

MEGAPROJECT MANAGEMENT: HOW BIG THINGS GET DONE

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SPEAKERS

Andrew Hill, senior business writer, Financial Times with

Bent Flyvbjerg, BT emeritus professor of major programme management, Saïd Business School



In this event, Andrew Hill, the senior business writer at the Financial Times, discussed the challenge of managing megaprojects with Bent Flyvbjerg, BT emeritus professor of major programme management at Saïd Business School, Oxford University. Flyvbjerg is the co-author with Dan Gardner of *How Big Things Get Done*. Here are the highlights.

MEGAPROJECT MANAGEMENT: A COST, TIME AND BENEFIT ANALYSIS

Bent Flyvbjerg has developed what he calls “the iron law” of megaproject management. Time and again, “they go over budget, over time and don’t deliver on the promised benefits”.

His conclusion follows an analysis of 16,000 megaprojects, those that “cost more than \$1bn, involve large numbers of people and take a long time to deliver”.

Flyvbjerg said when he began the work he was shocked to find no one could answer basic questions, even though trillions of dollars were involved. “How much do megaprojects actually cost? Nobody could answer. How long do they actually take? Nobody could answer. Do they deliver the benefits? Nobody could answer.”

He came up with these statistics: 48.5 per cent of projects are delivered within budget; 8.5 per cent of projects are delivered on time, and 0.5 per cent of projects are delivered within budget and on time. In his book, he says: “You know it’s bad – but it’s worse than you think it is.”

SUCCESSES AND FAILURES

Asked to name the most successful megaproject, Flyvbjerg had no hesitation in saying the Guggenheim Museum in Bilbao, Spain. His standout failure was the Channel Tunnel. It was “a financial disaster from the outset” and “it is still a financial disaster”.

So, why is the Bilbao museum so successful? Flyvbjerg praised Frank Gehry, the architect, in particular. He said Gehry cared about the cost, the time it took to deliver and the result. “He was serious about staying within budget and delivering on time out of respect for the people he was building for,” he said. “Gehry asks the crucial question ‘why?’. He asks: ‘Why is the project being done?’ It is important to know why you are doing something before you start doing it.”

GUGGENHEIM MUSEUM – COST AND TIME

Flyvbjerg said that to keep the Bilbao project within budget and on time, Gehry simulated the building using digital technology. He commissioned multiple iterations in a computerised trial and error process. Flyvbjerg said: “Gehry went through thousands of versions of the buildings before they even started digging.”

Surprisingly this is unusual – even today. “Why is this not common practice?” Flyvbjerg asked. “It’s common sense. But what we find with megaprojects is that common sense is not very common.”

GUGGENHEIM MUSEUM – BENEFIT

Gehry wanted to ensure that his Bilbao clients, the Basque government, got what they wanted. He engaged the politicians in a precise conversation over why they wanted the museum. They said that Bilbao’s main sources of income, industry and shipping, had declined, and that they wanted to replace those with tourism. The trouble was that while Spain attracted millions of tourists, they flocked to the Mediterranean coast, not the Atlantic.

The politicians’ idea was to turn an old but beautiful warehouse into a museum. Gehry said that plan “won’t do what you want it to do”. Instead, he suggested a new and “spectacular” building. The Basques heeded Gehry’s advice – and the rest is history. Flyvbjerg said that Bilbao attracts “three times” the visitors “than they hoped for in their wildest dreams”.

THE LESSON OF SYDNEY OPERA HOUSE

Sydney Opera House is one of the triumphs of 20th century architecture. When Gehry asked Bilbao what it wanted to achieve, it cited the opera house. City planners worldwide used to talk about “the Sydney Effect”. Today, they talk about “the Bilbao Effect”.

The aesthetic and commercial success enjoyed by Sydney Opera House could never have been predicted. It is the exception that proves the rule: a project that went wrong but turned out well.

Flyvbjerg said the opera house was “the poster example of how not to deliver a megaproject”. When it opened its doors, it had cost 1,400 per cent more than planned and taken 10 years longer to build.

Why did it go so wrong? Flyvbjerg said this was due to the youthful inexperience of Jorn Utzon, the brilliant Danish architect, and the mismanagement of the New South Wales government. Utzon was in his late 30s when he won the competition in 1957. By contrast, Gehry was in his 60s when he took on Bilbao. Flyvbjerg said of the Australian politicians: “They did not know what they were doing. They managed the whole project dismally.”

In the end, Arup, the British construction company, found a way to turn Utzon’s “magnificent doodle” into a bricks-and-mortar building. “The general consensus is that the Sydney Opera House couldn’t have been built without Arup,” Flyvbjerg said.

There is a kicker to the story, however. Using digital technology, Gehry put Utzon’s architectural sketches to the test and found that the opera house “could have been built as originally designed, but that wasn’t known then”.

TO GO FAST AND ON BUDGET, GO MODULAR – THE EMPIRE STATE BUILDING

It can be tempting to be lured in by fancy talk but Flyvbjerg warned that anything labelled “bespoke” or “customised” should be treated with caution. He pointed instead to the modular approach: this typically enables delivery within budget and on time because projects “are faster to deliver”.

The team behind the Empire State Building in New York discovered this in the 1930s. As they built the magnificent tower “they applied the same approach to each floor”. Eventually “they got to a place where they were building more than a floor a day”.

Where did this idea come from? Flyvbjerg said they drew inspiration from the car industry’s assembly line. “They were manufacturing the building – they weren’t building it”.

This modular approach allows management to achieve the “rhythm” of a good project: that is, “think slow, act fast”. Here, “think slow” means prepare well. “Act fast” means turn the plans into reality in the most direct way possible.

ONE SECRET OF MEGAPROJECT MANAGEMENT: REFERENCE CLASS FORECASTING

If you ask a project manager “do you think your project is unique?” they will almost always say yes,” Flyvbjerg said. “But in almost all cases their project is never unique.”

This “uniqueness bias” is a problem. “Project managers who think their project is unique tend to underperform those who don’t think their project is unique,” Flyvbjerg said. “That’s because if you think it’s unique, you think you don’t have anything to learn from”.

How can this bias be beaten? Flyvbjerg said project managers must “kill the illusion” by finding “a reference class” – an example of a similar project.

Flyvbjerg told the story of Robert Caro, a Pulitzer prize-winning author and the subject of *Turn Every Page*, which premiered in cinemas in December. When Caro quit as a journalist to write a book about Robert Moses, the New York construction tsar, he calculated how much time he would need to write it (and the money needed to cover his costs).

He calculated this by working out that each chapter was equivalent to two newspaper features, which each took him a week and a half to research and write. For 12 chapters, he would need nine months. He added three months as a buffer and decided he needed a year.

His calculation was wrong. Twelve months on, he was still far from finishing and he had to move to a smaller apartment. Five years in and he still hadn't finished. He then told his story to a fellow writer whose response was: "That's not too bad. I've taken seven years and I still haven't finished."

Caro realised he had, in effect, used the wrong "reference class". What should he have done instead? To get the right reference class, said Flyvbjerg, "he could have identified the 10-20 books closest to his book and asked the authors: 'How long did it take you?'" That way, he could have worked out that his project would take – as it did – seven years.

QUESTIONS FROM THE AUDIENCE

Who is mainly at fault in a joint project – government or business?

"It depends on the set-up. I wouldn't want to point the finger," Flyvbjerg said. "There is a perception that government is particularly bad and business is better – but I can tell you this doesn't stand up to scrutiny. Both are bad."

Can your advice be applied to smaller projects within businesses?

"Yes," Flyvbjerg said. He pointed to his book, which features case studies of large and small projects. Those lessons can be applied to anything from a kitchen refurbishment to planning a wedding and "all the way up to space exploration".

"The same principles apply," he said. "In the end, it's about human behaviour, and that's the same whether it's a big project or a small project."

Flyvbjerg emphasised the importance of understanding and countering "cognitive and power biases". "If the problem is bias," he said (and it often is), "you have to de-bias."

A typical bias is "optimism bias". We are hardwired to think things will turn out for the best but for a project it is important to be realistic. Flyvbjerg said the ideal architect (and client) were "realistic optimists".

Among typical "power biases" are "jockeying for position and competing for resources – and these are more pronounced in bigger projects".

Managing a megaproject involves calculating risks. How do you prepare for the black swan event: the hurricane, pandemic, the supply chain glitch?

Flyvbjerg said it was essential that megaproject managers noted the potential for a black swan event and then found a practical solution.

To illustrate this point, he told how the team behind Britain's multi billion-pound High Speed 2 (HS2) railway project had dealt with a problem – with his help.

The HS2 planners ran a survey of all similar transport projects to establish the main reasons why these suffered costly delays. And the top reason? "Archaeology". Every time the teams encountered a Roman fort or other relic, they had to stop and call in archaeologists. The problem is that archaeologists are not always available – hence the delay.

So that HS2 avoided this "we decided to put every archaeologist in the UK on a retainer – so that they would work for HS2 if necessary. It has had a massive impact and it has made HS2 one of the biggest sources of archaeological knowledge."