

## Those #@#S#%# Tie Breakers: An Explanation by Tom Doan

In the days before the explosion of scholastic chess, tie breakers were generally of minor interest. Prizes in most tournaments were cash, which could be split evenly among any number of players. Occasionally, some method of breaking ties had to be brought to bear if a tournament had a single “championship” trophy and possibly more than one player tied for the top score. But few players would ever be affected by this.

In scholastic tournaments, however, the *only* prizes are trophies, which have to be ordered well in advance. An organizer can't stock a bunch of extra “first place” trophies to cover any possible ties. Instead, we have to fall back on the use of tie breakers to decide who gets first place, second place, etc.

The tie breaking mechanisms that are commonly used in professional sports rarely have any usefulness for chess tournaments. The “head to head” tie breaker, which settles a pretty high percentage of ties in other sports, isn't very helpful when the highest finishers don't play each other. In chess, we might need to rank order as many as twenty or thirty players with the same score. For example, in the 1998 Nationals, K-3 section, there were twenty-seven players at 5-2, ten of whom won trophies.

The point of any tie breaking procedure is to determine which of a set of players with the same score had the “best” tournament. One's first thought might be to use the performance rating; in effect, ranking the players based upon the average rating of the opponents. That, however, doesn't work very well when perhaps 1/4 of the players have no published ratings, and another 1/4 have ratings which don't adequately measure their playing strength.

The simplest of the main chess tie breakers is called the *Cumulative*. For each player, this sums up the scores at the ends of all the rounds. If Player A won his first four games and lost the last round, and Player B won two, lost the third round, and won the last two, the players' scores at the ends of the rounds are: Player A: 1,2,3,4,4      Player B: 1,2,2,3,4

Player A's cumulative is  $1+2+3+4+4=14$ , Player B's is  $1+2+2+3+4=12$ . The cumulative tie break measures strength of schedule indirectly. By Swiss System pairing rules, players who do not lose until later rounds (and thus have high cumulatives) will usually face tougher opponents than players who lose in early rounds (and thus have low cumulatives).

The Cumulative tie break has the advantage, compared to all the other real alternatives, that it is, in effect, known even before the final round begins. The only change made by the final round is to add onto each player's previous tie break their final score. But if the players end up in a tie, the final scores match, so the old ordering is still valid.

The other two commonly used tie breakers are the *Solkoff* and the *Modified Median*. A player's *Solkoff* is the sum of his or her opponents' scores. The *Modified Median* is similar to the *Solkoff*, but the “least meaningful” results are left out. For players with plus scores, the lowest opponent's score is discarded. For players with minus scores, it's the highest score. For even scores, both the highest and lowest are discarded. (More scores are eliminated for tournaments with nine or more rounds.) For instance, suppose two players with 4-1 scores met players who ended with the following scores:  
Player A: 0,3,3,4,5      Player B: 3,2,5,3,3

Player A's Solkoff tie-break is  $0+3+3+4+5=15$ , Player B's is  $3+2+5+3+3=16$ . Player A's Modified Median is  $3+3+4+5=15$  (discard the 0) and Player B's is  $3+5+3+3=14$  (discard the 2). If we use Modified Median first, A ranks higher than B; if we use Solkoff first, B ranks higher than A.

The standard USCF tie break order is to use Modified Median, then Solkoff, then Cumulative. Players are ranked first by points, then by Modified Median. Where two players have the same Median, they are ranked by their Solkoff. If players have identical Medians and Solkoffs, the Cumulative is tried. On the rare occasions where those three main tie breaks all agree, there are some others that can be brought to bear, though the reality is that they are scarcely more useful than a coin flip for breaking a tie between players who are so close.

For CoChess scholastic tournaments, we have chosen to switch the order to Solkoff first, then Modified Median, then Cumulative. With most tournaments being just four or five rounds, discarding a score as in the Median was deemed too likely to distort the results.

For team trophies in K-8 scholastic tournaments (and Nationals), tie breaks are determined by summing the individual tie breaks. If, as is usually the case, we are using the top four scores, then we take the four highest scorers from each team and add up their tie breaks. Where a team has a tie for the bottom spot, the players with that score, but with the highest tie breaks, are used. The tie breaker that has usually been used is Cumulative, and, in fact, it was, until recently, the only team tie breaker available in most pairing programs, forcing the TD to pull out the calculator in those (thankfully) rare cases where the tie breaks matched. CoChess is now using the Solkoff as the main team tie breaker with Cumulative as the backup.

The IHSA Championship (and many other high school tournaments) and the US Amateur Teams need a different form of tie break, since their tournaments consist of team versus team matches. The "individual" tie breaks ignore the magnitude of a victory, treating a 4-0 win the same as 2.5-1.5. The simple alternative of using total game points ignores the quality of the opposition: a good team which loses early and then mows down weak teams for two or three rounds can build up a big tie break lead over a team which ekes out wins over stronger teams and finally loses a late round match. The US Amateur Team's tie break is to value each round as the sum of the opponent's final match score times the points scored against that team. For instance, a 2.5-1.5 win over a team which scored 4-1 is worth 10 ( $2.5 \times 4.0$ ), while a 4.0-0.0 win over a team which scored 2-3 is worth 8 ( $4.0 \times 2.0$ ). The IHSA's tie break is similar to this.

Any tie breaking procedure has cases where it seems a bit unfair. For instance, in our example with the two players above, Player A is badly hurt in his Solkoff by his first opponent being shut out - it isn't too much of a stretch to figure that he would have beaten a stronger player. On the other hand, Player B can argue that she didn't get any pushovers, and shouldn't be penalized by having a fairly high score tossed out if Modified Median is used. Fortunately, the main tie breakers agree (or at least don't conflict) about 80% of the time in shorter tournaments, and have an even better track record in longer tournaments.