

# MASTERSBALL

## SGP Theory

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*A Discussion of Standing Gains Points Theory: The Epiphany*

Hold on, don't worry. I'm not about to announce that I have switched allegiances and gone over to the dark side, quite the contrary. But I am going to explain why the valuation system we endorse here is not as dissimilar to the standings gains points as some may assume.

For those that are unfamiliar with the concept, the standing gains points valuation system, commonly referred to as SGP, assigns value to players based upon how many points in the standings their production is estimated to yield. In a nutshell, if it is expected that it will take 5 HR to move up a spot in the HR category, a player hitting 20 HR earns 4 SGP. This is done for all the categories and the SGP are summed. Total value is then distributed proportional to the players contribution to the total amount of SGP. This is a watered down explanation, as the real calculation takes into consideration that you must spend a minimum of \$1 for each player and adjusts the prices accordingly by incorporating marginal SGP.

The number of statistics theorized to gain a point in the standings is termed the SGP denominator. The SGP denominator is determined by using linear regression on a representative sample of the previous year's standings for a specific style league. It is assumed the difference in SGP denominator from year to year is close enough to yield accurate values. Many opponents of SGP methodology cite the guesswork involved with SGP denominator computation as a major flaw of the system. I have presented a study showing that there is actually a pretty large acceptable margin of error with the SGP denominators, so the employment of previous year's results to model the following year is not a major flaw of the system.

So even though the SGP denominator is not a real problem of SGP methodology, the process is indeed imperfect. But before I reveal to some and remind others the exact nature of these shortcomings, I would like to take a little time to explain my philosophy in these matters.

While I have been involved with fantasy baseball for over ten years, I have studied, taught or worked in the sciences for twice that, presently as a Peptide Chemist but I have experience in organic chemistry, biology and biochemistry as well. As such, I approach many facets of fantasy baseball from a scientific perspective, most notably the theory of player valuation. It is not enough for me to simply accept something "because it works". Unless I understand why it works, I cannot be sure it will continue to work if the game changes. These changes can be related to baseball itself, as statistical trends change or they can be internal to the game of fantasy baseball such as the use of alternate scoring categories or roster requirements.

While the basis of assigning value based upon expected gain in standings seems elegant enough, there are some contradictions to this principle that manifest when you do the calculations. Yes, here it comes, the fundamental flaw in SGP methodology.

A point earned in home runs is the same as a point earned in any of the hitting categories, they all count equally. Therefore, in theory the number of standings gain places in all the categories should also be the same. It is a logical progression. Furthermore, there is a definable number of standings gain places per category. In a 12-team league, the next to last place team procures one SGP, the top team eleven and the rest are slotted in between, yielding a grand total of 66 SGP per category.

But something odd occurs when you run the numbers, In a study we performed a few years ago, the number of SGP across the hitting counting categories for the 2004 season are HR-250, R-351, RBI-320 and SB-155. Not only are they different, they are all two to three times the theoretically expected number of 66. The

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scientist in me is bothered by this. The results do not corroborate the theory, something is amiss. This is the root of the fundamental flaw of SGP methodology. The end result is budget is distributed disproportionately across the categories which is a violation of basic valuation theory. As a side note, ratio stats such as batting average can be handled in a like manner, but the process is a bit involved and their inclusion is not necessary to make the ensuing points.

Let's take this a step further and ascertain the cause of this discrepancy. The original premise is that value is awarded per standings gain places the player renders. But an extremely major point is being overlooked. A team cannot begin to amass points until they accrue a baseline level of stats, which is equal to that accumulated by the last place team in each category. Using the data referenced above and speaking in SGP language, the following number of SGP are needed to achieve the baseline (last place) number of stats: HR-14.7, R-23.2, RBI-20.5 and SB-7.2.

Observe the variation in that data, there is a significantly different number of baseline SGP necessary across the categories. Now consider the repercussions. A player is awarded SGP per category and then they are all thrown into the same pool. After an adjustment for the fact you are obligated to spend a minimum of \$1 on each roster spot, the remaining SGP comprise this adjusted pool. Value is then allocated as a percentage of one's SGP with respect to the money dedicated to hitting. The key is all the SGP are blindly pooled together. If the conclusion is drawn that some of these total SGP are actually going towards gaining the baseline level of SGP before actual standings point are earned, it follows that some of the SGP provided by a stolen base specialist actually help overcome the barrier in the other categories, as the barrier for stolen bases is the lowest of the group.

The resultant effect is stolen base specialists are cheated out of value. Theoretically, the SGP barrier for stolen bases should be attained via SGP emanating exclusively for stolen bases, but alas, they are not. As such, SGP undervalues stolen base specialists. A similar approach shows closers are likewise undervalued.

As just suggested, by rights the last place barrier for each category should be compensated for by SGP earned in that particular category. Above, the numbers of SGP obligatory to begin to earn value in each category are presented. Let's do the following. By multiplying each by 12, we arrive at the total number of SGP needed for everyone to be able to rise in the standings. The numbers (rounded) are as follows: HR-176, R-278, RBI-246 and SB-86. If we subtract these from the total SGP per category, we end up with: HR-74, R-73, RBI-74 and SB-68.

Recall earlier that it was theorized that the available SGP per category was exactly 66. It certainly appears that we are pretty darned close. The small disparity is due to the fact that we attach positive value to exactly enough players so that each team has a complete roster, in this case 168. In the course of the season, injuries, slumps, cross-league trades, minor league call-ups and category management dictate utilization of more hitters than the 168 top earners.

What does this all mean? Not only was a flaw in the methodology elucidated by observing how the contradiction between the expected and actual number of SGP per category, but a manner to counter this error was presented that culminated in results that matched those theoretically derived. These are the type of results that give the scientist in me the warm and fuzzies. We ended up with a neat little symmetrical exercise that first uncovered the flaw in SGP methodology, then went on to substantiate this pitfall logically and numerically.

Truth be told, this is not a whole lot more than was originally presented, it just approaches things from a slightly different perspective. But after thinking about the process in this manner, something struck me. I

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could envision viable SGP based methodology that properly accounted for baseline stats. Remove that shortcoming and we may actually have something.

Then it hit me--the epiphany. What we would have is nothing more than a slightly tweaked version of the REP method we champion here. The two methods are really not "Red State-Blue State" at all. They are linked by a common bond, the reliance upon linearity to partition value. SGP utilizes linear regression to obtain the SGP denominator. By the nature that REP assigns value directly proportional to the contribution in each category, it is assumed that distribution of the stats throughout the category is linear. In effect, the linear regression employed by SGP is analogous to the aforementioned assumption. REP and SGP are not that dissimilar.

It should be pointed out that an identical analysis can be done on any league format, not just the one presented herein, resulting in the same conclusions—SGP unequally allocates money across the categories and this misallocation can be fixed by having each category barrier be overtaken by SGP from that category.

You might be wondering just how much do values calculated by the two methods differ? We evaluated some data from the 2003 season. In short, stolen base specialists Carl Crawford and Alex Sanchez earned \$9-\$10 more in our system while players that steal a lot but contributed in other categories like Carlos Beltran and Alfonso Soriano earned \$4-\$5 more. Sluggers that rarely steal like Manny Ramirez and Carlos Delgado picked up this difference, earning \$3-\$4 more in SGP.

To conclude, I will leave you with a thought that you very well may be pondering already. If the SGP system is so flawed, yielding inaccurate values, then why has its deployment persisted, if not prospered over the years? People obviously have enjoyed bountiful success using values generated by this fallacious method. And how does someone like your scientifically-rooted author come to grips with the fact that the more theoretically plausible system plays Burger King to SGP, fantasy baseball's McDonalds? The answer lies within the fact that a precise dollar value is a fool's errand – that there is so much more to determine what a player is "worth" than can be represented in a calculation, but the method we deploy nonetheless is more appropriate.