

## MITOCW | MIT15\_071S17\_Session\_2.3.02\_300k

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Today's lecture is a story of Moneyball, a book by Michael Lewis in 2003 and a movie in 2011 starring Brad Pitt.

Moneyball discusses how sports analytics changed baseball.

Moneyball tells the story of the Oakland A's.

The A's is a team near San Francisco, California.

They were once a rich team, but the team was purchased in 1995 by owners who enforced strict budget cuts.

Despite this, they were improving over the years 1997 to 2001.

In the table, you can see that the percentage of wins was increasing in each and every year.

This was puzzling, and many baseball experts thought it was just luck.

In 2002, the A's lost three key players.

The key question: could they continue winning without them?

So what is the key problem?

Let us discuss the graph on the left of the screen.

The horizontal axis shows the average payroll during the years 1998 to 2001.

The vertical axis shows the average yearly wins over the same years.

So let's look at some of the teams in this graph.

So which one is this team?

This is a team that won about 100 games and spent roughly \$90 million during this period.

So this is the New York Yankees.

Let's look at this team.

This team spent about \$80 million and won about 90 games.

This is the Red Sox.

Where are the Oakland A's?

The A's are here.

They won about 90 games, and they spent under \$30 million.

If you compare it with the Red Sox, they won about the same number of games during this period but the Red Sox spent about \$50 million more per year than the A's.

Clearly, rich teams like the Yankees and the Red Sox can afford the all-star players.

But please observe how efficient the A's are.

As I mentioned, they won 90 games, and their payroll was under \$30 million compared to the Yankees, who spent almost three to four times as much, and they won, of course, more games, but not that much more.

So rich teams, as I mentioned, have three to four times the payroll of poor teams.

Yet the A's made the playoffs every year.

How do they do this?

And what we will see in this lecture is that by taking a quantitative approach, an analytics approach, they were able to find undervalued players and form teams that were very efficient.

So the A's started using a different method to select players.

The traditional way of selecting players was through scouting.

Scouts would watch high school and college players, and they would report back about their skills, especially discussing their speed and their athletic build.

The A's, however, selected players based on their statistics, not on their looks.

The following are quotes from the book Moneyball.

"The statistics enable you to find your way past all sorts of sight-based scouting prejudices." And a direct quote from Billy Beane, the manager of the Oakland A's and the architect of this approach: "We are not selling jeans here." Let us contrast how the A's selected players versus the Yankees.

On the left, you see a catcher, Scott Hatteberg, that the A's selected, who would not throw particularly well but got on base a lot.

On the right, you see Derek Jeter, one of the top players in baseball, a consistent shortstop and the leader in hits and stolen bases.

Let us look into pitchers.

On the left, you see Chad Bradford, a pitcher for the A's, a submariner who used an unconventional delivery and slow speed.

On the right, you see Roger Clemens, one of the best pitchers in the game that used conventional delivery and fast speed.

Billy Beane was the manager of the Oakland A's since 1997.

He played Major League Baseball, but he was not a great player.

In fact, he sees himself as a typical scouting error.

In the 1980s and 1990s, analysts were hired by baseball teams, but none of them had enough power to affect anything important.

As I mentioned, Billy Beane became the general manager of the Oakland A's in 1997, and he was given a rather small budget.

He understood the importance of analytics.

But during this period, most general managers knew little about statistics and based decisions primarily on feelings.

In contrast, Billy Beane hired Paul DePodesta, a Harvard graduate, as his assistant.

Furthermore, he was not afraid to alienate scouts, managers, and players if the quantitative approach suggested decisions that were different than the scouts or the managers or the players suggested.

An important player in this story is Paul DePodesta, a Harvard graduate.

Paul spent a lot of time looking at the data.

The analysis suggested that some skills were undervalued and some skills were overvalued.

The key premise of the Oakland A's is that if they could detect the undervalued skills, they could find players at a bargain.

