# Behavioral Traps in Project Management

**Intaver Institute Inc.**
**303, 6707, Elbow Drive S.W.**
**Calgary, AB, T2V0E5, Canada**
**tel: +1(403)692-2252**
**fax: +1(403)259-4533**
**sales@intaver.com**
**www.intaver.com**

*The most important in thing in project management is not to became entrapped*

*Mickey Mouse*

You are driving down a highway, and as usual, you have chosen the fast lane. However, today, it seems to be moving more slowly than usual and when you glance to the side, the adjacent lane appears to be moving faster. After 5 minutes without improvement, you are starting to wonder whether you should switch lanes, but because you have already spent some time what is normally the fast lane, you hope that it will eventually resume its normal pace. Essentially, you have become entrapped. In this paper we will discuss behavioral traps or situations where people become engaged in rational course of actions which later become undesirable.

## *Sunk Cost*

Here is an example how you could become entrapped during the execution of a project You are the promoter for a new Hollywood horror movie "79 Vampires and Anxious Housewives". You have already invested $20M in marketing and despite an ocean of blood, the movie sucked at the box office. Apparently, the vampires were less scary than your average HR director and the werewolves sounded more like a high school hip hop band. Your best bet to recoup your losses is DVD sales. You have the following choices:

a. Spend an additional $10M on an aggressive marketing campaign: "Buy 79 vampires DVD or you will be their victim'. Leave out the part that the real victimization occurs when they pay over their hard earned dollars for this dud.

b. Spend $1M on a poster campaign "Always have 79 vampires at your home"

c. Walk away. Don't invest another dime in this money pit. Instead, invest it in a new romantic comedy 'Frankenstein Resurrection IV'.

What would you choose? You have already spent $20 million, wouldn't it be nice to see some return on that investment? It would be very difficult just to walk away, refuse to spend another dime on it. Unfortunately, spending more money on an already bad investment will probably just increase your losses. This is called the *sunk cost* effect. Sunk costs are a trap because it is difficult to ignore the temptation to spend more money on a losing project to try and improve the outcome. Because of the sunk cost effect people often elect to spend more money when the better response would be to walk away.

The sunk cost trap affects every type of decision both large and small. The Constellation Program is a human spaceflight program that was designed to replace the Space Shuttle and send astronauts to the Moon and possibly to Mars as well. The Constellation Program included the Ares I and Ares V booster rockets (Figure 1), the Orion crew capsule, the Altair lunar lander, and other components.

Sunk cost is past costs or efforts that have already been incurred and cannot be recovered.

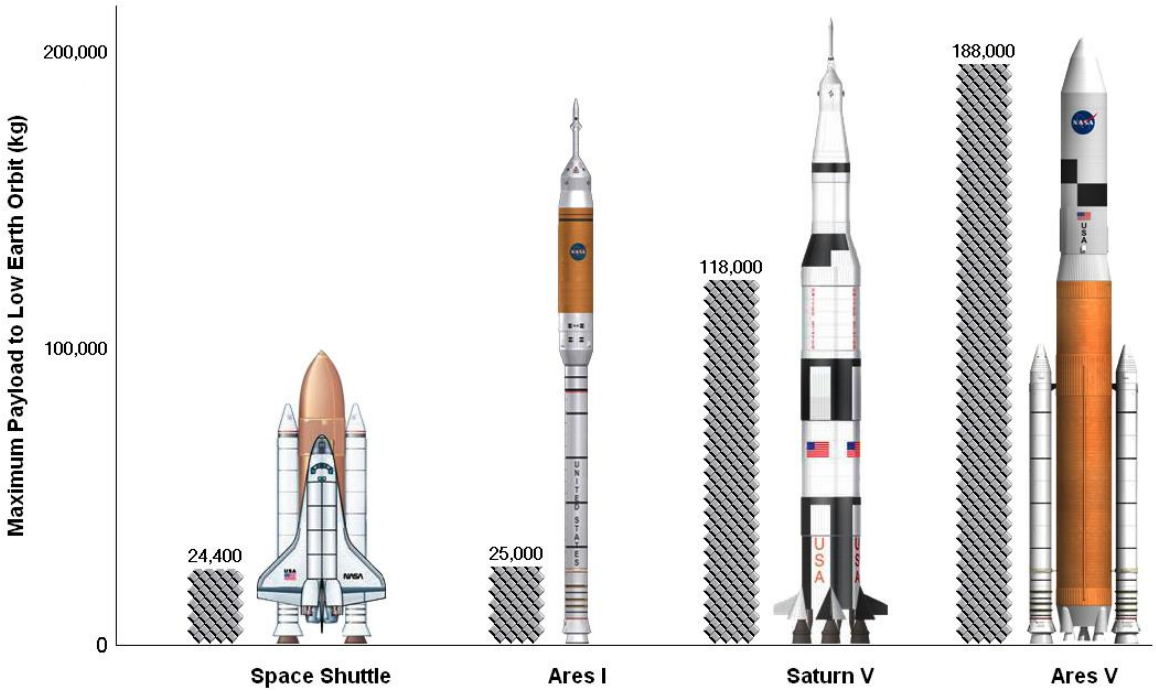


Figure 1. Ares I and Ares V booster rockets compared to Space Shuttle and Saturn 5

In 2010 President Barack Obama found that the project was too costly, "behind schedule, and lacking in innovation"(Amos 2010). Former astronauts Neil Armstrong, James Lovell and Eugene Cernan urged President Obama not to cancel what they warned would be a "devastating" new policy for the future of NASA (MSNBC News, 2010). In particular, they mentioned that the $10 billion plus in investments that would be lost of the program was canceled. In fact, $10 billion has already been spent. To continue to invest funds in a program that was not providing

the results that were promised would be wasteful. Actually, the faster that ineffective programs or projects are canceled the better off we will all be. In the case of the Constellation Program, the solution was to either cancel the program or to significantly change its scope. Barack Obama later announced major changes to the program that would be focus on human flight to Mars, while the Orion capsule would be used as a rescue spacecraft for the International Space Station.

One of the main issues in project management is related to managers who often do not realize the magnitude of an issue. They believe that the issue can be addressed within the framework of the existing design or solution; therefore, they perform incremental and often futile attempts to fix the project rather than start all over again. This type of situation occurred during the construction of Russia's longest railroad tunnel, the Severomuysky Tunnel (15,343 meters or 50,338 ft) in Siberia. Construction started in 1978 (Levinsky 2003) and soon after it was discovered that the mountain through which the tunnel would pass had a large number of faults with pressurized water, sand, and clay. Tunneling in such faults cannot be done by traditional methods and attempts to tunnel though one of the faults caused a collapse of the face of the tunnel, several deaths, and a major delay in construction. In addition to these troubles, the tunnel was located in seismically active region. Some experts suggested that perhaps it would have been better to stop construction and build the tunnel in a more suitable environment. However, after each set back, it appears that key decision makers had a thought process that went something like this:

"Yes. We had a problem. But next time it will work because our technology is improving and we have more experience with these problems".

Unfortunately it was wishful thinking. Although tunneling methods and technology gradually improved, it did not compensate for the huge delays and cost overruns caused by the initial conditions. The longer the project continued, the more difficult it became to escape from the sunk cost trap. The tunnel was finally completed 25 years late: 31 people lost their lives during construction.

To overcome behavioral traps, awareness is the best defense. Here are some specific suggestions about how we can manage the sunk cost effect (Hammond, Keeney, and Raiffa 2002):

1. Ask advice from project managers or engineers who were not involved in past decisions because these people will be less likely to be committed to these decisions.
2. Try to understand why you are motivated to continue to follow earlier poor decisions; remember, being smart or experienced does not make you immune to mental errors.
3. Project managers or engineers who were part of the previous decisions should either recuse themselves or have less involvement in the subsequent decisions. For example, if a bank gives a loan and the borrower has difficulties to paying it back, the bank often gives additional funds to help borrower recover. While this sometimes works, it often leads to more bad loans which in turn are harder to recover. Researchers found that if the bank manager who issue the original loan and the manager who approves additional funding are different people, the chance of a default on this loan is lower.

### *Time Bombs*

A common strategy of businesses is to lure us to buy their products by offering "buy now - pay later" options, a strategy that is very popular with consumers. In the early 2000's, the US government modified mortgage regulations that lowered requirements for mortgage approvals in an effort to boost home ownership. For many people this experiment has become a trap: they took out mortgages that are beyond their means to pay off. The cumulative effect of this time trap was one of the prime causes of the worst financial crisis since the 1930s. People rarely think about the long-term consequences of their decisions and become entrapped: drug users think about short-term pleasure, but not long term addiction; people who enjoy their favorite desert every day do not consider the possibility of becoming obese; and, software developers who fail to spend the time to document their source code does not realize that they will not understand their own software the next year. This effect is often referred as *time delay trap*.

Here is another example of a time bomb. At the beginning of a project decisions are made about the proper course of actions that will define the project. However, if the time frame of the project is long, the situation may change and a previously decided course of action may no longer be optimal or valid. The Mackenzie Valley Pipeline was supposed to transport natural gas from the Beaufort Sea and Mackenzie Delta through Canada's Northwest Territories to Alberta. The Mackenzie River delta and contains huge deposits of oil and gas, so in 2004 several large oil companies and aboriginal groups put forward a proposal to build multi-billion dollar pipeline (CBC News 2009). The problem is that for project of this magnitude the assessment, design, and approval process takes so long time, that conditions can change dramatically. The balance between supply and demand may shift multiple times one way or another. One major shift has been the emergence of shale gas in North America. New techniques have made the extraction of what was previously and very expensive and marginal resource very competitive in comparison to traditional natural gas resources. In addition, in many regions, shale gas is located very close to the areas of the consumption, such as Appalachia, and does not require the construction of new major pipelines. Because of this and other developments in the economy, the Mackenzie Valley Pipeline project could change radically or not be required at all. This is called the *deterioration trap*.

What we can do about time delay and deterioration traps? Here are few suggestions based on the choice engineering approach:

1. Always ask yourself the question: if I do something now, what could change over time and how will these changes affect my original decision.
2. Whenever possible, try not to make decisions that will not have consequences for a long period of time. For example, instead of investing hundreds of billions immediately on the design and construction a high speed trains and infrastructure, the US government has chosen a gradual approach (Glasser 2009). They invest in projects that will have an immediate impact on the rail system such as system upgrades that will help existing trains travel faster. At the same time, these projects should create a foundation for future high speed trains (Figure 2).


Figure 2. Plan for high speed railroads in US

3. Do not make irreversible decisions. If situation changes, you must be able to make corrections or even abandon a project at minimum cost. For example, if you develop a software do not attempt to implement all possible features before taking it to the market. Develop in phases and ensure that you set in place the foundation that will allow you to provide incremental improvements in the future as required. In fact one of the fundamental principles of agile project management is iterative development.

### *Prudence Traps*

A number of years ago a U.S. automakers were updating their sales projections (Hammond, Keeney, and Raiffa 2002). They asked different departments within their companies to forecast sales, inventories, costs, and other variables. Each department came up with very conservative forecast (from their point of view at least): produce enough cars to ensure that they can meet demand. However corporate planners used this data at face value and then made their own adjustment just to be on the safe side to ensure that they could meet demand. As a result, automakers produced so many cars that most sat in the car lots for up to six months and required substantial cuts in prices before they were actually sold. This is called the *prudence trap*. Some project managers still plan and manage their projects based on "worse case scenarios". While it can be important to have conservative estimates; sometimes, it is more important to be honest

and make realistic assessment of the probabilities of future events. The prudence trap can lead to cascading effects with disastrous consequences.

### *Collective Traps*

Approximately forty percent of world's oil production is controlled by twelve countries that belong to the Organization of the Petroleum Exporting Countries (OPEC). When prices are low, OPEC issues quotas for their members, they reduce supply until the prices rebound. While this could work in theory, in reality since OPEC does not control 60% of oil production, its power to control prices is limited. When OPEC reduces production and prices go up, this provides an opportunity for other producers such as Mexico, Russia, or Norway to increase production and capitalize on higher prices for the expense of OPEC members. The problem oil producers face is if each country acts according to its own self-interest, everybody will suffer. This effect is sometimes called a *collective trap*, because it involves a number of people with different agendas who interact but do not necessarily fully communicate with each other (Plous 1993). A typical example of a collective trap is a rush hour traffic. Everybody hits the road around 5 p.m. because is it convenient. But as a result of the heavy traffic, everybody suffers. Mathematicians research such traps using *game theory* which is a mathematical theory of human behavior in competitive situations in which players interact.

Game theory seeks to understand and explain a number of similar problems. Let us assume that you have a job interview. Everything was going well and it looked like that you would land the job. Bu the final question posed a dilemma for you, "What is your salary expectation?" You do not know how much the company is willing to pay for this position. If you ask too much, you might not get an offer. If you ask too little, you may lose a significant amount of money for years to come. You become entrapped. Ideally, you could dodge the question, but you probably will have to come up with a figure.

Collective traps occur in project management all the time. The relationships between customers and developers often lead to a collective traps when both sides do not clearly state their expectations. Organizations could be entrapped in complex relationships between management and employees as well as different departments and business units.

How can we avoid collective traps and similar traps regarding interactions between different groups of people? Since is impossible to eliminate the traps prohibit people from falling in to trap, choice engineering principles can be applied. In the late 1950s, the USA and Soviet Union had no effective communications with each other. Instead, they were forced to assume the intentions of each other, a process which eventually brought both countries to the brink of nuclear war. Fortunately one of the leading researchers in game theory, Thomas Schelling had close contact with the Kennedy and later Johnson administrations and introduced Robert Kennedy to his war games (Harford 2008). Based on this analysis, Thomas Schelling realized that a full blown nuclear war could be triggered as a result of mistake by a radar operator or simple misunderstanding. In 1958, he proposed to establish a communication hotline between the United States and Soviet Union which contributed to reducing the threat of nuclear war. Thomas Schelling got a Nobel Prize in economics in 2005.

Effective communication, while sounding trivial, is not easy to establish. It is a key aspect of all project management education. One of the fundamental concepts of the agile project

management is face-to-face communication (Manifesto 2006). At the same time, a lot of problems occur because communication channels are ineffective, slow, one-way (down), or even completely shut down.

### *References*


Amos J. 2010. Obama cancels Moon return project. *BBC News*. Available at http://news.bbc.co.uk/2/hi/science/nature/8489097.stm. (Accessed August 26, 2015).

Glasser J. 2009. America's high-speed rail off to a slow start. Fortune. August 6, 2009. Available at http://money.cnn.com/2009/08/05/news/obama_high_speed_rail.fortune/index.htm?postversion=2009080610. (Accessed August 26, 2015).

Hammond, J., Keeney, R., Raiffa, H., 2002. *Smart Choices: A Practical Guide to Making Better Decisions*, Broadway Books

Harford T. 2008. *The Logic of Life*. NY: Random House.

Levinsky A. 2003. Spacesuit for the Tunnel: Severomuysky Tunnel. *Popular Mechanic*. Available at: http://www.popmech.ru/article/4796-skafandr-dlya-tonnelya/. (Accessed August 26, 2015).

Manifesto for Agile Software Development. 2006. Available at http://agilemanifesto.org (accessed August 26, 2015).

MSNBC News. 2010. Armstrong: Obama NASA plan 'devastating'. Available at http://www.msnbc.msn.com/id/36470363/ns/nightly_news/ (Access August 26, 2015).

Plous, S. 1993. *The Psychology of Judgment and Decision Making*. New York: McGraw-Hill