



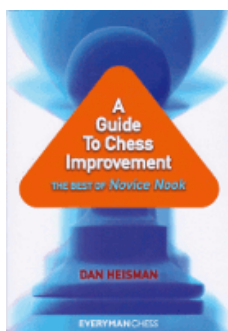
COLUMNISTS

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Counting Material

Quote of the Month: *Knowing the material situation is the primary aspect of evaluation.*

I have found that many players, including intermediates, have difficulty keeping track of the material situation when there are exchanges, especially if these exchanges feature imbalances. So in this month's column I would like to cover the following topics:

- The three main ways to keep track of material during a series of exchanges.
- The best way to express that material situation (both verbally and internally).

Both are crucial steps toward becoming a competent player. With the occasional exception of king safety, material is by far the most important [Evaluation Criteria](#). Therefore, if you can't determine the material situation when analyzing possible sequences, then you can't determine which sequence is best for you, and playing good moves in critical situations – when they are needed most – becomes problematic.

Furthermore, being able to express material in an understandable manner makes retaining information and making decisions about that information clearer and easier. For that reason, let's first address the best way to describe material balance.

Expressing Material Balance

When I ask players about the material situation in any given position, they often convert to pawns (or, less preferably, the fictional "points" – see [A Counting Primer](#)). For example, in the following position they will say, "White is ahead two pawns," even though Black has more pawns than White!

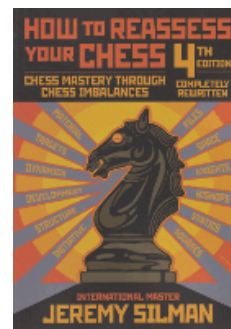


[FEN "rnbqkb1r/ppp3pp/8/4Np2/4p3/8/PPp1QPPP/RNB1KB1R w KQkq - 0 7"]

Of course they are basing their answer on what I call the Reinfeld values of the pieces (1,3,3,5,9) and, finding White ahead a knight (3) for a pawn (1), they get two pawns. This way of expressing the answer is valid, but it is *not* a good idea for two reasons:

1. Doing the extra subtraction makes the process more complex. The better answer is to express the evaluation by *providing the differences between the two armies*: "White is ahead a knight for a pawn." This is simpler because the extra step, the subtraction, doesn't have to take place. It is also more accurate because it reflects the real material

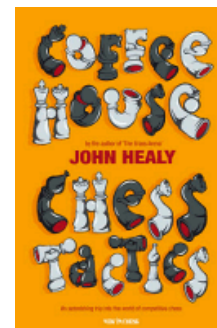
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[How to Reassess Your Chess](#)
 by Jeremy Silman



[Rethinking the Chess Pieces](#)
 by Andrew Soltis



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 by John Healy

situation and not an equivalent one (see below).

2. The Reinfeld values are not the most accurate, although they are great for beginners. So by converting the knight's value to three pawns, *one is actually taking away information and replacing it with less accurate information*. For example, in the above position it tells us much more about White's advantage to say he has a knight for a pawn than it would to say he is the equivalent of ahead two pawns. Early in the game a knight is worth on average more than three pawns (as is a bishop; that is why trading a knight and a bishop for a rook and a pawn early in the game is almost always disadvantageous). So stating that White is ahead the equivalent of two pawns slightly understates White's advantage.

It is true that when the material imbalance is complex, say a queen and knight traded for a rook, two bishops and two pawns, it is valuable information to convert to pawns to help determine who you think is better. However, in most cases the conversion is unnecessary; for example, everyone should know that White is better early in the game if he wins a knight for a pawn. However, in the endgame relative material value can change drastically. If you only have a knight and your opponent has one pawn, it is much more likely that he has the only winning chances. So in endgames it is better to simply express what is left on the board.

The easiest way to *provide the differences between the two armies* is to "discard" all the pieces on both sides that are the same value and just express what is left. This is similar to *subtracting equal values from both sides* in algebra. In the example in the previous diagram, ignore the kings, queens, rooks, and bishops, since both sides have an equal number of those. Then among the remaining pieces – knights and pawns – White has one more knight and one less pawn, and that provides the most accurate answer, "ahead a knight for a pawn."

Let's show this as if it's an equation. In the following three examples I will express White's set of pieces and then Black's. We will determine the material balance by "casting out" the equal parts:

White

K, Q, 2R, 2B, N, 6P

Black

K, Q, R, 2B, 2N, 7P

Casting out a K, Q, R, 2B, and 6P from each side's army, we get:

R vs N and P so White is ahead the exchange (winning a rook for a bishop or knight) for a pawn.

White

K, Q, B, N, 5P

Black

K, R, 2B, N, 6P

Casting out the K, B, N, and 5P leaves:

Q vs. R, B, and P so White has "won" a queen for a rook, bishop, and pawn. On the average queens are worth almost ten pawns, so this sounds like a slight advantage for White. However, Black has the bishop-pair, which on the average is worth about half a pawn. So the material is actually quite close. Thus, the other evaluation factors (see [Evaluation Criteria](#)) will probably determine who is better in this case.

White

K, 2R, 4P

Black

K, B, 2N, 3P

Here we can only cast out the K and 3P, leaving:

2R and P vs. B and 2N

This is a very unusual material imbalance. Nominally White has a very small advantage, but in practice the extra pieces can be very pesky (see [The Principle of Symmetry](#)).

For advanced advice on how to evaluate material imbalances, I highly recommend GM Larry Kaufman's article [The Evaluation of Material Imbalances](#) and, for more advanced players, GM Andrew Soltis's excellent book [Rethinking the Chess Pieces](#).

Determining Material During and After Exchanges

The first step in determining material after exchanges is to *be aware of the material situation before the exchanges took place*. I have shown students positions where one side wins a pawn and then asked them to determine the material. They sometimes answer that the side that won a pawn is ahead a pawn, even though that was not the case. This error was due to their assumption that material was equal beforehand, when it was not. So the first step is always to be aware of the current situation.

When keeping track of material during a trading sequence there are three primary methods. We will use each method to track the material from a sequence that occurred starting with move eight in **E. Myers-Heisman**, NJ Open 1968:

1.d4 d5 2.c4 e6 3.Nc3 Nf6 4.cxd5 exd5 5.Bg5 Be7 6.e3 Bf5? 7.Qb3 Nbd7



[FEN "r2qk2r/pppnbp/5n2/3p1bB1/3P4/1QN1P3/PP3PPP/R3KBNR w KQkq - 0 8"]

First, count the material. It is even. Then try to visualize the game continuation **8.Nxd5 Nxd5 9.Qxd5 Bb4+ 10.Kd1 Qxg5 11.Qxb7 Rb8 12.Qxc7**. What is the material balance?

Method One The *"total captured" method* – you keep track of each piece that is captured and at the end "add up" the captured pieces to see how the balance was affected. This is fairly difficult and prone to error.

Let's use the total captured method on Myers-Heisman: 8.Nxd5 (White has captured a pawn) 8...Nxd5 (White has captured a pawn and Black has captured a knight) 9.Qxd5 (White has captured a knight and a pawn and Black has captured a knight) 9...Bb4+ 10.Kd1 Qxg5 (White has captured a knight and a pawn and Black has captured a knight and a bishop) 11.Qxb7 (White has captured a knight and two pawns and Black has captured a knight and a bishop) 11...Rb8 12.Qxc7 (White has captured a knight and three pawns and Black has captured a knight and a bishop).

So White has three pawns for the bishop. Since White had to lose castling rights and time with his queen to capture the pawns, Black has a large advantage and went on to win quickly. The remainder of the game finished **12...0-0 13.Nf3 Qg6 14.Rc1 Bd6 15.Qc3 Nf6 16.Be2 Ne4 17.Qe1 Qxg2 18.Rg1 Nxf2+ 19.Kd2 Bb4+ 20.Rc3 Bxc3+ 21.bxc3 Rb2+ 22.Kc1 Rc2+ 0-1** I hope Eugene pardons me for using this example, because this is the kind of game anyone would like to forget!

In retrospect, 8.Nxd5? was a big mistake – the future IM missed 9...Bb4+! Perhaps he only calculated 9...Bxg5? 10.Qxf5 with a huge advantage. White should have played 8.Bf4 with advantage.

Method Two The "*running count*" method – you keep track of the *balance* of what is traded and not each piece. For example, if a series of exchanges begin with capturing a bishop with a knight, which then gets recaptured, count this part of the sequence as nothing since bishops and knights are worth about the same (but at the end check to see if someone emerges with the bishop-pair!).

Let's use the running count on Myers-Heisman: 8.Nxd5 (White is up a pawn) 8...Nxd5 (Black is ahead a knight for a pawn) 9.Qxd5 (White is ahead a pawn) 9...Bb4+ 10.Kd1 Qxg5 (Black is ahead a bishop for a pawn) 11.Qxb7 (Black is ahead a bishop for two pawns) 11...Rb8 12.Qxc7 (White has three pawns for the bishop).

Method Three The "*final position count*" method – Analyze through to the end of all the trades and visualize the final position. Then just count the material in that final position and express the answer using the ideas from the first part of the column; e.g., White has a queen and a pawn for two rooks.

Let's use the final position count on Myers-Heisman: After **12.Qxc7**, you visualize the board and see that White has a king, queen, two rooks, bishop, a knight, and seven pawns. Black has a king, queen, two rooks, two bishops, a knight, and four pawns: Result: White has three pawns for the piece.

The final position count method has strong pros and cons. One pro is that it *does not matter if you lost track of the material either before the trades or even during the trades*. So long as you correctly visualize the final position and are also able to determine the material balance, you will have the right answer. The other methods require both knowing the initial material balance and keeping track during the trades.

One con of the final position count method is that visualizing the final position and counting the material requires both a perfect visualization of the position and perfect counting of the visualization. This makes the method more difficult, slower, and prone to error. That's a good reason to avoid it, unless you are well above average at visualization. *In most sequences I use the "running count" method*, but, if I am unsure, I will double-check it with whichever of the other two methods is easier. Late in the game I am usually just concerned with what is left on the board after any sequence of exchanges.

We have discussed the need for an improving player to work on his weakest analysis skills, whether it be recognition of basic tactics, taking your time to look for better moves, visualization, or others – see [Improving Analysis Skills](#) and [Bootstrapping Analysis Skills](#). If you are looking to improve your visualization skills, the *Chess Visualization Course* by Ian Anderson can be recommended for players rated 1300-1650 USCF. *Book 1: General Tactics* has been available for several years, and *Book 2: Attack on the King* will be published soon.

Improving vs. Maximizing Performance

Some players don't really wish to work hard to improve, but they do want to maximize performance. For example, if you are not good at closed games, then studying and practicing closed games, and reviewing your play with strong players will make you a better player, because no matter what openings

you play, you can't completely avoid closed games. Anyone wishing to become a really strong player needs to be able to play all kinds of positions, even if some type of positions are not their strong suit (your performance chain is only as strong as its weakest link).

But if you don't want to study and learn closed games, then you can maximize your performance by choosing openings that minimize the chances of getting into closed positions. This approach is not nearly as effective as putting in the work to study closed games. However, this avoidance (or at least minimizing exposure) of areas where you are weak is a plausible workaround if you have very modest improvement goals.

If you have an instructor, you might want to discuss this issue. Make sure you are on the same page as to how much you expect to improve, how much work you are willing to do, and whether the instructor is putting you on the path to improvement or just helping you maximize performance. If you are playing in the World Open, then short-term maximizing of performance makes some sense. However, if you are looking for long-term improvement and are primarily focusing on opening selection, this approach probably will not be sufficient.

Question Checks, captures, and threats is the mantra, combined with evaluation of the position both prior to and after a contemplated move. Failure to think about what happens after is "hope chess." Would you agree that any mental process that includes these crucial elements, and which a player can stick to, is a good mental process?

Answer I would say that any thought process that *excludes* consideration of whether your candidate moves are safe, especially for any analytical move, is a deficient one. It is possible to consider an opponent's potential replies and still have a deficient process if it misses other key elements, such as asking yourself whether your opponent's previous move was safe; what are *all* the things the opponent is trying to do; see a good move, look for a better one, etc.

I covered some of this in [A Generic Thought Process](#). Another is [Making Chess Simple](#). If you just want to practice the "checks, threats of mate, captures, other threats," then one exercise you can consider is the "PV" Exercise (#3.2). I cover this on my website's [Exercise page](#) – This exercise is easily accomplished via a practice slow game with a friend.

Question I've discovered the core of my chess problem: I play hope chess. I'm trying to break the habit, but, after years of doing things the wrong way, it's very hard. Do you have any advice?

Answer There is no magic. Eliminating bad habits begins with intent and continues with perseverance. Practice asking [Is It Safe?](#) about each candidate move. Meaning, "in the position that this move creates, does my opponent have any check, capture, or threat that I cannot meet?" By studying basic tactics repetitively, you can quickly and accurately recognize safety issues, and you will get better and better at answering that question correctly.

Getting out of the Hope Chess habit requires a combination of good and consistent thought process and tactical recognition. And have faith; everyone can do it, once they practice and get in the habit. Getting into this habit requires playing many slow games (trying to take almost all your time each game). Playing too much fast chess will leave you with too little time to develop good habits (see [Intermediate Time Controls Hinder Improvement](#)).

Phillytutor.

Yes, I have a question for Dan!

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