

# Baseball and its Technological Revolution



In today's world, live professional sports make up a massive portion of modern-day entertainment and due to many technological advancements the broadcast experience of today is a stark contrast to that of the past. How has technology revamped not only the fan experience, but also the sports themselves? To answer this question I've decided to focus on a sport that has consistently been at the forefront of technological innovation. This sport is baseball.

## Why Baseball?

I've decided to focus on baseball for number of reasons. Firstly, on the surface baseball is a sport which is easy to grasp; it can essentially be broken down into multiple duels between the pitcher and the batter. However, most importantly it has a long history of incorporating new technology into the sport whether that be, the now replaced, PITCHf/x system used to track pitches, the umpire review system similar to VAR or TMO in football and rugby, or most importantly Statcast. Statcast has become one of the most ground-breaking systems in sporting technology and has completely changed the world of baseball since its introduction in 2015. What is it? Well, Statcast utilises radars and two high-quality cameras placed in specific points around the stadium to replicate the binocular vision of the human eye and provide depth perception. This means the system can track not just the ball, but also all the players on the field. This has opened up fans and teams to previously unattainable data and ushered in a new wave of statistics. If you want to know something as simple as how far a home run travelled, or something as complex as knowing the release point of a pitch, it's all available through Statcast. In fact, so much data is gathered that a typical MLB game generates seven terabytes of data, with most of it being used for averaging purposes, but can also be used by broadcasters to share interesting stats and anomalies throughout the game or accessed by interested fans online. These technologies have played a huge role in shaping the game of today, but they have also not been without their flaws.

## **Barry Bonds, Pine Tar and a Bin**

Technology in baseball has at times been used unethically, as it has been used at times by teams or players to gain an unfair advantage over others. There has however always been a history of cheating in baseball, with the most notable being the 'Steroid era' during the 1990s and early 2000s when many of the game's top players were abusing steroids. This included big names such as Barry Bonds who at the time was considered one of the greatest players of all time. Of course, this has been cracked down upon and is very rare in today's game, but new ways to cheat have been found using technology. The most well-known cases recently are the use of sticky foreign substances by pitchers and the 2017 Astro's cheating scandal.

The abuse of sticky foreign substances by pitchers has been one of the sport's darker secrets for many years, with most pitchers using pine tar or suncream to get a better grip on the ball. This has always been illegal in the sport, but the rule had rarely been enforced. However, due to pitch tracking cameras being available, players have been using them to measure their spin rate and find new substances that further increase it. This is important as it is well known that pitchers with high spin rate tend to strike out more batters. Without this technology this stat could never be measured, so there would've been no way for players to test if their spin rate is better with certain substances. The most notable case being Trevor Bauer who won the 2020 NL Cy Young award (best pitcher award) who had implied before the season started that he was going to cheat and saw a staggering increase to his pitches' spin rates, with his fastball spin rate increasing by over 300rpm.

The most damning cheating scandal in recent times was caused directly through the use of technology. This was the 2017 Astro's sign stealing scandal where the Houston Astros used cameras placed in centre field of their stadium to gain a competitive advantage over their opponents. Typically used for tv broadcast, the Astro's instead used them to steal other teams' signs that catchers would give pitchers so that they knew what pitch was being thrown to them. Essentially one person in the Astros' dugout would go into the back of the dugout and watch the screen during the game. Once they had figured out the signs, they would then signal to another player to hit a bin lid with a bat when an off-speed pitch was signed for, so that the player currently batting would know what was coming. This was huge news as it was one of the first times technology had been directly used to cheat in professional sports; coupled with the fact the Astros won the World Series that year, wasn't a good look for the sport. The Astros would go on to be fined five million dollars and would be forced to forfeit their first and second round picks in the next two drafts.

## **Who Wants to be a Millionaire?**

Off the field operations in baseball have remained largely the same since the incorporation of technologies like Statcast, with the main change being that teams are now employing more analysts than ever. The larger focus on analytics since the introduction of Statcast has however had a major effect on player acquisition especially in free agency and salary arbitration. Over recent years the need for elite fielders has dropped due to statistics from Statcast highlighting that they are not as useful as once perceived. This has raised a few legal issues with many players believing they are being undervalued in contract negotiations because of the statistics being used to evaluate them. On the other hand, this has benefitted players on the other end of the spectrum too, with players like Yordan Alvarez, a known liability in the field, being handed nine figure contracts based on just his hitting. This shift in player valuations has changed for numerous reasons, but the rise in three outcome baseball has played a pivotal role.

## Walk, Strikeout or Home Run

Three outcome baseball, also known as true outcomes, is when a plate appearance either ends in a walk, when four balls are thrown outside the strike zone, a strikeout, when three strikes are thrown, or the all-important home run. They're called the true outcomes as they are all the possible outcomes of a plate appearance that don't include the fielders defending and the rise in this style of play can mainly be attributed to the stats presented by Statcast. Since the technologies introduction in 2015, the likelihood of a plate appearance ending in one of the three outcomes has risen from 30.73% to 36.06 in 2020, the biggest increase over a five-year time frame. This has led to many fans calling the sport boring as less balls are actually being hit into the field of play when compared with the past, with many of the sport's top players looking to create the optimal launch angle and most exit velocity possible in order to hit home runs. That is not to say that home runs aren't exciting ;it can be agreed that they are, but a game full of them tends to get boring rapidly. Take a player like Joey Gallo for example, who is possible the definitive three outcome player. To a fan, he's possibly one of the worst star players imaginable to watch, with over 50% of his plate appearances ending in a walk or a strikeout and averaging just a measly batting-average of .199%. Less than twenty percent of the time will you see Joey Gallo get a hit, but at least if he does it'll probably be a home run . This seems to be the way the game is trending with a greater emphasis on statistic dictated play and personally I hope it doesn't as although technology has led to more in-depth stats, the excitement of the sport cannot be sacrificed.

## The Future

Overall, even in its infancy, sport in technology has already had a major impact on not just how we consume sport but has revolutionised the fundamentals of the sports themselves. With the upcoming developments coming to many sports such as trackers being placed inside footballs or the next iteration of Statcast, it is exciting to see what direction technology takes one of the biggest entertainment industries in the world and how it will shape the athletes of the future, but we should be wary of the issues associated with it. The next time you are watching a live game and the statistics are displayed, think about the technology that was responsible for providing it.

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