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Knowledge development and transfer in a mindful organization

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Abstract

The objective for the Norwegian Olympic participation project was to create optimal conditions for the athletes. The challenge was to develop organizational capacities that could create competitive advantages, while making sure that all factors that could threaten optimal performance in the 2010 Olympic Winter Games in Vancouver, Canada, were eliminated or reduced as much as possible. Negative experiences from the 2006 Olympic Winter Games in Turin, Italy, were exploited as focal points of learning. The result was mainly a success. The research questions are: 1) What lessons did Olympiatoppen draw from the experiences in the 2006 Olympics? 2) What were the mechanisms involved in creating and transferring knowledge to improve management in the 2010 Vancouver project? The article contributes to the literature on knowledge development in projects in the following ways: First, knowledge, development and transfer are linked to risk management and the concept of mindful organization. In a mindful organization knowledge transfer and risk management are an integrated part of best practice. Second, it specifies how the social dimension; personal knowledge and problem solving capacities embedded in social relationships, is a precondition for exploiting general mechanisms of knowledge creation and transfer across projects. Such organizational characteristics are increasingly viewed as the key to success.

Purpose

In elite sport competitions there are small margins, and small advantages may be the key to big success. Details that in many other setting would be considered insignificant can have a major impact on results. Awareness about risks therefore become key concern in such projects, and this is often viewed as the essence of project management. Compensations for negative outcomes do not make sense. Delays, cost-overruns or compensations are not viable options. In such situations, success depends on the ability to manage risks with a high degree of reliability reflecting the ability to mobilize, use and develop new knowledge. It offers an opportunity to investigate mechanisms for knowledge development and transfer in relation to risk management in a mindful organization.

Design/methodology/approach

The starting point was formal documents and plans, but the main data source is semi-structured in-depth interviews with all major actors involved. The data are representative in the sense that they provide a comprehensive mapping of critical elements in Olympic projects, strategies for dealing with them and how knowledge from earlier projects were exploited.

As data were collected they were systematized through *open coding*, identifying recurrent themes relating to major concerns, influence of earlier experience, knowledge sharing, relationships between experiences and new project team members etc. The next step was to recode descriptive categories in ways that captured underlying *analytical or theoretical* dimensions relating to different types of risk, knowledge and knowledge carriers.

Findings

The article links risk management to knowledge development and transfer in a mindful organization. Three mechanisms are crucial for successful project-based learning: 1) relating different competences, 2) reflecting upon experiences, and 3) routinizing lessons learned. Such processes are at the core of a mindful organization. Knowledge transfer and risk management are an integrated part of best practice. In Olympiatoppen there is little codification of knowledge in formal systems and detailed operating procedures. Knowledge is mainly carried by individuals – and activated, evaluated and used in a setting where relationships play a key role. The ability to exploit such mechanisms for knowledge transfer is generally attracting attention as an essential success factor in project-based learning.

Research limitations/implications

Project-based learning reflects the organization's general capacity for mindful learning; where learning from everyday activities also provide the organizations with capabilities to exploit experiences from major projects. The study directs attentions to this interplay between organizational capabilities for knowledge development and transfer and the ability to learn across projects. In mindful organizations

risk management is an integrated part of best practice. Such organizational characteristics are increasingly viewed as the key to success for project-based learning. The study also highlights the social aspect of learning; emphasizing personal knowledge, problem solving capacities and relationships. The most important limitations of the study are: It does not have detailed time series data about key processes. There is no strict control for various factors that may have affected outcomes. And, finally, there may be limitations in the transferability of findings to the business context.

Practical implications

Managing opportunities and risks with a high degree of reliability reflects the ability to develop and use new knowledge. Project-based organizations typically experience problems in achieving such integration. Several factors undermine knowledge creation and knowledge transfer across projects. Most projects are conducted under strict constraints of time and budgets. There is rarely time for comprehensive evaluation of a completed project and the knowledge and experiences that can be derived from it. Mindful organizations pay particular attention to such factors as part of best practice efforts. The study illustrates mechanisms for mindful knowledge development and transfer that may be of practical use for all who wants to strengthen project-based learning.

Originality/value

The article contributes to the literature on knowledge development in projects in the following ways: First, knowledge development and transfer is linked to risk management and the concept of mindful organization. In a mindful organization knowledge transfer and risk management are an integrated part of best practice. Second, it pays special attention to the social aspects of knowledge transfer; particularly the role of personal knowledge and problem solving capacities and the importance of social relationships.

Keywords

Project-based learning, knowledge development, knowledge transfer, knowledge management, mindful organization, risk management

Paper type

Research

*Victory awaits he who makes sure that everything is well prepared – it is called luck
The arctic explorer Roald Amundsen*

Introduction

Norway's participation in the Vancouver Olympic Winter Games (OWG) in 2010 was organized by the Norwegian Olympic Top Sports program (hereafter Olympiatoppen). Olympiatoppen is the central organization for elite sports within the Norwegian Olympic and Paralympic Committee and Confederation of Sports (NIF), with an overall responsibility for results in Norwegian elite sports. It is quite unique that a national sports organization like Olympiatoppen, takes on an overall responsibility for all sports in preparing and implementing Olympic participation. While Olympiatoppen has the responsibility for the Olympic participation project, it involves representatives from many different sports associations as well as the athletes themselves.

Olympiatoppen supports ongoing performance development of teams and athletes in numerous small projects. The objective of the Olympic participation projects every other year is to create optimal conditions for exploiting competitive capacities (Andersen, 2009; Gotvassli, 2005). For the 2010 project a key concern was to avoid negative experiences that undermined Norwegian results in the 2006 Winter Olympics. In sporting events, from the local competition to mega-events such as the Olympic Games, risk is pervasive in the preparation and the implementation (Chappelet, 2001). The research questions are: 1) What lessons did Olympiatoppen draw from the experiences in the 2006 Olympics? 2) What were the mechanisms involved in creating and transferring knowledge to improve management in the 2010 Vancouver project?

The article contributes to the literature on knowledge development in projects in the following ways: First, creation and transfer of knowledge is linked to risk management in a mindful organization. In a mindful organization such processes are an integrated part of best practice. Second, it specifies how the social dimension; personal knowledge and problem solving capacities embedded in social relationships, is a precondition for exploiting general mechanisms of knowledge creation and transfer across projects.

Below we will first present the theoretical framework and how it is related to the Olympic project. Mechanisms of knowledge creation and transfer will be discussed in the context of risk management and characteristics of mindful organizations. The next section presents research design and methodology. Then we present our case; Olympiatoppen as the core in preparations for and participation of the Vancouver Olympics. This leads to a discussion about how relevant knowledge and experience is created and transferred to eliminate, reduce and manage operational risks. The concluding section discusses implications of the study in relation to knowledge creation and transfer across projects.

Theoretical framework

In elite sport competitions there are small margins, and small advantages may be the key to big success. Details that in many other settings would be considered insignificant can have a major impact on results. What characterizes the most successful elite sport organizations is often the ability to deal systematically with the many mundane factors in preparations and competitions (Chambliss, 1989). Awareness concerning the uncertainty of existing knowledge and risks therefore becomes key concerns in such projects, and attention to such factors are often viewed as the essence of project management (Krane *et al.*, 2010, p. 81). Such an attitude corresponds to a general approach to extreme projects with limited space for ad hoc risk management (Garel and Lièvre, 2010; Mekonian and Picq, 2010). Practicing management of the unexpected or crisis management is part of this preparation.

The present study relates to the literature on risk management in major sports events (Walker and Stotlar, 1997; Chappelet, 2001; Ammon *et al.*, 2004; Appenzeller, 2005; Leopky and Parent, 2009a, 2009b). Here the objective of risk management is to control the impact of unforeseen issues or accidents. Risk management is thus a proactive process (Getz, 2005; Wideman, 1992). It involves

“assessing all possible (...) by strategically anticipating, preventing, minimizing, and planning responses to eliminate or mitigate those identified risks” (Leopkey and Parent, 2009b, p. 1999). However, as Perminova *et al.* (2008, p. 77) point out, traditional planning and risk analysis cannot fully grasp future contingencies. They argue that the key to successful risk management is reflective learning, building capacities that enable flexible responses to unforeseen and unique events. This study represents a down-up perspective on major events, following the preparation and participation of a national team in the Vancouver Olympic Winter Games.

Creation and transfer of knowledge in projects is often discussed in relation to companies operating complex technological systems, involving a variety of specialized knowledge domains. Success depends on products and services' ability to successfully compete in global markets (Berggren *et al.*, 2011). Such companies face different types of risks. Some relate to the ability to develop and apply technology. Other risks relate to what competitors do. Modern elite sport faces similar challenges. To develop world class athletes it is necessary to combine many different types of scientific knowledge; like physiology, medicine, nutrition and psychology as well as material sciences and design of sports equipment. In a major sports event, like the Olympic Games risk management also requires knowledge about local conditions and many different logistical and operative details. In contrast to complex technological system, the reliable experience-based knowledge is critical for the organizations success.

In both business and elite sport actors have to develop organizational capabilities to manage complexities and uncertainties relating to problems that are not fully understood and which require the combination of various types of knowledge. Actors rarely know from the start exactly what will work, what elements will be crucial and what the end result will be. This requires coordinated experimentation and interpretation of ambiguous or incomplete data (Pavitt, 1998, p. 444). Knowledge application – knowledge in use - almost always implies elements of knowledge creation and transfer (Berggren *et al.*, 2011). Knowledge needs to be activated, recreated and extended in relation to situations that contain both opportunities and risks.

Knowledge creation and transfer is often been conceptualized as a cyclical process; the recurring movement between reflection and action. However, studies of project-based knowledge development and learning show that reflection and action is often loosely coupled (Argyris and Schön, 1978; Flyvbjerg, 2011). Project organizations often fail to develop and transfer knowledge necessary to bridge the gap between earlier short comings and new challenges. They do not take the time, or lack the capabilities, to systematically reflect upon experiences, draw lessons, identify gaps and to develop knowledge and new ways to more efficiently transfer and use it in preparations and operations. In addition to reflection Søderlund *et al.*, (2008, p. 518) emphasise the ability to relating different competences of the organizations and to routinize lessons learned as critical capabilities in knowledge creation and transfer.

Understanding how organizations can promote creation and transfer of knowledge relates to both individual and collective reflection. Reflection “means engaging in comparisons, considering alternatives, seeing things from various perspectives and drawing inferences. This constitutes a major element in learning from experience” (Jordan *et al.*, 2009, p. 466). It is particularly important when engaged in activities that require continuous improvements. Elkjaer (2004) argue that organizational reflection implies reflective learning supported by organizational routines, practices and cultures that prepare and enable actors to sense uncertain situations and act upon them by inquiry. An important part of this is to exploit diversity of competences and experiences (Zollo, 2009). Such characteristics that permit the questioning of expectations, knowledge and routines in relation to processes that are not fully understood are characteristic for mindful organizations.

Mindfulness can be regarded as an organizational phenomenon that is grounded in individual mindful behavior, but facilitated by organizational mechanisms (Weick and Sutcliffe, 2006). Collective mindfulness is realized through direct interaction or through rules and routines that help organize mindfulness reflection. Most attention has been paid to reflection *on* action. This is essential

in learning across projects. This is usually done through training sessions or meetings outside, rather than within, ongoing operations. Reflection *in action* allow practitioners to reflect on their actions as they go along. (Jordan et al., 2009, p. 467-68). This is important in learning within projects. The relative importance of these forms of reflection may differ (Swan *et al.*, 2010).

Knowledge involves a person using his or her perceptions, skills, and experience to process information (Ajmal and Koskinen, 2008, p. 7-8). Being mindful means greater sensitivity to build-in assumptions and context for knowledge. “When we are mindless, our behaviour is rule and routine governed; when we are mindful, rules and routines may guide our behaviour rather than predetermine it” (Langer, 2000, p. 220). In mindful organizations actors are encouraged to think about their knowledge as “probably true” under certain conditions. Mindful learning is about actively drawing new distinctions and noticing new things, about phenomenon as well as context (Langer, 2000, p. 221). To the extent that organization culture and practices supports characteristics of mindfulness we would expect a greater capacity for knowledge creation and transfer across projects.

Producing an optimal setting for Norwegian athletes in Vancouver requires a high degree of integrated knowledge, shaping expectations and behaviour under different contingencies. The question is how and in which ways the Olympiatoppen supports mindful knowledge development and transfer? Before we address this, we will briefly describe research design and methodology.

Research design and methodology

The Turin Winter Olympic Games in 2006 was a disappointment for the Norwegian team. In Salt Lake City four years earlier Norway was the best nation (13 gold medals). In Turin Norway won only 2 gold medals. In addition to 8 silver and 9 bronze medals, there were 10 fourth places. Norwegian athletes still had the capacity to be among the best, but they did not have the margins on their side. An important reason was that key athletes became ill, weather conditions and lacking collaboration created problems for ski preparation, some did not get to eat properly, and a general feeling of distress spread to the whole team (Hanstad, 2006). The following evaluation emphasized how the organization of future Olympic participation could exploit advantages and reduce the risks for similar “bad luck”. Some of these improvements were implemented already for the Summer Olympics in Beijing 2008.

This study compares experiences from the Turin with the Vancouver project. The starting point was formal documents and plans, and Olympiatoppen’s (2006) internal evaluation reports of the Turin OWG 2006. However, the main data source is semi-structured in-dept interviews with all major actors involved.

In the weeks leading up to the Vancouver Olympics we conducted interviews with 16 informants, covering all major areas of responsibility. The duration of the interviews was about one hour. This allowed for in-dept discussions about preparations over the preceding 1-2 years, before expectations were coloured by what actually happened. Studies of organizational learning show that interpretation of the past is greatly influenced by what happens later, just as learning is shaped by expectations. This is so both in everyday learning and in relation to critical and dramatic events (Weick and Sutcliffe, 2001, 2006). After the Olympics we had two meetings with two groups where almost all of the key informants were present. We discussed how and to what extent the Vancouver projects had succeeded in realizing optimal conditions for performance, and what lessons could be drawn from the project. We also had a couple of individual follow-up interviews to elaborate on specific situations that occurred during the Olympics and how they were handled.

Almost all informants hold key positions in both the Olympiatoppen and in the Vancouver project, and they all had central leadership roles during the Olympics. These include the head of top sports, who in this project is Chef de Mission, the heads of Norwegian contingents in different camp sites, head of logistics, press services, medical support, nutrition, psychological support, and coaches responsible for overall coordination and support in different localities. One, the head of the biathlon camp, is the general secretary of the Biathlon association. Cross country skiing and biathlon are two important sports in Norway, and they are of special interests because they experienced particular

problems in the Turin Winter Olympics. For this reasons we also included the sport directors in these disciplines.

We conducted the interviews together, each taking detailed notes. The interview guide provided a common structure for conversational interviews. The interviews focused on five main topics; 1) their role in the project, 2) preparations and planning, 3) critical risk factors in the Olympic competition, 4) the role of experiences from the Turin Olympics, and, eventually 5) experiences from the Vancouver Olympics. Conversations allowed for follow up questions and probing ensuring reliability and validity. Informants differed in their emphasis and evaluation of various factors, partly due to their roles, responsibilities and experience. Most had been part of earlier projects, while others were participating for the first time. The data are representative in the sense that they provide a comprehensive mapping of critical elements in Olympic projects, strategies for dealing with them and how knowledge from earlier projects were exploited.

Data were analyzed in a two-step procedure. As data were collected they were systematized through *open coding*, identifying recurrent themes relating to major concerns, influence of earlier experience, knowledge sharing, relationships between experiences and new project team members etc. This approach made it possible to summarize data in a way that show how informants were thinking about various issues. Interestingly, the concept of risk was not commonly used by informants. Uncertainties were usually discussed in terms of specific requirements and capacities needed to avoid negative outcomes.

The next step was to recode descriptive categories in ways that captured underlying *analytical or theoretical* dimensions (Charmaz, 2006; Silverman, 2005) relating to different types of risks, knowledge development and transfer. The issues of learning, knowledge development and transfer across projects were familiar themes that resonated with informants' everyday attitude to learning. In systematizing and interpreting statements regarding these issues we relied on the conceptual model of a mindful organization.

The case: Olympiatoppen as the core of the Vancouver project

In relation to Olympic participation it does not make sense to think of risk management in terms of compensations. Such efforts must focus on prevention and handling of negative events. The challenge is that almost any negative factor may undermine participants' capacity for optimal performance. There are often very small margins that distinguish between the best. Risk analysis must have a broad perspective and pay attention to small details that in many other settings would be considered insignificant. In this sense planning and preparations require a mindful approach. This was frequently emphasized by our informants in the Olympic Top Sports program. In the words of the head of the Olympiatoppen: "Our work is characterized by a continuous process, where the perfect always can be even more perfect. There are small margins. We know that success may be very close to failures" (Svenska Dagbladet, 2009).

As other elite sport organizations, Olympiatoppen is characterized by a culture of active and self-critical reflection in knowledge creation and knowledge transfer. In this sense it is a mindful organization. In mindful organizations managing complex technical systems, knowledge is codified in detailed procedures that play a key role in learning and knowledge transfer (Langer, 2000; Weick and Sutcliffe, 2001; Starbuck and Hedberg, 2006; Roberts, 2008). In contrast Olympiatoppen is characterized by situated learning; where people participate and interact within few and general formal procedures that emphasize roles and responsibilities. However, leadership practices and informal rules strongly support interactive routines that foster both reflection *on*, and reflection *in*, action that stimulate mutual challenging, sharing of experiences, a strong sense of shared responsibility for results and importance of relationships in applying, transferring and creating new knowledge that can be trusted in critical situations (Andersen, 2009).

The Olympiatoppen actively engages with individual sports as well as athletes, teams and coaches in many different ways (Gottvassli, 2005; Augestad and Bergsgard, 2008). It regularly

organizes and participate in the many development projects that takes place in various sports. It provides support in specific and prioritized areas. Plans for individual sports are challenged, cooperation and advice offered. The latter may include finding a new coach, specific development projects or managing challenges relating to individual athletes. Senior coaches play a key role. They have been recruited on the basis of sustained success in their own sport. Though subsequent involvement in many different sports they become generalist coaches, introducing elements of mindfulness into various settings. These coaches challenges existing practises, help draw lessons from experience and make sure that new knowledge and various experiences across sports are made available to everyone. In this sense knowledge creation and transfer is part of the core competence in the Olympiatoppen.

Observation and judgements about what has happened and why are frequently discussed both during and after various projects, but most attention is paid to the process. In the words of an informant: “To get it right we need to continuously evaluate what we do. For this reason we don’t spend a lot of time on evaluation when the project is completed” (20100217). In preparations for an Olympic participation project, reflection *on* earlier experiences is a major input in planning and systematic preparations. In the operative stage reflection *in* process is viewed as the key to success.

An Olympic participation project is closely linked to the many on-going development processes involving various athletes and teams, but it also differs from these projects in important ways. It involves a large number of people from many different sports. Competitions take place in new settings, introducing new and unique challenges. The project management group has a special responsibility for planning and preparations. The Olympiatoppen coaches have a special role, in providing assistance and support for coaches, athletes and teams in the competition situations. Practical experience is viewed as essential. Great effort goes into finding the persons fill the different roles. They have often been central in developing and transferring experience-based knowledge, and in formulating how different types of expertise can contribute to more reliable and robust knowledge about from experience formulating. “We make sure that all project members have the proper experience. Some of us have been participating in 10 Olympic projects” (Interview, 100106).

Having an organization that actively supports mindfulness is, of course, no guaranty for success. Small glitches may have major consequences. The back drop for the Norwegian Vancouver project 2010 was the experiences from the Turin Olympics in 2006. One informant with a central position in the Turin projects put it like this (Interview 100108):

“Almost everything that could go wrong went wrong. Results did not materialize, illness developed partly because living conditions were not good enough, we had negative press coverage, members of the ski preparation team were involved in fist fights and some athletes were partying. In one sport, there were cooperation problems. However, all negative experiences have been used to improve preparations and relationships between the Olympic Top Sports program and the sport teams.”

Reflections upon what happened in the Turin Winter Olympics were an important input in planning and preparations for the Vancouver Olympics. New knowledge pointed to the need to extend and specify fact finding, risks evaluations and capacity for operative risk management. This led to some new initiatives already in the Beijing Olympics in 2008. They involved organizational adjustments to increase the capacity for operative risk management. A key element of this was related to the role of the Olympiatoppen coaches in critical situations that may arise during competitions.

Below we will discuss how challenges were perceived and dealt with from the perspective of knowledge development and transfer.

Lessons learned: Risk management, knowledge creation and transfer

Some risk factors may be almost completely reduced through good preparations. Practical problems related to logistics and living conditions may also to some extent be corrected for there and then. The risk of illness can be reduced, and considerable efforts go into this. However, such risks cannot be

completely eliminated. If illness occurs, it may not be so easy to manage. Isolation and heightened awareness about such risks can have negative psychological effects. This means that corrective measures may introduce new risks. Also, the occurrence of serious accidents by team mates or competitors in or outside competition may also undermine concentration. The effects of such negative events are likely to be reinforced by media coverage. In the Turin Olympics many of these mundane factors seems to have interacted in a negative way.

The key to successful implementation of an Olympic participation project is careful planning and preparation. This involved identification of major risk factors, and making sure that the necessary knowledge necessary to manage risks is embedded in the organization. Risk factors can be divided into four main groups 1) practicalities, including living conditions and transport, 2) physical health, including injuries, nutrition and accidents, 3) mental factors; including anchoring of realistic goals and dealing with high expectation, and 4) dealing with media and 5) coaches capacity to coordinate and support in the operative stage. In all these areas the experience from Turin pointed to the need for refinements of routines and practices to provide a more detailed picture of risks involved, to strengthen the relevant knowledge.

1. *Practicalities.* In Turin practical arrangements were managed with care. Parts of the team were spread on several different locations outside the Olympic Village to accommodate special needs and to strengthen team cohesion. However, in the wake of several negative events, including illness among some athletes, the special accommodations were to be viewed as negative factors adding to the misery. One important lesson was that some specific factors were not well understood. Another was that special arrangements to create advantages could also create new risks. In Vancouver, Olympiatoppen had, in addition to inspection visits, a representative living in the area for one year. She later became the Assistant Chef de Mission and head of Norwegian Olympic Village in Whistler. Local knowledge and good facilities allowed for risk reduction by placing almost all sport teams in the Olympic Villages.
2. *Physical health.* Managing risks related to illness and health is central to good performance. In Turin some of the best athletes became ill. In the wake of this, too much focus on illness during the games had negative psychological effects for the whole team (Hanstad and Engebretsen, 2007). There were also problems related to food and nutrition for those located outside the Olympic Village. Again, measures intended to reduce risks introduced new ones. In Vancouver routines were improved, but the main difference was how they were implemented in the teams. An important lesson was that organizational factors were essential. In Turin preparations the support staff had been viewed as external experts. Their knowledge was not internalized and integrated with other types of knowledge. Better access to teams during general training and preparations and increased attention to athletes with special needs created a different situation. Routines managing expected contingencies were improved. This involved greater openness and honesty in communicating early signs of illness (Hanstad *et al.*, 2011).
3. *Mental factors.* In Turin overly ambitious public goals were not realized and this created mental stress, leading to uncertainty and pessimism. Before Vancouver there was a conscious policy of keeping leaders, coaches and athletes from creating high expectations that could add to the pressure that everyone feel in such situations. In each sport processes were implemented to ensure that objectives were realistic and based on athletes capacities rather than external expectations. Preparing for success also involves preparing for failure. The capacity for support and mental training had been expanded and embedded in the team. The team was prepared for a bad start, to reduce negative psychological effects. "I have been involved in several Olympics to provide mental support. Despite some disappointments the first days, reports indicate that this did not significantly undermine the team's confidence. I was sure that the medals would materialize and this was communicated to everyone in the team" (Interview, Chef de Mission, 100422).

4. *Dealing with media.* The relationship between the Norwegian team and the *media* was subject to an agreement set down in a detailed set of rules. Despite this, in Turin, media was experienced as a serious stress factor. Failure to realize high ambitions appealed to the media format. Illness in the team became a key issue. “Negative news coverage was the first thing that met team members when they opened Norwegian newspapers” (Interview, 100202). Medical personnel got a too much media space. Already in the years preceding Vancouver, new routines had been developed for coordinated contacts between media and team representatives and athletes. In addition, athletes were trained to handle the media. During the Games, both journalists (Hanstad and Skille, 2010) and the press attachés (group interview, 100422) found the collaboration to go more smoothly than expected. However, the athletes still felt media as a stress factor because of the tendency to exaggerate different events (Kristiansen *et al.*, n. d).
5. *Coaches capacity.* A central responsibility for the Olympiatoppen coaches is to coordinate and support team coaches and athletes in the *operative phase*. In Turin their roles were not sufficiently clear, practices and communications differed. “One of the coaches from the Olympiatoppen I had never met before we were in Turin. We did not know each other well enough and this complicated cooperation in situations of vital importance” (Interview, 100108). There was a lack of strong team sprit across sports. Some conflicts did arise. Before Vancouver, the development of competences and roles of coaches had been a priority. During the Games this represented new capacities. “Positive personal relationships among coaches and leaders in different sports created a sense of security” (Interview, 100429). The fact that more athletes were living together at the same location added to the overall team feeling.

Below we can summarize lessons that were learned from the Turin Olympics in relation to two dimensions. The first is risk factors. Here we distinguish between risks related to specific issue areas and risks related to organizational capacities to deal with uncertainties. The second is knowledge development and transfer to improve risk management. We distinguish between reflections on experience and the actions taken to develop new routines or organizational capacities. All application of knowledge requires contextual and situational modifications, as well as capacity for improvisation. Combining these two dimensions provides us with a framework to summarize lessons across the five issues areas, as shown in table 1.

Table 1.
Risk factors and knowledge categories

Creation and transfer of knowledge	Reflection on experience from Turin	Actions taken to develop new routines and capacities
Risk factors		
Issue specific	Need for more detailed routines Understanding specifics of local context Routines not properly followed Unintended effects of risk reduction strategies	More detailed fact finding More specific routines Embedding routines in organization Routines for managing expected contingencies
Organizational capacities	Some people did not have the sufficient experience Relationships for information sharing, knowledge development and knowledge development not sufficiently developed	Picking the right people Improved relationships Cognitive and social capacities for fine-tuning of organization and managing unexpected contingencies through mobilizing and developing knowledge

To summarize: In preparing for Vancouver Olympics evaluations of the Turin experiences played a major role. It identified gaps in knowledge and the way it was transferred and used by the organization. New experiences added to or modified existing knowledge. New people were brought in to complement the organization. In addition, there were special projects to develop new knowledge and competences viewed as essential in both preparations and in the operative stage. The objective was to develop and transfer knowledge to create new organizational capacities for risk management. This required a strengthening of general values and relationships supporting mindfulness on all levels. A special project was carried out already before the Beijing Olympics in 2008 to develop the role of the Olympiatoppen coaches. They have a key role both in preparations and in their role as leaders helping fine tune the organization and solve unexpected problems during the games.

How can mechanisms of reliable knowledge development and transfer be linked to characteristics that strengthen mindfulness in organizations? This is the topic of the next section.

Mechanisms of knowledge development and transfer

Successful projects require learning among many actors involved. In this sense projects are flexible and adaptive structures. However, it is well known that project leaders tend to underestimate uncertainty and complexity up front. There is a “optimism bias” (Bradly and Hobday, 2011, p. 273-74). This optimism seems to involve both the issue specific risks and the organizational capacities for effectively dealing with them. The resulting shortcomings in realizing goals within budgets, on time, with expected quality represents learning opportunities. To the extent that organizations consciously try to exploit such opportunities for knowledge development and transfer they demonstrate elements of mindfulness.

Söderlund et al., (2008, p. 518) emphasize that successful project-based knowledge development and transfer requires organizational support for three main mechanisms: 1) relating different competences, 2) reflecting upon experiences, and 3) routinizing lessons learned. These

mechanisms are at the core of a mindful organization. Drawing upon the Vancouver study we will discuss how general mechanisms are exploited to strengthen learning across, and within, projects. A striking observation is emphasis on personal knowledge and problem solving capacities and the nature of social relationships as the key to success.

Mindful organizations are characterized by a culture that *relate and integrate* knowledge across domains (Weick and Sutcliffe, 2001, p. 42). Knowledge is almost never simply a question of specific skills, it is usually embedded in the organizational context. The Olympiatoppen is involved in many different projects to help athletes and teams build capacities necessary to win world class competition. In such processes part of the effort is to actively challenge on-going activities and develop new knowledge, drawing upon many different types of expertise. Project can draw upon the processes and skills from everyday development work as well as former experiences from earlier Olympic projects. New capacities in training and development, as well as experiences from other international competitions, are integrated as part of preparations. Key people had comprehensive knowledge about such projects as a whole, about critical factors and key lessons from earlier Olympics. “We knew the challenges and we knew each other well when the project was initiated. This was a great advantage” (Interview, 100422).

Active and self-critical *reflection*, individually and in collective organizational settings, is a precondition for reliable knowledge development and transfer. In a mindful organization this involves reflection both *on* and *in* action. Knowledge creation may be viewed as an extension and further development of the models for what is considered best practice. Such extensions come from reflection *on* earlier experiences. In all risk areas preparation for Vancouver Olympics included new elements or details of critical importance or improved understanding of the conditions for more reliable implementation. In operative stage of an Olympic project the focus shifts from active challenge to active support for the existing best plans, and capacities for handling unforeseen contingencies. *Reflection in* processes may be vital in projects where even small glitches may have major consequences for results (Jordan *et al.*, 2009). “When situations arise, like illness, it may be too late to do anything. Therefore, we need to be prepared for everything” (Interview, 100422). In this sense knowledge creation is linked to collective capacities for flexible response to unforeseen events (Perminova, *et al.*, 2008).

The quest for continuous improvement means that routines are rarely applied in semi-automated and literally mindless ways. Learning and knowledge creation is closely related to development of new practices, but *routinization* takes the form of focused concerns rather than detailed and fixed operating rules (Langer, 2000). Finding the right people for the job is critical both in preparation and in the operative phase. “We have people who know what this is about, who are conscious about the responsibilities that they take on. However, experiences from Turin demonstrated that we did not go far enough in securing the quality of key processes” (Interview, 100106). Routines related to specific issue areas are always linked to meta-routines for mindful organization. Specific routines and expectations for interaction, exchange of information and reflection on experience are closely linked to various forms of knowledge transfer and knowledge creation.

The sections above deal with three key mechanisms of knowledge development and transfer. However, this study also pints to a common denominator; namely the importance of the social dimensions for reliable experience-based knowledge creation and transfer. In mindful organizations experience, as tested and reliable knowledge have a special position. This is particularly so, when experience constitutes the core knowledge critical in combing different types of specialized knowledge and in evaluating overall results. From our study it is clear that knowledge as experience has two main dimensions for the key actors in the project. First it provides actors with a practical repertoire that cover important aspects of the situations at hand. Second, it contains an element of tested knowledge creation capacity, allowing experienced practitioners involved in solving problems or enhancing operations. While both types of capabilities may be shared or transferred to others, the most important thing may be that such persons through good relations are available to others when needed. The ability

to exploit such mechanisms for knowledge creation and transfer is generally attracting attention as an essential success factor in project-based learning (Sense, 2007, 2008; Thomas *et al.*, 2008; Ajmal and Koskinen, 2008).

Concluding remarks

Project organizations' capacity for knowledge development and transfer across projects is often quite limited. Evaluation and reflection often suffer from competing attention from new projects and the fact that participants often come from different organizations. The article links risk management in projects to knowledge development and transfer in a mindful organization. In such organizations attempts to strengthen reliability of learning and capacities for action is considered a key concern. Key mechanisms for knowledge development and transfer are pursued with vigour. However, it demonstrates that knowledge in organizations is not only a cognitive capacity; it is embedded in individual repertoires of action, social relationships, organizational routines and culture. This study suggests the capacity for reliable knowledge development and transfer organizational properties, rather than the design of specific procedures for processing and acting upon experiences.

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