process mistakes, it is much easier if a good instructor helps you identify your misconceptions.

So how does one go about maximizing adding positives and subtracting negatives? In the remainder of this column we are going to deal with those issues in a more global manner. For example, how does one find as many “big” negatives as possible within a short period of time? And how do you identify what causes the negatives and how to minimize or replace them? Each is a separate issue.

Let’s start with subtracting negatives since most chess books are filled with adding positives (new opening information, guidelines, endgame patterns, and tactical problems), while there is less information about “subtracting negatives.” Interestingly, this relates to the frequent question, “Why should I hire a coach when I can go over my game with Fritz?” In “Developing Young Chess Masters: What are the Best Moves”, *Chess Life*, May 2005 the authors state:

All the young chess masters have been coached by titled players and most began regular instruction of one or two hours per week soon after learning the game.

This was so important and effective for those strong young players *because most of the roadblocks to improvement are from the failure to eliminate errors, rather than the failure to add new information.* I would estimate that 75% of my student’s errors are from not following concepts they already know. Only about 25% are because of something they did not know and need to learn. Of course, if you only eliminate errors and never learn new information that will surely stifle your improvement as well, so both methods of improvement are important and necessary.

You probably know several weak chess players who have read hundreds of chess books and strive to find more books to ignite their stalled improvement. I would bet that almost everyone in that situation would get more out of identifying and minimizing their recurring errors than they would by learning new information.

A person’s ability to identify his own errors – not just in chess – is somewhat suspect. That’s why we have teachers, quality assurance personnel, and proofreaders. Moreover, *identifying an error versus doing something about it are totally different capabilities.* While a good coach can do more than just help you find your negatives, one of the best and most common ways to identify your mistakes does not require an instructor. How is this possible?

You can’t lose a chess game without making a mistake. Moreover, the probability of winning chess points (1 point for a win, $\frac{1}{2}$ for a draw) goes down the more highly rated your opponent: 36% if he is 100 Elo rating points higher (i.e., if you are 1200 and play a 100 game match against a 1300, your expected score is 36 points), 24% (for a 200 point difference), 16% for 300,

11% for 400... Therefore a great way to find out what you are doing wrong is to play higher rated opponents and allow them to highlight your mistakes. It's a simple concept.

You make similar mistakes against *lower* rated opponents but, of course, they are less likely to punish your mistakes, and they give you less opportunity to make them. For example, suppose you are playing someone rated 300 points below you and you quickly win a piece. Then it is unlikely that your opponent will generate enough pressure on your position to force meaningful mistakes – unless you don't follow the guidelines presented in the Novice Nook [*When You're Winning It's A Whole Different Game*](#) and throw away the win. Then you probably have made an entire series of enormous mistakes that you can correct in future situations! But otherwise you are so far ahead that there will be many reasonable paths to victory. Finally, to make matters worse, weaker opponents may even play so badly as to *justify* your mistakes and *reinforce your misconceptions*! So a steady diet of weaker opponents can definitely be harmful to your game.

Conversely, playing slightly higher rated opponents provides ample opportunities for you to make mistakes! It is difficult to defeat stronger players and, even if you don't lose, a superior player will likely put you under some pressure for most of the game. Stronger players will also put up the most resistance when they are losing.

Once you have made mistakes, you need a method for identifying them, defining how serious they are, what could have been done instead, and how to prevent them in the future. Yet every player has one potentially great tool for that – your opponent! If you can get a higher-rated opponent to review the game with you then he likely will be able to help identify (sometimes too gleefully!) what you did incorrectly. Players are often “not in the mood” to go over a lost game, but this only compounds your mistakes by overlooking a great opportunity to improve. Almost all strong players took advantage of such critical “post-mortem” opportunities on their road to improvement. Luckily the possibility to play stronger players is plentiful, as most tournaments allow you to play “up” against higher rated opponents. Even on-line events often match you with higher rated players.

When going over your game with a stronger opponent, you should discuss:

- Where you could have improved in the opening. If you made a move that was “incorrect,” then your opponent can likely tell you what would have been more acceptable.
- Any tactics that either of you overlooked.
- Any moves you made which converted the game from a win to a draw (or loss), or a draw to a loss. This is called “the losing move.” It is a great exercise to identify the losing move in each game you lost – in other words, analyzing with your opponent to find the spot where an alternative move would have saved the game.
- Any other tips your opponent will offer. He may not be a super strong player, but even players at your own level know things that you don't – it would be almost impossible that your knowledge and his are identical!

So whether you are at a chess club, an over-the-board tournament, or just playing online, don't overlook opportunities to go over your games with your opponent *or any strong player who is willing to chime in* – think of these as golden opportunities to improve.

Any negative which can cost you a game is important, but the negatives that cost you many games are the most important. Therefore, repeatable errors are the ones you most want to eradicate. In my experience, some of the most common errors include:

- Playing too fast or too slow
- Having bad thought processes – such as playing “Hope Chess” (making a move but not analyzing whether you can safely meet any forcing reply), seeing a good move and not looking for a better one, or not looking for *all* your opponent's threats from his previous move.
- Not following general principles, such as not developing all your pieces in the opening or not activating your king quickly enough in the endgame.
- Misunderstanding the value of the pieces. For example, thinking that trading a rook and pawn for a bishop and knight is usually an equal trade.
- Psychological errors, such as not playing with confidence, or avoiding higher rated players for fear of losing.
- Analysis errors, like “retained images” (where you analyze and think a piece is still on a square from which it moved earlier in the imagined sequence) or making “quiescence errors” (stopping your analysis to evaluate a position when there are still tactics to be resolved).
- Evaluation errors – thinking a position is good when it is actually bad and vice versa.

Some errors are very easy to identify, and possibly even to correct. For example, if you think you are learning as much from playing weaker players as playing stronger ones, reading an article such as this one may be all you need to set yourself straight. Other errors are more difficult to correct. For instance, if you have trouble performing detailed analysis, then exercises like the Stoyko Exercise can help (see the Novice Nook [Chess Exercises](#)).

However, some errors are difficult to correct, even when properly identified. Suppose you're experiencing an abnormal number of retained image errors. In this case, although just practicing “long” analysis will help somewhat, it will not cure that particular error. Therefore, in addition, you must become more aware that this particular error can occur in your analysis and “wire your brain” to be more alert for its presence. This should result in being more careful when you mentally move the pieces. Another beneficial action you can take is to start more long analysis lines from the initial move instead of from the most recent branch. This method of analysis reduces retained images but it is also time consuming.

For example, suppose you are considering your 23rd move, and would normally look at three 25th moves after 23. Rxe6+ fxe6 24.Qxe6+ Kf8: 25.Ng5, 25.Bc4, and 25.Rf1. Upon finishing the analysis of 25.Ng5, a strong

player likely would immediately start analyzing at the position before 25.Bc4 in order to consider that move. But if you have a retained image problem, you might start back at the 23rd move, and “re-do” 23. Rxe6+ fxe6 24.Qxe6+ Kf8 25.Bc4 to make sure you envision that the rook you sacrificed on e6 is now gone, and that the Black king is on f8, etc.

Another example is playing too slow. Suppose you consistently take seven minutes to decide where to put your knight on move six. Even if someone pinpoints this problem, it may be extremely difficult to break what has become a bad habit. It’s not so easy to convince yourself that your impending time trouble will cause more harm than putting your knight on an inferior square. However, you must correct it, or you will lose 50 games because of time trouble for every one you might save by playing too slowly in non-critical situations.

This brings up an interesting point: fixing one problem can give rise to new problems. Indeed, what you need is a “cost benefit analysis.” Many things in chess involve a trade-off: taking less time *here* and more time *there* surely means that “here” may be harmed. Spend less time in studying the opening and surely you will know less about the opening. Yet harming the less critical areas is precisely what you must do in order to maximize improvement. After all, your time and resources are limited, so spending them wisely, even at the cost of other areas, is going to be your best plan.

Similarly, doing “X” may be good for your game, but doing “Y” instead may be better – or doing mostly Y with just a little X, may be optimum. Improvement is not a black and white situation – grey is often best. For example, playing all fast games is certainly better for your chess improvement than playing no chess at all, but likely not as good as playing all slow games. However, the best mix is to spend most of your practice time playing slow games, but augment that with a reasonable dose of fast games to practice openings, work on time management, develop a quick tactical eye, etc. There are many examples of the “grey is best” in the chess improvement world, just as in real life.

The best way to identify negatives and help minimize their effect is by hiring a good chess instructor. Even if you, without any help, were able to identify all your negatives – and this is unlikely – it would be difficult to assign the proper level of their effect and identify how to minimize their recurrence. If you’re interested, refer to the Novice Nook [Finding a Good Instructor](#).

One suggestion that does not require a coach is to create a “Hall of Shame” – a three ring binder consisting of positions in which you made a mistake, so as to identify and minimize them. Perhaps the position is just the one where on move six you took seven minutes to make your non-critical knight move. Or it may be a pattern you did not recognize where you missed a tactic. Under each position state what you did, why it was wrong, and what you should have done. That way you can study your worst mistakes and learn to recognize them. So, unlike most other chess books, your personal “Hall of Shame” usually contains material to help you subtract negatives, not add positives. You can’t beat that – a free study book optimized just for you!

Finally, let's quickly address the issue of making the most of adding positives. Since almost all chess books attempt to add positives, this is a much more common method of study. It's important to remember that learning some positives yield far more beneficial results than others. For example, playing over instructively annotated master game books is a great source of learning general principles, how to analyze correctly, and how to play many different types of chess positions. For annotated game book suggestions see the Novice Nooks [Chess Books and Prerequisites](#) and [An Improvement Plan](#). Moreover, the articles [A Counting Primer](#) and [The Most Important Tactic](#) help fill the void about this basic and often overlooked idea.

Another important point about adding positives is *you must know almost all of the ideas that would be normal to learn at a level before you can attain a capability two or three levels higher than that*. For example, if you don't know all the basic patterns that a 1200 player should know, then you won't understand the material that is geared towards 1700-1800 players. At *some point* in your improvement, the holes in your learning will catch up to you. This also helps explain why studying basic tactics, even if you already know 80% of the material, may be very helpful, because the missing 20% can be crucial for further development. This is known as "having a good foundation."

Moral of the story: follow the edicts of *The Theory of Chess Improvement* and your improvement should be steadier and more consistent. And, as always, good luck!

Reader Question #1

You mention that army activity/mobility is one of the most important criteria for positional evaluation, and attaining activity/mobility is one of your "Big Five" skills to build up to improve at chess. Have you written a separate piece on this? For one, I am not sure exactly what activity/mobility is (I naively think of it as the net number of squares to which I can move or over which I have control). You also say it is easy to learn, but it would be great to have it more explicitly addressed. To me it seems a lot harder than learning simple tactics. You do mention that discipline is key, and to follow a few guidelines (move each piece once before moving any piece twice), but it would be great to have a systematic treatment of this topic. Someone should put out a CD with mobility/activity as the main instructional goal!

Answer

I discuss activity/mobility in many of my works, particularly my first book *Elements of Positional Evaluation*, which was written (I hate to say it!) over 30 years ago.

You are correct that, by my definitions, mobility is quantitative. *Mobility* can be defined as the number of squares a piece can move to (*potential mobility* on an otherwise empty board; *actual mobility* in a given position). On the other hand, *activity* is qualitative; a piece that is active has either one strong thing it can do or several reasonable possibilities. But these concepts are mostly independent: suppose a piece can move to eight squares but on each one it can just be captured; in this case that piece has mobility but little activity.

The mantras of activity:

- Try to keep **all** your pieces active, all the time.
- In the opening, move every piece once before you move any piece twice, unless there is a tactic.
- If you don't know what to do find your worst piece and make it better or find an opponent piece and try to prevent it from getting in the game.
- In the endgame the king is worth about 4 pawns of fighting power. Get it into the action!

Reader Question #2

When you talk about “board vision” do you visualize an actual board or a diagram like you see in chess books? What do you visualize in your mind's eye when you read chess notation – an actual chess board, or a diagram?

Answer

Excellent question. I think you are confusing three issues.

- “Board Vision” as I mean it,
- The ability to visualize the pieces moving when you analyze, and
- The ability to play blindfold

“Board vision” is the specialized ability to recognize what is happening on the chessboard. So the more you play and study chess, especially slow chess requiring long visualizations, the better your board vision. For example, your ability to recognize a pattern and see the possible candidate moves, or a tactic already known to you in similar positions, comes from this talent.

When I read a book I play out the games on a board, but if it is a puzzle I just visualize the answer as I would during game analysis. The ability to analyze a line and see all the moves clearly falls under this ability.

The ability to play blindfold is quite different. Some players can do it quite well, while others with excellent board vision cannot.

Obviously these three abilities are related, and stronger players are likely to be better at them than weaker players. Yet it's possible that two players with similar ratings will have fairly different abilities in these three categories.

Dan welcomes readers' questions; he is a full-time instructor on the ICC as Phillytutor.



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