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Changing Baseball Forever

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Hidden in the back rooms of any modern major league baseball franchise are a select few individuals that are drastically changing the way teams operate. Using numbers and borderline obsessive tracking of each player’s every move, they see things that elude the everyday baseball fan. These are the baseball analysts. Although they do the research that can potentially decide which player becomes the face of the team, these analysts can likely walk the city streets without a single diehard fan knowing who they are. Baseball analysts get almost zero publicity. However, their work is clearly visible at any baseball game. A catcher’s decision to call for a 2-0 curveball to a power hitter, the manager’s choice to continuously play a hitter that’s only batting 0.238, and a defensive shift to the left that leaves the entire right side of the infield open are all moves that are the result of research done by analysts. Some of it may make no sense on the surface, but in a game where slight advantages can give you a huge edge over the opponent, every little bit counts.

The work done by baseball analysts stems from Bill James, the pioneer of advanced statistics (“Bill James”). James is the creator of many different ways teams measure player performance, including runs created (RC). RC is a formula that combines a hitter’s output in numerous individual offensive statistics to measure how many runs that player contributes to the team. Of course, it is only theoretical, but the numbers are useful. For example, a team can calculate the Runs Created for two players that are battling for a spot in the lineup and determine which player would theoretically help the team produce more runs. This new-age statistic is an example of sabermetrics. Technically speaking, sabermetrics are complex statistics used to quantify a plethora of baseball situations in order to reveal things that basic statistics keep hidden. They allow us to see beyond the box scores and reveal what exactly is going on.

Baseball is a complicated game. A pitcher’s earned run average (ERA) may give an idea of how dominant he is, but it is horrifically skewed. ERA measures a pitcher’s average number of earned runs, i.e., runs scored not through an error, given up in a nine inning game. It is as basic as it gets when it comes to pitching stats, and it’s the most popular. However, ERA does not nearly tell everything. For example, a pitcher plays his home games at a ballpark with a really short fence in left field. If a batter hits a home run over the left field fence that would have been caught in any other ballpark, the pitcher’s ERA still goes up even though the run that scored is a situation of a unique circumstance. In another ballpark, an identical pitcher allows a batter to hit the exact same fly ball to left field, except this time it is caught for an out. That pitcher’s ERA is lowered. If the two pitchers are identical, any variance in ERA is purely a difference of luck and circumstance. In order to level the playing field, ERA+ comes into play. ERA+ adjusts a pitcher’s basic ERA based on the ballpark that he is playing at and the league average ERA (“Adjusted ERA+ Definition”). The average ERA+ is set to be at 100, so any pitchers with an ERA+ over 100 are considered to be above average. Ideally, two identical pitchers playing at different ballparks should have the same ERA+.

Sabermetric stats, like ERA+, allow teams to get a better idea of how valuable a player is in comparison to others. It is an analyst’s job to use these statistics to find out things that may be of use to the team. But baseball analysts do much more apart from formula-driven statistics. They work for hours on end replaying video of a hitter’s every at-bat to find their weaknesses and tendencies. After viewing hundreds of plate appearances, trends can be seen. An analyst may notice that a hitter likes
to chase curveballs on the first pitch or is hesitant to swing on anything up in the zone when they are ahead in the count. Also, it could be clear that a hitter really knows how to crush a specific pitch in a certain area of the strike zone while they cannot make contact with others. Then, after the hitter makes contact, the analyst maps out where the ball was hit and what kind of contact it was. If a trend shows balls being hit more often on the ground to the right side than to the left, it may be beneficial to shift the infield to the right. After all, there is no use in having a fielder defend a portion of the infield where the ball is not likely to go. A shift could give the defense an advantage over the hitter; balls hit in one spot that would normally result in a hit could instead lead to an out. These advantages add up. Preventing the other team’s offense from producing by using careful analysis could potentially avoid runs from being scored and, thus, lead to more wins.

An analyst’s work regarding individual players’ results is evident regarding pitching and defense as well. For pitchers, an analyst could study each of their pitches over time and measure variances in speeds or degrees of movement. This could show trends that could help predict how effective the pitcher will be in the future. Defensive analytics could include how much range a fielder has when fielding their position or how efficient the path an outfielder takes to a fly ball is. There is no way that simple statistics could tell anything about things like this because all of the common statistics only give information about outcomes. Sabermetrics give information about efficiency and ability. Analytics help teams understand more about a player’s skills in each phase of the game.

When putting a team together, baseball analysts can help the franchise run efficiently by saving money. Using advanced statistics, teams can find players that are not necessarily valued high by other clubs but theoretically are productive. If a player does not have high value, they will most likely not require a large contract. This allows teams to fill spots on the roster with players that fly under the radar but end up playing key roles.

A perfect example of this was the Oakland Athletics 2002 season outlined in Michael Lewis’s book, *Moneyball*. Going into that year, the A’s needed to replace three of their key players through free agency. The only problem was that they could not spend big money on a player with high market value. To replace the lost offensive production, General Manager Billy Beane used advanced statistics to find players that were undervalued by other teams. Beane focused on signing players that got on base in any way or hit for power. Unbelievably, the Athletics ended up winning 103 games, including a 20-game win streak, and easily made the playoffs. Because they focused on finding bargain players, “the Oakland A’s had paid about half a million dollars per win” (Lewis). This was incredible because, in contrast, “[t]he most profligate rich franchises…paid nearly $3 million for each win, or more than six times what Oakland paid.” Oakland’s success that year was so remarkable that Lewis’s book was even made into a major motion picture in 2011 starring Brad Pitt and Jonah Hill.

Among the key acquisitions that year were Scott Hatteberg and David Justice. Hatteberg, an injury-prone catcher, was not receiving many offers from teams because of the risk. The Athletics had an opening at first base and Beane decided that since Hatteberg had a history of getting on base, he would take a chance and let him learn first base. Because he was not wanted by any other team, Beane was able to sign him for less than a million dollars (“Oakland Athletics 2002 Salaries”). Similarly, David Justice was not being pursued by many other teams because he was aging and on the decline. As a former power hitter, Justice also knew how to draw walks and get on base. In 2002, he only hit 0.266 but had a whopping on-base percentage of 0.376. Justice signed for $7 million. Both Hatteberg and Justice signed contracts well under their production value.

The creativity that led to the Athletics’ success in 2002 was sparked by baseball analysis and sabermetrics. Beane’s ideas at the time were foreign to the baseball community; every decision they made was scrutinized by the public and media because it seemed so unorthodox. Normally, a team would just pursue the players that produce the most runs and have direct offensive output. Instead, Beane decided to create runs through simply getting on base and relying on the probability that some
of those baserunners would end up scoring. In result, this strategy won the Athletics 103 of 162 games in 2002.

Since the Moneyball year, teams around the league began to alter how they approached the game. Basically everything changed. Teams began hiring analysts to do intense research in order to come up with new ideas that would help them stay ahead of the opponent. Sabermetrics came to the forefront and began to play a role in how teams made player decisions. Simple scouting reports were not enough anymore, and advanced statistics were finally appreciated. Kevin Towers, the General Manager of the San Diego Padres, put it this way: “You’re crazy if you are blind to the value of sabermetrics as a way to supplement scouting reports. There are trends you can see in numbers that you might not pick up in scouting reports. The organizations that are not open-minded and not willing to think outside the box are going to be in trouble” (qtd. in Coffey). Towers is correct because baseball is always evolving. Staying up to date on the newest ideas is key to being able to run a team efficiently and successfully.

The Boston Red Sox took action pretty quickly after the Athletics’ iconic season. On November 15, 2002, the Red Sox hired famed baseball analyst Bill James, himself (St. John). In fact, the Red Sox were so impressed with Billy Beane’s work in Oakland that they tried hiring him just days after the 2002 season ended. Beane backed out, but Bill James was enough. Just two short seasons later, the Red Sox won the World Series in 2004 for the first time since 1918. That championship was not a fluke, too, because the Red Sox won two more World Series championships in 2007 and 2013. Much of their success has been credited to Bill James and his work. To win the World Series in 2013, Boston had to rebound from a last place finish in 2012. The offseason that followed included a restructuring of the roster. Similar to Oakland’s 2002 season, Boston signed a bunch of players that seemed like they just came off the scrap heap. But once again, the front office’s pristine work and research led to great success. The Red Sox are a perfect example that using baseball analysis not only wins games, but it also wins championships.

Analysts are important in the draft, as well. When a team considers which player to select in any of the 40 rounds of the MLB First Year Player Draft, it comes down to who has the best chance at being an impact figure in the major leagues at some point. It is difficult to find players that the general manager, analysts, and scouts can agree on because every player has their strengths and weaknesses. The players that are taken in the later rounds are especially difficult because they are always big risks; otherwise, they would not be available at that point in the draft. Scouts go and visibly get an idea of what a player’s strengths/weaknesses are and put together a scouting report. Analysts watch a player and find things that may signify potential or future failure. Although these two sides seem similar, they rarely go hand in hand because the scouts and analysts focus on such different ideas when evaluating a player.

A player being taken in the draft is selected because he has clear potential to play in the majors, has an intriguing combination of abilities, or a scout or analyst has a gut feeling about him. In a 40 round draft, almost all of these players never play in the majors. This improbability of individual success is so drastic that “[f]ewer than 10% of drafted players spend even a single inning in the big leagues” (Reiter). Of course, almost all of these players are taken in the first few rounds of the draft. Very few selections in the latest rounds end up ever paying off at all. Being able to compete yearly is dependent on drafting well and having players come to the majors from within. Otherwise, a team will have to spend big money on free agents that are already established as impact players. This is why drafting well is important. In order to have effective drafts, a team needs scouts and analysts that know how to make the correct decisions when choosing between players.

One of the greatest drafts of all time was performed by the St. Louis Cardinals in 2009. Current Astros General Manager and former Cardinals scouting director Jeff Luhnow ran the draft. The Cardinals had a history of drafting well, but this one topped them all. In 2013, just four short years after the draft happened, five of St. Louis’s 25 active roster players were acquired in that draft.
What’s even more remarkable is that these five players were not bench-fillers. All five were vital to their success that ultimately led to a matchup with the Red Sox in the World Series. This includes: “second baseman Matt Carpenter, their leadoff hitter and WAR leader; first baseman Matt Adams; righthander Joe Kelly, who is likely to start Game 3 against Boston; closer Trevor Rosenthal; and righthander Shelby Miller, a 15-game winner who ranked 10th in the NL in ERA (3.06)” (Reiter). Luhnow and his team were able to find successful players in the later rounds, which really separates this draft from the rest. They did this by using a sleek combination of scouting, analytics, and following gut feelings that separated individual players from a pool of well over a thousand.

Luhnow’s work throughout his time in St. Louis gained him enough recognition to get hired as the General Manager of the Houston Astros in December of 2011. He took over a weak team with an even weaker minor league system and embarked the franchise on a total teardown. Trading almost every major league asset since for prospects and minor league depth, Luhnow has created arguably the deepest and most impressive minor league system in all of baseball. In fact, the Astros placed first overall in ESPN’s annual ranking of all 30 farm systems this year (Law). To improve the major league roster, Luhnow and the Astros have focused on using analysis to find what works. The men that hold the front office positions in Houston are overqualified and have titles such as “Director of Decision Sciences.” The Astros have been so committed to trying to run efficiently during their rebuild that their 2013 team payroll was less than what some individual players in the league make in one season. To this point, there has not been progress in the wins/losses category, but many experts have praised Luhnow for his work and project the Astros to be a powerhouse in the near future. This is due in part to the front office group that includes some of the smartest figures in all of baseball. The Astros front office includes graduates of University of Pennsylvania, Harvard, Yale, and Georgetown, along with a NASA engineer. Apart from being a group of complete baseball nerds, the Astros have a smart group of people running the show.

Getting a job in baseball is a difficult task. There are so few baseball analysis jobs out there that the ones that do end up being hired tend to be overqualified. Of course, there is no specific college major that would best suit a career in baseball so there are multiple paths.

Jeff Luhnow has bachelor degrees in both engineering and economics along with an MBA. In an interview, Luhnow explained how he was one of the few that were asked to join the industry, so he did not have to break in at the lower ranks. “I also came in at a high level because I had three successful careers prior to baseball,” Luhnow says.

Overall, baseball analysis is an extremely difficult career to just break into. There are so many people that aspire to obtain the same few jobs that it is unreliable to depend on being hired. Much of the hiring process in baseball is luck and knowing the right people at the right time. Luhnow believes that the best way to break into baseball is to build connections. “Get to know as many people in the industry as possible and don’t focus on the people on the top, focus on the people on the front lines,” Luhnow explained. The best way to do this is to either attend games and try to befriend scouts or to do some of your own research and try to share it online with people that already work in baseball.

After connections have been made, the initial job quality is poor. Luhnow describes that if you are going to break into the industry at the front lines, you usually begin as an assistant to a scout working for free. If you are not scouting, most teams have internship programs in the front office. “[B]ut even after a successful internship, many find there are limited opportunities for full time work,” Luhnow notes. Pursuing a job in baseball requires commitment and passion. It is not always the one that has the flashiest degrees that gets hired; it’s whoever shows the team that they can help them be successful in any way. Luhnow says that “the two key areas are problem solving skills and communication skills.” He also points out that “[r]esumes don’t get people hired, connections and knowledge help more than a resume.” So, preparation for a job in baseball is not dependent on just studying hard and building flashy accolades. College major is not a huge factor. Of course, math and
science helps on the analysis side of things, but the skills required to work in baseball can stem from a wide variety of college majors. There truly are many different ways to break into the baseball industry, and most of it comes down to commitment and passion.

Once a baseball analyst is successfully hired, it is a really enjoyable career. Life in baseball is hectic and busy, but definitely different than any typical career because the lucky few that hold those jobs are as passionate about baseball as it gets. Luhnow describes baseball life as “long days, long hours, no weekends to yourself, but otherwise a very rewarding career because you are doing what you love.” As teams are more openly using analytics in their everyday operations, there are more jobs being created. Looking to the future, there should be even more openings. A downside to the baseball job market is that it is extremely demanding in terms of producing success. If it is clear that a team is not running efficiently and successfully, employees get replaced. This will never change, as teams will always demand the best. Overall, holding a job in the front office of a major league baseball franchise may be one of the more rewarding careers out there.

Today, baseball analysis is vital to the success of any major league team. As a game of advantages, baseball teams need to get ahead of the opponent in any way possible. Since the turn of the millennium, professional baseball teams have gone from disregarding sabermetrics to embracing it in every move they make. Past success shows that these strategies work, too. Looking to the future, the analysis used by teams is bound to only increase as new strategies and ideas unfold. Getting a job in baseball may be difficult, but it is enjoyable and gratifying. The lucky few that sit in the back rooms of Wrigley Field or Minute Maid Park have changed the science of baseball forever and are the reason teams approach the game the way they do today.

Works Cited


Luhnow, Jeff. E-mail interview. 7 Feb. 2014.

