

# Beyond the point of no return: On the management of deviations

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## Abstract

This article explores how deviations are managed in practice in a diesel power plant project. The article builds upon an analysis of a case study of a power plant project and a true story of mountaineering. Metaphorically the paper uses mountaineering to shed light onto the management of deviations and the decisions that follow. At first sight the comparison is farfetched, but once the picture is painted there are similarities that make it worthwhile. The analysis demonstrates the impact of the point of no return on formal procedures when the actions associated with deviations are forced and how these actions are by necessity sanctioned after the solutions are found.

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## 1. Introduction

“Mountain climbing offers a powerful metaphor for achieving any demanding objective – that ordinary persons striving for a goal can achieve what others consider to be impossible. Mountaineering is hard work, and reaching the summit requires total physical, intellectual and psychological commitment. There is no way to cheat and there are no short cuts. It strips your soul bare and reveals your true nature for everyone to see. If you don’t walk the talk, you’ll only get yourself and your team into serious trouble.” Geoff Choo, Project Manager [5]

Then, what has mountaineering got to do with deviations? The answer is: Everything. To paraphrase Mr Choo, if it is accepted that project management involves facing the unexpected which needs to be managed in order to move slowly but steadily towards the goal – the top of the mountain and back – then mountaineering provides an ideal setting to learn about deviations. Projects and

mountaineering have features such as time, resources and scope limitations in common, in addition to reliance on risk and change management to prevent and solve deviations. Arguably deviations in mountaineering are similar to those in projects. Life threatening or project threatening situations will occur and the need for action will make rational tools and goal-setting inadequate. One of the more renowned mountaineering events is the one in 1996 on the shoulders of Mount Everest which killed 10. It has been argued that one of the reasons for the tragedy was the breakdown of planning before and during the expedition [33]. Narcissistic leadership fostered a competitive environment and macro changes in the mountaineering community further contributed to the disaster [10], and still does, considering that another nine lives were lost on Mt. Everest in the spring of 2006. Another explanation is that the tragedy was a consequence of a breakdown in rational goal-setting [22]. Previously the lessons of mountaineering have been applied to a range of fields including management education in ethical decision making [23], MBA training [40], learning [22] failing leadership [33] and narcissistic leadership [10]. While these studies have focused on The Goddess of the Sky, a.k.a. Mount Everest, this article focuses on the less known Siula Grande and contributes to another field, project management.

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Similar to mountaineering, project management is described as rational, planned and controlled [39]. However, irrespective of the amount of planning, unexpected unplanned events – deviations from the expectations – occur in project management (compare [18]) as much as in mountaineering. Thus, even the best project managers will face deviations that need to be handled. While a rational approach is heavily promoted, research has shown that the management of deviations relies on informal patterns and experience rather than on formal procedures [2,3,11,12].

The explanation could be that implementing the commonly proposed tools of risk and change management requires a lot of time and such methods cannot ensure the successful management of unexpected events under severe time constraints [41]. Thus, when time is an issue, the tools and the impossibility of turning back, become even more problematic. Thus the research question is framed as:

*How are deviations managed in practice beyond the point of no return?*

The unit of analysis is a project team responsible for planning, controlling and managing a diesel power plant project. The contribution of this article is to extend the contemporary project management debate in general, and the discussion on how deviations with severe time limitations are managed in particular. The article is structured as follows. Subsequent to the introduction, a mountaineering expedition that went terribly wrong is described. Next, there is a comparison between mountaineering and project management, followed by a review of the literature on plans and deviations. Methodological considerations and findings are presented. The discussion and conclusion sections start with the point of no return and the sanctioning in retrospect of actions taken. The final section – implications – offers some food for thought for both practitioners and academics.

## 2. Background

### 2.1. *Touching the void*

The story is Joe Simpson's description [37] of what happened to him and his partner Simon Yates when they were climbing Siula Grande, a 6344 m peak in the Andes. The route they were planning to use had not previously been climbed. Thus, it had an unknown route and was a task beyond the normal, with a time constraint and limited resources (of food, water and fuel).

During the ascent Joe and his partner became worried as they were slowed down by loose snow, cornices and had started to run out of water. The situation frightened the 2 climbers as it might cause deadly high altitude sickness. Nevertheless, as the climbers made it to the top half of the expedition they felt more settled. Using another path the descent started out rather easily but soon became harsh when a storm emerged limiting the visibility to a few feet. Loose snow, cornices and ridges made the descent unex-

pectedly dangerous even though the climbers were roped together.

During the descent Joe started to go down a 10 m high edge. Tired and struggling he listened to the ice axe go into the wall but the comforting sound of a fixed axe failed to occur. When Joe tried again the other axe let loose and he fell. To his horror the lower leg was driven through the kneecap making every step close to impossible. Joe's partner faced a decision. Either he could leave Joe or they could continue together. The latter decision would result in tremendous pain for Joe and probably kill them both. The decision was made to continue, roped together.

A storm, thick fog and loads of snow made it impossible for the climbers to communicate and the descent hazardous. Suddenly Joe fell and picked up speed. When the rope yanked to a halt Joe found himself hanging from a cliff without any possibility of communicating. After 2 h Joe's weight started to pull his partner from the mountain. The partner faced a decision: to cut the rope or not. He chose to cut the rope, certain that he killed Joe.

Incredibly Joe survived but he fell 30 m into a crevasse. He had no possibility of climbing up and a partner who believed he was dead, faced with a decision either to lie down and die or to lower himself into the darkness of the crevasse, Joe continued with his infected broken leg and luckily, managed to get to a small but very fragile ridge which lead onto a glacier they had passed on the ascent.

A glacier is not a safe place to be unless you are properly secured and know what you are doing. Joe knew what he was doing but was not secured; neither could he see previous tracks. The broken leg made any movement incredibly painful. Despite pain and hallucinations Joe divided the distance to be covered into milestones.

Joe crawled back to the camp on all fours, covering a distance of 15 km with a broken leg, reaching the camp site 2 h before his partner left. Later on Joe argued that it was his will to survive which saved him but also the fact that he was constantly breaking up the task into small milestones brought him home alive, able to tell his story.

### 2.2. *Mountaineering as a project management metaphor*

Metaphors are frequently used in a range of fields, including business studies. A metaphor contributes to the understanding of one field through concepts from another and provides a powerful tool for bringing new light to common themes [16]. A recent example of the use of metaphors is given by Lundin and Steinthorsson [27] who used the metaphor of stepping into the same river twice to elaborate on the temporary organization. One might ask, "why use the metaphor of mountaineering on project management?" Firstly, climbing is constrained in time, cost and scope and should accomplish a unique task, involving a team, and these are the often-claimed features of a project [28]. Secondly, although they use different methods, mountaineering relies on planning and control, just as projects do. Thirdly, risk is the key to most mountaineering routines,

for example, using a rope crossing a glacier. In projects, risk management is considered to be fundamental [1] and a lot of project management behavior can be assigned to it [32]. Fourthly, expeditions are multifaceted, as are projects. Like the leader of an expedition, it is the job of the project manager to manage for example, transports, stakeholders, subcontractors and clients to make it safely to the top and back. Failing to manage the plan and the deviations to it may, as in the case of the Everest disaster, contribute to death [4] or a failed project [32]. One difference though, which proved to be close to fatal in the Andes case, is that in projects there is the possibility of communicating to find solutions. This possibility does not necessarily exist on the mountain. See Table 1 for a summary of the similarities.

### 2.3. Projects and deviations

Of course, there are projects and there are projects [6,35,39] but generally projects are considered to be task-oriented creating an action-based organization [9]. Projects have been defined as unique undertakings by a team which operates with a limited amount of resources during a certain time within a set of boundaries. All these parameters are later evaluated against [25]. While the project manager is held accountable for following the plan, the actions and the outcome of the project is a race against time, partly perhaps as a consequence of the fact that contracts are signed with a clause stating the final date for completion and if the clause is broken the organization faces severe penalties ([15] p. 408). Thus, in terms of efficiency, the point of no return in these kinds of projects is associated with the signing of the contract and the deviations that occur have to be managed expeditiously but still with great consideration (compare [29]).

Uncertainty is inherent in any project due to the novelty and the plan that are the main tools of constraining that uncertainty while it also is supposedly the most efficient path towards the goal. Using a plan suggests regularities

in the development but deviations are just as natural. Hällgren and Maaninen-Olsson [18] argue that the deviations – unexpected events – are handled according to four main tactics depending on the amount of uncertainty and ambiguity of the deviation rather than formal procedures. They are evident-, controlled-, diffuse- and development solution tactics. De Meyer et al. [7] suggest that variations range from simple variations to chaotic ones and they each call for different measures. Concurring, White and Fortune [43] found that only a few of 236 project managers used a fraction (fewer than four) of different tools during a project. To understand deviations there is thus a need to focus on the actions of the practitioners, beyond formalities and make-believe statements (compare [14] p. 5). The importance is highlighted by the turn towards practice in contemporary research [21,34] and project management (e.g. [3,19]).

### 3. Methodological considerations

This paper reports on a turnkey project in a company called Power Solution in the distributed power industry. The author spent three months at the office collecting ethnographic data and conducting interviews according to the procedures proposed by Spradley [38]. The author gave admittance to all plans, contracts, meetings, the project team's emails, etc. Thus not even sensitive information was intentionally withheld from the researcher. The use of multiple data gathering allows for triangulation [30] and producing different pictures that enhance the understanding ([8] p. 28) which is preferable if the focus is on the process [30]. The data were analyzed according to Silverman's [36] propositions. The precise approach is detailed elsewhere [20]. This paper builds upon past research on deviations, uncertainty and ambiguity comprising 39 interviews and observational data [17].

Power Solutions Turnkey projects were conducted with 2 teams. One site team in the country, where the power plant was built, was responsible for the erection

Table 1  
Similarities of the mountaineering metaphor and project management

	Mountaineering	Projects
Time	Time objective	Time objective
Cost	Food, water and gear	People, resources etc.
Scope	Top and back	The project goal
Unique task	The route being climbed neither before nor after	Often claimed feature of projects
Temporary endeavour	A non-continuous climb within certain frames	A limited endeavor within the borders of a task
Team	The members of the expedition	The project team
Planning methods	The route and the necessary resources	The project plan and the resources to acquire it
Control methods	Physical securing during the climb and visible consolidation of personal and mountain conditions. Later on the break down of the path into small objectives.	Project plan, work bread down structure, earned value, CPM, PERT etc.
Risk management	Mitigation of risks to circumvent them by for example choosing another path	The identification or risk to circumvent its impact.
Management task	Transports, stakeholders, subcontractors, clients etc.	Transports, stakeholders, subcontractors, clients etc.

of the building, assembling and installation of the system in general. The project team, on the other hand, was located at the corporate office, responsible for planning, control, resources and customer contacts. The project team consists of three engineers and a project manager. The project team at the corporate office was the focus of this study. Each team manages about three projects in different phases. The phases are mostly conducted in parallel, hence transport might start during design and at the same time the building erection is commenced [26]. As will be seen, although Power Solutions were used to carrying out projects, having at any point in time about 100 simultaneous active projects, they still experience deviations.

#### 4. Findings

At the beginning of January 2005 the project team had no idea about what lay in front of them. The project team at this point in time managed three active projects, 2 sales projects and 5 warranty projects.

One of the project team's active projects was a Turnkey project intended to produce 13 MW for a client. The project had been ongoing for 5 months and the erection of the building was just about to finish while the site team was waiting for the transport of the heavy machinery. As the days went by Erik, the project manager, was becoming increasingly worried because of a delay in customs clearance.

The initial delay was covered by slack in the project plan but Erik was worried as the days were needed for the installation phase and the workers at the site could not keep the speed up. So costs were increasing. When the goods were cleared by customs a transport mess emerged, delaying the material further. Because of the delay a subcontractor started to demobilize their personnel as they considered them to be more useful on other sites. Erik and the site manager discussed the matter and decided to send the subcontractor an email stating that they have to maintain their personnel and the speed or otherwise they would be deemed liable for any delays. In a few days the demobilization came to a halt. In the end the transport was delayed 20 days. During the period Erik had a lot of correspondence with the transport consultant, the transport company, the local transport agency and the site. The information was conflicting and the reasons numerous: divided transports even though it should have been done in a convoy fashion, bad weather, police intervention, holidays, slow progress, etc.

Finally the equipment arrived at site but another deviation emerged. When Erik opened his email he found out that the medium voltage switch gear cubicles and a few air silencers had been visibly inspected and found to be damaged. Erik sent an assistant to inspect the damage and write a report on what had happened. When talking to the insurance company 2 days later Erik was slightly agitated:

“We have to order now! Otherwise we will pay ourselves silly in fines!” Listening for a while he says: “I understand that you can't give me an absolute answer but I tell you once again, we have to order now!”

On the same day, without full information and without the insurance company's decision on compensation, Erik felt forced to order replacements for the damaged equipment.

“I understand that the 2 MV switchgear cubicles are so badly damaged that we need to supply new ones. Please act accordingly to not lose more time.”

**Email 050119**

In the end the transport damages meant increased costs and a delay in the arrival of the equipment. The deviations were duly noted in informal conversations with the management and in different emails. Some reports were written and sent to the insurance company and the transport company but nothing appeared in the project execution plan or related documents. The deviations were later reported in the compulsory monthly reports.

Another progress-related deviation was the erection of the fuel tanks which was on the critical path. The reason for the delay was primarily accorded to slow progress and an inadequate work force. The contractors were repeatedly asked to pick up their speed and employ more people but it took time. Again, email and conversations were used to push the subcontractor but no formal routines or tools were applied. Finally a deviation emerged that would delay the handing over. The pipe rack, carrying pipes and electric cables from the power plant to the paper mill, was within the client's scope. In the middle of January Erik started to get increasingly worried about the progress. As far as he knew there was no progress at all and the reminders produced nothing but empty promises. The farce continued over a number of months – the client promised but no progress was made. Four months later, passing the critical date for the completion, the client started the construction. No formal complaints were done in this case either, there were only emails, minutes of meetings and conversations. In the end the consequence of the delay was a demobilization of the site for 2 months. The cost of the deviation was sent as a complaint to the customer and was later negotiated. Another deviation, also related to the client's scope, was the ordering of switch gear equipment. This deviation was interconnected with the pipe rack one and discussed parallel to that issue. In the end, the switch gear was as much delayed as the pipe rack, delivered at the end of June instead of March. Monthly reports were filed regarding the deviations according to company procedures.

#### 5. Discussion

Metaphors are powerful tools to shed new light into areas [16]. Combining insights from mountaineering with

project management this article contributes to the understanding of how deviations are managed in practice. Although Power Solutions runs more than a hundred projects simultaneously and has done so for a couple of decades, they still experience deviations. This demonstrates that preventing deviations is a problem and also that studies of deviations are worthwhile. Adding to the argument is the fact that there is evidence that deviations are not always, even seldom, handled according to procedure (c.f. [7,18]). The purpose of this article was to contribute to and extend contemporary debates in project management generally, and in particular, how deviations with severe time limitations are managed. The findings could be summarized into 2 statements:

- (1) The point of no return forces deviations to be addressed immediately and contributes to the neglecting of formal methods as the actions become forced.
- (2) As a result of the abandonment of formal procedures, the actions are sanctioned after the deviation is rectified rather than before.

### 5.1. Point of no return

The point of no return is associated with the latest turn-around time and thus greatly influences a major part of the decisions made in a project (compare [15]). In the case of Power Solutions, the termination of the project was not realistic even though it was associated with deviations that had a large impact. Too much effort, too many resources and penalties depended on it. To wait and see was not an option, as it would further delay the project and add costs. In P3 [damaged equipment] the decision to go ahead without full information proved to be correct but this was not certain at the time of the decision. As in mountaineering, non-action was lethal, without making the decision to cut the rope, they both would have been sentenced to death. In Table 2, the deviations, the consequences and decisions in the metaphor are compared.

Likewise, in the project immediate action was taken when the subcontractor started to demobilize the site and the tank progress was slow – a quick conversation, a swift decision and then action. The action was also immediate in the case of the pipe rack and the switch gear delay.

Table 2  
Deviation and consequence

Mountain climbing	Consequence	Decision and control method	Proj. mgmt.	Consequence	Decision and control method
Deviation M1 Slow ascent	Endangering the life of the climbers	Decision: Forced decision to continue Control method: Use of as little water and fuel as possible	Deviation P1 Transport delays	Delayed progress	Decision: Information gathering Control method: Use of email and phone conversations
Deviation M2 Slow descent	Endangering the life of the climbers	Decision: Forced decision to continue Control method: Increased caution	Deviation P2 Demobilization of subcontractor personnel	Decreased progress	Decision: To threaten the subcontractor Control method: Use of email and phone conversations
Deviation M3 Broken leg	Slowing down progress even more and making descent extremely hazardous.	Decision: Live or die. Chose to continue Control method: Rappelling Joe down the Siula Grande	Deviation P3 Damaged equipment	Ordering of new material, increased costs	Decision: Forced decision to order new equipment Control method: A letter to the insurance company. Extensive use of email, phone and reports
Deviation M4 Cut rope	Thought to kill Joe	Decision: Live or die. Chose to cut the rope Control method: No control method.	Deviation P4 Tank erection progress	Decreased progress	Decision: To push the subcontractor Control method: Use of email and phone conversations
Deviation M5 Descent into crevasse	Saving the life of Joe	Decision: Live or die. Chose to continue  Control method: Ice screw and rope. (No knot at the end to stop a fall)	Deviation P5 Pipe rack delay	Delayed turn over	Decision: Repeated reminders in meetings, phone calls and emails. Control method: Meetings and minutes of meetings. Extensive use of email and phone conversations
Deviation M6 Glacier walk	Saving the life of Joe	Decision: Live or die. Chose to continue  Control method: No physical control method. Breakdown of the task used as mental control method	Deviation P6 Switch gear delay	Delayed turn over	Decision: Repeated reminders in meetings, phone calls and emails. Control method: Meetings and minutes of meetings. Extensive use of email and phone conversations

However, here the problem was that they could not apply the same pressure as it was the customer who was delayed. This is an important distinction. The project team's actions were forced, but they were not effective due to power relations. Without immediate action, the deviations would have prolonged the project into a failed project. This situation shows how small decisions and small impact events may change and evolve over time [31]. The decision to let the customer take some responsibility for the task created a state of dependence and an inability to take action. Hence, it is important to regard deviations as a process rather than a single restricted occurrence. [Compare [31,42]]

The same situation is reflected in the Andes. The individuals' lives were dependent upon the outcome of their decisions. The decisions were not easy but they had to be made. In the crevasse, non-action would have meant a slow, agonizing death. If the rope had not been cut both climbers would have plunged to their deaths. In both these situations, actions were forced and in retrospect considered legitimate [compare [18] p.409] which in turn shows the importance of informal practices rather than formal instructions.

One example of the importance of such decisions is Kayes [22], who draws upon Krakauer [24] in arguing that one possible reason for the many deaths on Mount Everest.

In 1996 was the lack of a turnaround time due to bad leadership. Usually when climbing at this altitude (>8000 m) a "safe" turnaround time is considered to be 12 am; 1 pm is risky and 2 pm is really pushing the climbers' luck. In 1996 the last climber reached the top at 3.20 pm. The survivors claim that no final decision was made regarding the turnaround time. In the Andes, a descent on the same path was considered impossible because of the snow conditions. There was thus no "turnaround time" – or – the point of no return was passed when the climb began! In the same way as a mountain forces climbers to keep moving or turn around, industrial projects face the same decisions but with a twist. Industrial, contract regulated projects seldom have the possibility of turning around without heavy fines [compare [15] p.408]. The mechanism that explains the need for action is the point of no return in combination with the limits of the project in time, resources, scope, etc. [9]. There was no possibility of turning back, neither was there any possibility of ignoring the situations as they might become increasingly serious. The actions became forced, that is, the project team had to continue on their endeavor and solve the deviations ahead. This was done by stepping away from the plan and finding original and innovative solutions to difficult deviations.

### 5.2. Sanctioning of action in retrospect

In mountaineering, the plans are very important as they constitute the path and the level of difficulty. To control developments a number of control methods are used including harnesses, ice axes, crampons and foremost

among them all, partnering. "In climbing, having confidence in your partners is no small concern. One climber's actions can affect the welfare of the entire team." ([24] p.37).

Plans, on which control relies, also constitute projects (c.f. [25] p. 341). The plan shows how to finish the project in the most efficient way. Yates cut the rope, the most important safety device of them all. Obviously even the best control methods may break down in the face of reality [31]. When time is a scarce resource, as in a project, the decision seems to be pushed away from formal methods associated with the plan. Action becomes promoted at the expense of formal correspondence and reporting the normal features of control (e.g. [15]).

In neither of the deviations were there any formal change procedures, nor were there any formal risk management procedures as described by for example, the PMBoK [32]. The process was instead formed around informal communication. The reports that were written regarding the deviations reported on the past – what had been – and did not form any basis for future decisions in relation to managing the deviation. According to Akintoye and Macleod [1] one reason for this is lack of time and knowledge. Thus, the results are partly in accordance with the findings of this study.

Without the possibility of turning back and faced with time limitations, the decisions are "good enough". At the time of the decision, breaking rules and taking immediate action without full information meant that the actions might backfire when they were evaluated later [25]. The full results were only apparent retrospectively which made the project manager's decision to take action a risky one. Joe faced a similar situation when he decided to continue down in the crevasse. He did not know what waited for him and it was not until later on he found out that the decision was the correct one. It might seem a high stakes game to gamble with life (as a mountain climber) or with the thousands of dollars (as a project manager) but compared with the risks of the alternatives the stakes seem low. To return to Mr Choo:

"What separates people who make it to the top and people who don't is the determination to keep going forward despite the fear, the doubt and the exhaustion – all the way to your final objective." [5]

## 6. Conclusions

The study described how deviations were dealt with during a project and a mountaineering expedition. In both cases, the control methods broke down because the nature of the point of no return forced actions without full information. In this paper the actions that were taken without full understanding and in haste are referred to as "forced actions". These actions were sanctioned afterwards rather than before but on the other hand they made it possible to continue with the project. The recognition of these results represents the contribution to the understanding of projects in general and deviation in management practice in partic-

ular. The research depended upon cases and one is always cautious in generalising observations from these. On the other hand, Flyvberg argues that “By and large, the conventional wisdom is wrong or misleading. [T]he case study is a necessary and sufficient method for certain important research tasks in the social sciences, and it is a method that holds up well when compared to other methods in the gamut of social science research methodology” ([13] p. 241). The deviations that were chosen were not necessarily representative of all deviations, neither is the management thereof, but examining the evidence from the entire study and other studies, there is reason to believe that the deviation and the management bear many similarities to other deviations and contexts [7,18]. Lastly, it is hard to be certain that all the relevant actions have been observed. On the other hand, finding similar behaviour in the larger study and other studies gives confidence in the findings. Nevertheless, some reflection seems in order.

## 7. Implications

There could be several benefits of this study to practitioners and academics.

Firstly, deviations happen and they have impact on the overall project. When deviations emerge, time shrinks and action becomes important. To be able to take the appropriate action the freedom that comes with it has to be allowed. That is, the project team has to be permitted not to use various methods. On the other hand, they probably will anyway. For the organization, this means less control but on the other hand, it increases the sensitivity to general change but also the management of deviations. Secondly, drawing upon the Everest cases, the importance of the right project manager and his/her abilities becomes evident. At Everest the expedition leader – the “project manager” was identified as one of the sources of the disaster whereas the project manager of the power plant managed to bring the project to a successful ending even in the face of deviations. This implies that not even the best tools can compensate for a lack of skills in the responsible people, especially in the case of deviations where the solution is more reliant on experience. Thirdly, a theoretical implication is that a project-as-practice perspective permits a supplementing, but not compensating, picture of projects which exposes new knowledge about projects and their practitioners. Such a perspective increases knowledge about real situations and what governs them instead of make-believe statements which at best, do not do much more than provide some relief and may actually confuse; and which at worst hinder problems caused by deviations from being solved.

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