Why Good Project Managers Make Bad Choices

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It is not uncommon to see good and experienced project managers make poor decisions that led to issues and eventually project failures. What is the explanation: misjudgment, lack of experience, or do some project managers just run out of luck? People make similar repeatable mental mistakes when they make choices, whether they are mothers trying to decide which is the fastest route to their children's soccer match or managers of large companies who are trying to decide which design they should use for their next product launch. These illusions are a primary source of human error in project management, errors that can eventually lead to project failures.

The Power of Illusions

Starting around 1995 a number of large computer companies including Oracle and IBM were involved in ambitious projects. They were trying to develop and market a range of diskless desktop computer devices, which Oracle called a Network Computer or a NC. The idea was quite revolutionary: if computer were mostly used to connect to the Internet, it does not require a very powerful processor, a CD-ROM, and even hard drives. Computers could be much cheaper than regular desktop computers were at the time: they could be priced at less than for less than $1000. Moreover, since the software was installed on the server rather than the NC, the user would not be required to maintain and upgrade it. Customers could have a computer that met all of their needs for a fraction of the cost. Despite all of its promise, the idea failed to materialize and NCs were not sold in significant enough quantities (Roth 2009). Why? For this project to succeed at least four conditions had to be met:

1. The price of regular PC computers must stay way above $1000 to ensure that NC would be competitively priced.

2. The availability of a wide range of compatible software for NCs.

3. Widespread network availability of network infrastructure sufficient to run NC software.

4. Widespread acceptance by consumers of the idea of network computing where central control was external, that is someone else on the server side would be in control of the system and even their data.

Let's assume that probability of each condition that each condition be met equals 70%. At first glance 70% appears to be quite high and chances are promising. But taking a closer look we can see that there are several conditions that must be met, each of which has a 70% chance. Therefore project success is the product of all of the chances for each condition. It is $0.7*0.7*0.7*0.7 =\sim 0.24$. So, would you invest millions of dollars on ap roject with a projected chance of success of only 24%. The makers of the NC most likely faced a similar situation, but went ahead with the project anyway. Most likely because the executives of these companies were subject to an illusion, they thought that the chance of success was much higher. This illusion "overestimating the probability of conjunctive events" is quite common and behind many project failures.

With just this brief example, we can see that organizations are capable of acting quite irrationally, but just so you don't think that this is an isolated case, here is another. In the 1980's, the North Korean government was looking make a bold statement to the outside world that would illustrate the country's industrial and technological power and attract much needed foreign investment. The governments leader came up with a most audacious project – they would construct a building that would be the envy of the rest of the world, a hotel that would not only be the world's largest, but one of the largest buildings of any type in the world, the Ryugyong Hotel. (Figure 1). This enormous building was planned to reach a height of 1100 feet comprised of 105 floors. This project represented an investment of a significant percentage of the North Korean GDP (Hagberg, 2008), and would become the center piece of the North Korean's governments efforts to showcase the success of their political and economic system and take some of the shine off of the economic success of their arch enemy South Korea.

As fate would have it, the project did not turn out to be the resounding success that the North Korean leadership had envisioned. Huge cost overruns and a host of technical issues ground the project to a halt 1992, leaving behind a massive derelict concrete shell sitting in the heart of Pyongyang for all to see. Although some work on this hotel resumed 2009, the construction of the Ryugyong Hotel has had the exact opposite effect that was intended by the Korean leaders. If they had decided instead to build a rocket or a massive ship, if the project failed, the reminders of the failure would fade quickly as the evidence would probably have vanished in a huge explosion or lie on the bottom of the ocean hidden from view. When you fail and leave behind a reminder larger than the great pyramid of Cheops, everyone is reminded of this every time they look at the city skyline. Can there be a greater humiliation? So while we can understand the motivations behind the decision to start the project, the question given the great risks is why the project went ahead in the first place. Were the North Korean leaders unaware of the potential cost? Even given the large amount of risks and uncertainties associated with a project of this size, calculating the costs was not an impossible task.

Figure 1. Ryugyong Hotel, North Korea

These stories have at three things in common:

a). All managers in these examples had a choice: they could decide not to invest in an unproven computer architecture, and they could have chosen not to build an impossibly extravagant skyscraper.

b). These are not trivial choices.

b). Eventually these choices lead to negative consequences, as they were essentially *irrational*.

Power of Illusions

Irrationality is a contradiction between what we would like to achieve and how are actually choose to achieve it.

What do we mean when we refer to something as irrational? People often use long words to describe simple concepts in the hope that it makes them sound intelligent or hide their true meaning. So they will use words like irrational when stupid would do just fine. However, *irrationality is not stupidity, it is a contradiction*. It is a contradiction between what we would like to achieve and how we actually choose to achieve it. Why do these contradictions, these irrationalities occur? Why are good project managers unaware that the decision they have made will not achieve the results they expect? These smart and educated peopled are capable of making rational choices, but do not do it on a very predictable basis.

In reality, these decision makers, become subjects of an *illusion*. Criss Angel is an illusionist and the star of his own show Mindfreak. In one memorable show, he hypnotized and levitated young lady in front of stunned spectators on the street of Las Vegas.

It was incredible and it was an illusion: both the live and TV audience appeared to see the young lady floating in the air; however, according to well known laws of physics, we know that there must have been some sort of support. It was a very compelling display that tricked our minds into seeing a woman apparently floating in thin air. Here is interesting phenomenon about all illusions: they require people to make *the same mental errors.* All of the spectators shared the same perception during Criss Angel's illusion: they saw a lady floating in the air. These illusions or errors in perception are similar for all people regardless of place of birth, level of compensation, nationality, sexual orientation, political preferences, language and other factors, which distinguish us. For example, mental errors experienced by a CEO and a dishwasher are the same, except the CEO's errors will have much greater impact.

Let's return to Criss Angel and Las Vegas. Here is another illusion for you. Take a look at the picture of the Bellagio Hotel and guess how many stories there are (Figure 2). Commonly, people estimate that it has about 20 stories, which is precisely what the architect wants us to believe. The actual number is 36.

Figure 2. How many stories there are in Bellagio Hotel

> Project illusion is an erroneous mental representation of a project. It often lead to project problems and failures.

The difference between our estimates and reality is caused by a well designed optical illusion. In addition to optical illusions, there are a large number of other types of standard mental errors that affect our judgment. For example, project managers often user previous similar activities as guidelines when estimating cost for specific activities. Sound a reasonable, basing your estimates on the results of previous similar activities. Good up until that point, but then they often believe that cost of current activity should be less because of lessons learned, better management, etc. This may be true, but just as often this is an illusion: most likely they will make other mistakes and even repeat the previous ones. Here is an actual example. For

the past 8 years we have been designing and developing our own project management software. Through these years we have had 12 releases and without a single exception, they were all delayed anywhere from 2-6 months. Each time we planned a new release date, we suffered from the illusion that we could improve our process and release the software on time even though we were writing books and articles on this very subject at the time.

For Oracle executives, the belief that demand, cost, infrastructure and software availability would be favorable for them was an illusion. This illusion led to a contradiction: tens and hungers of millions spent on development and marketing of NCs were mostly wasted. The Ryugyong Hotel project is another example a contradiction: instead of becoming the first building outside New York or Chicago with over 100 floors or the largest hotel building in the world, it could instead have the title: the world's Tallest Incomplete Building.

If critical decisions were not subject to the same mechanism that leads to illusions, we would have nothing to worry about. If you are lucky enough to attend one of Criss Angel's shows, see some of his fantastic illusions and appreciate the skills behind the performance, this is nothing but good entertainment. However, if after seeing a Mindfreak show, you conclude that the law of gravity has been repealed and you start to base some of your decisions on this, you will probably quickly find yourself in trouble, if not severely injured or dead. Unfortunately, the truth is that people often base their decisions using the same mental errors that cause Criss Angel's illusions, which can have disastrous consequences.

Alternatively, it might be fair to ask if illusions can have unforeseen positive effects on projects? Remember illusions are erroneous mental representation of reality. Is it possible to make better choices by perceiving a project differently that it really is? Maybe there is a chance that illusions could lead to a better decisions. However, we strongly believe that critical project decisions must be done based on an analysis of reality rather than illusions.

Illusions in Project Management

We are subject of the illusions everywhere. Everything we see, listen, touch, taste, and smell can be misinterpreted and our ability to manage projects is not an exception. In project management, the consequences of irrational choices made due to illusions are failed projects. Here are few encyclopedic cases of failed projects (Hall, 2005; Charette 2005):

- 1991: an inaccurate structural analysis for the Sleipner North Sea Oil Platform led to the loss of the platform at a cost of $1B.

- 1994: U.S. Federal Aviation Administration canceled a project to upgrade traffic control system.

- 1995: an overrun of the development Denver airport baggage handling system prevented the airport from opening on time. Fixing the extremely bug riddled system required an additional 50% of the original budget - nearly $200m. Confirming that people don't learn from previous mistakes: in 2008 a very similar project at the new terminal at Heathrow airport suffered the same fate; hundreds of flights were cancelled when the baggage system malfunctioned (BBC News, 2008).

- 1996-1999: several major space exploration projects, including the Mars Polar Lander, Mars Climate Orbiter, and Ariane 5 European Space Launcher, were lost because of various errors.

- 2003: a software bug was determined to be a major contributor in the 2003 Northeast blackout, the worst power system failure in North American history. The failure involved the loss of electrical power to 50 million customers and economic losses estimated at $6 billion.

- 2003-2004: Customer relations management at AT&T Wireless upgrade problems lead to a revenue loss of $100 million.

- 2004: Newly automated supply-chain management system of British food retailer Sainsbury's fails and the company had to hire 3000 additional clerks. $526 million investment was written off.

- 2004. Ford Motor Co. abandoned its purchasing system after deployment costing $54.5 million.

- 2005. Hudson Bay Co.'s problem with its inventory management system contributes to $33.3 million loss.

Researchers who study such projects found that the main underlying reason for these failures is not earthquakes, pine beetle infestations, floods, or other external factors, which are hard to either predict or avoid. Most projects fail because of errors in human errors judgment, essentially irrational behavior.

Project illusions are not the only reason of project failures, there is a good measure of incompetence and inexperience lurking in the shadows. But we strongly believe that illusions are root cases of many problems. Every year illusions in project management lead to multi-billion loses. A 2002 study commissioned by the National Institute of Standards and Technology found software bugs cost the U.S. economy about $59.5 billion annually or 0.6% of the gross domestic product (NIST, 2002). The same study found that more than a third of that cost (about $22.2 billion) could be eliminated by improved testing. These bugs are not created by a nature: animals, volcanoes, and geysers don't develop the software. The problems were caused by the faulty judgment of people.

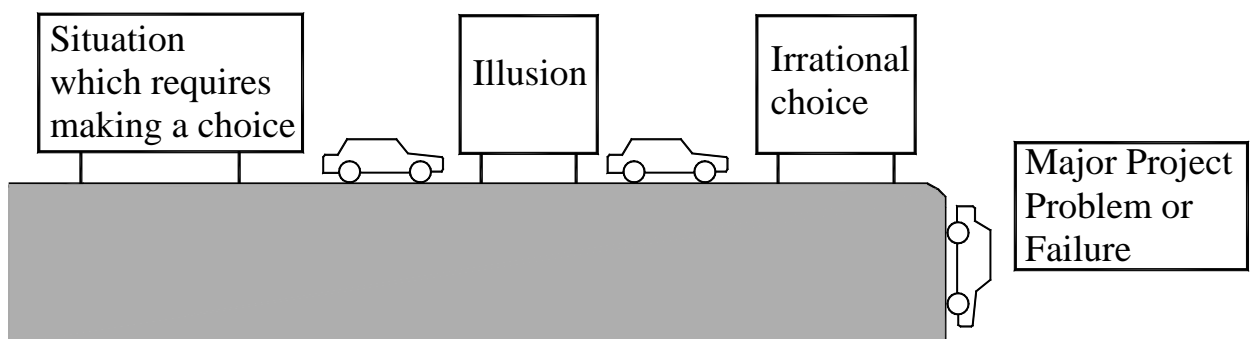Here is a typical road map to the project failure (Figure 3):

Figure 3: A typical road map to the project failure

1. **You have a** *situation in a project that will require making some choices*. Here is an example. In 2000, the retailer Kmart Corp., in Troy, Mich., launched a massive $1.4 billion IT modernization effort aimed at linking its sales, logistics, marketing, and supply systems, to better compete with rival Wal-Mart Corp (Charette 2005). Kmart had many choices regarding the timing and the scale of the project, but decided to pursue a quite ambitious scenario.

2. **You often have to deal with** *illusions*. Upper management of Kmart apparently had many other priorities outside IT project and was under the illusion that the project would succeed with limited upper management support. This is a very common illusion. Upper management initiates project with minimum possible resources and then distances itself from the project somehow hoping that it will succeed by itself.

3. **These illusions lead to** *irrational choices*. The Kmart IT project had limited budget and manpower. Moreover, the IT project's relationship with the organization's business was not clearly established.

4. **Irrational choices lead to major project problems or** *project failures*. 18 months later Kmart cut back the modernization project writing off $130 million dollars it had already invested. Four months later Kmart it declared bankruptcy.

Illusion or Intention?

It is important to distinguish between illusions or mental errors and intention. Danish researcher Bent Flyvbjerg and his colleagues reviewed a significant number of large projects (Flyvbjerg, 2005). Among them were large transportation projects such as Skytrain in Bangkok, Channel Tunnel, Los Angeles subway, defense projects such as Eurofighter military jet, Nimrod maritime patrol plane, F/A-22 fighter jet, oil and gas projects, such as Sakhalin-1, construction projects, such as Hannover Expo 2000, Scottish parliament building, Ontario's Pickering nuclear plant, and very many others all over the world. Flyvbjerg also talk directly with people who were involved in the politics of megaprojects, such as famous architects Frank Gehry and Kim Utzon. What was common about all these projects is that they were significantly over budget and often took much longer than originally planned. For example, The Channel tunnel between U.K. and France came 80% over budget for construction.

Flyvbjerg found that project planners often intentionally underestimate costs and overestimate benefits to get their projects approved. He studied data for the past 70 years and found that cost overruns have not decreased over time. This intentional "cooking of the books" is pernicious, not only because it leads to cost overruns, but also to safety, security and other problems.

Intentionally underestimating of cost and duration is not the only unethical one thing you might do. Here are few other ideas (just don't tell anybody where you got the idea):

- Although you have spent the last few weeks procrastinating and catching up with your friends on Facebook, tell your boss that you completed the development of the software module two weeks ago, even produce an ugly looking hand drawn screen shot as proof of your effort even though you haven't even started yet.

- Although you have yet to even open the quality assurance manual, create a report that shows the quality control procedure was properly executed and even show that you managed to find several minor defects.

- Although prototype does not actually work yet, tell your project sponsor that that the prototype's performance is very close to the specification.

So what is the main reason for human mistakes in project management: honest mental errors caused by illusions or what Flyvbjerg refers to as deception: deliberate errors in project planning, forecasting and execution? Flyvbjerg said that the answer depends on the project (Flyvbjerg, 2006). In large projects and megaprojects where political and organizational pressure is very high, deception plays a key role. Whereas in smaller projects, where these pressures are limited, illusions have a greater role.

But here is one important thought about deception. People who are involved in a deception are mostly motivated by: a belief that in the long run it will benefit society, as in the case of many transportation projects; benefit their company, as in a case of Enron or WorldCom; or. provide benefit to themselves. In almost all cases, these beliefs are also an illusion. Projects that are approved based on fraudulent forecasts will at end of the day be a net loss to society. If you create a fake report or tell your manager you are performing tests when in reality you are researching your picks for next week's fantasy football pool, you may be fine in the short term. But this is an illusion, because at the end of the day, you will have to deal with problems you create.

Why is recognizing and dealing with illusions so difficult?

All people are subject to illusions, we all make repeatable mental errors, so why all the fuss. Mistakes can be identified and fixed. Perhaps you made a mistake and forgot to turn off the BBQ when you went on vacation. No big deal, some minor fire damage to your neighbors' houses across the street (unfortunately, your house burned to the ground). However, it can be fixed: call your insurance agent, if you happen to have one.

But here is the problem. The mental errors that cause irrational decisions are very cunning. They hide their tracks so well that it is often very hard to determine if there was a mistake and, if there was, what caused it. People who are extremely competent in one area often display poor judgment in others. This explains why successful engineers may not be good project managers, and experienced politicians often cannot properly manage their finances. Thomas Jefferson, the third President of the United States was a great project manager and was ultimately responsible for the country's finances. At the same time he was deeply in financial debt. During his career in office, Jefferson attempted numerous times to abolish or limit the advance of slavery. At the same time, he owned many slaves and would not free any because of his personal financial difficulties (Sloan, 2001). Obviously, if someone like Thomas Jefferson can find themselves in such an irrational situation, anyone can. But why is it so easy to get caught in these irrational situations? Why is irrationality so widespread?

One of the most common sources of such mental errors is people's difficulties in assessing future uncertainties. Wouldn't life be a bit more bearable if we could accurately predict what will occur as a result of our actions? You start smoking: now you will die from lung cancer on January 17, 2021 – 24 years earlier than if you had taken up the habit. If you go to the casino today, you will lose $12,798.67, but hold off until tomorrow and you will win $6589.32. This

situation would have some drawbacks as uncertainty is the basis of entire practices, including project management. You would not need to worry that your project would be delayed: it will be completed Friday, June 26, 2015 as scheduled. But it doesn't work that way, does it? You cannot go to a Wal-Mart and buy a crystal ball that provides accurate forecasts how your project should proceed in the future. Lacking any reliable instruments that provide accurate foresight, people tend to make predictable mistakes when they estimate future risks and then go onto to choose course of action based on these flawed estimates. For example, if you asked people to estimate the risks associated with nuclear and fossil fuel power, most would believe that nuclear power is more risky option, when in reality, the chance that the burning of fossil fuels will damage your health are far greater.

Here is another issue that leads to many mental errors: choices we make are often based on multiple objectives. Balancing such objectives can be very complex. For example, your project has a tight schedule and a limited budget for expenses. You need to fly from Denver to Phoenix, would you buy ticket with a stop in Detroit for $200 or a direct flight for $300? (Airlines tell us that it makes economic sense for them to have routes with multiple stops that zigzag across the country, but we are still not convinced that it is rational). You have to balance two objectives: convenience and time versus price, which may lead to irrationality. In project management everything is very complex: balancing scope, cost, time, quality, and other objectives is fertile ground for potential illusions.

A final complication, many mental errors are due to group interactions. For example, during a project meeting, team members may have severe reservations about the project, but did not express them because there were afraid of appearing to be the only hesitant person in the room. Psychologists discovered this phenomenon by researching how Kennedy administration's decision to invade Cuba at the Bay of Pigs was made (Janis, 2008). Project management is rarely done in isolation. Interactions between different project stakeholders often lead to misunderstandings, communication issues, or incorrect assumptions and expectations. If a group of people is expected to make a decision, it does not necessarily reduce the chance of mental errors; in fact, it leads to other types of mental errors.

- Project manager make similar mental errors in similar situations, because they are subject to the same mental illusions.

- Illusions in project management eventually lead to significant loses and project failures. Typical road map to project failures includes a). situation which require making some choices, b). illusion, and c). irrational choice.

- Many errors in project planning and execution are intentional. Such error or deception are prevalent in large project, where political and organizational pressure is high. However illusions are fundamental reasons behind such mistakes.

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