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Projects in uncontrollable environments – Uncertainty management in projects pursuing interests (PPI's)

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Abstract

This paper is a study of uncertainty management in projects pursuing interests (PPI's) where high levels of uncertainty are present. Uncertainty in political projects is typically related to changes during the project process. Strategies for risk management in political projects should focus on both operational and contextual uncertainties. An organisational perspective should be dominant in uncertainty management in these projects since a task perspective will most likely lead them astray. When initiating PPI's the organisation is advised to make room for project management strategies which include transformational leadership styles using network based management. On the basis of a literature study and a project case study a model for uncertainty management in PPI's is developed and recommended to the organisation.

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1. An introduction

The paper focuses on uncertainty management in projects executed in political organisations - and under severe levels of uncertainty. A case study has been made involving a project in a trade organisation that functions as a shared political secretariat for companies in a specific sector in Denmark.
Professional organisations, well organised interest groups or public authorities are organisations specialized in pursuing the interests of specific groups of people - for example lobbying organisations and NGO's. Even the central administrations executing the will of politicians elected by the people pursue interests. Societies are full of organisations preoccupied with the representation and pursuing of interests – an activity often organised as projects.

Projects dealing with pursuing interests are often characterized by the fact that the specific product – if such product exists at all – plays a secondary role during the execution of the project. The dominant activity for project management is managing the processes of decision-making that surround the project. Project success often depends entirely on the central uncertainties originating from decision processes involving multiple and diverse parties.

The trade organisation in which the case study was made is led by a board comprised of eighteen managing directors from member businesses, which is the political and strategic management of the organisation. Management is undertaken by a managing director and a deputy managing director.

Project work was introduced in the base organisation six years ago to promote the strategic goals of the organisation. Among these is the aim to be a more pro-active lobby organisation. Experience with project work is mixed. Often the projects are hit hard by uncertainties far from the control sphere of the projects and even the base organisation's control sphere. Meanwhile project tools and models insist on risks related to time, resources and quality – tools and models that match the uncertainties in these projects poorly. It is clear that all these risks are present in projects exposed to high levels of uncertainty. But often deadlines can be postponed and more resources can be found. It is not the influence on deadlines and resources of uncertainty that knocks out these projects. Rather, it is the underlying sources of uncertainty. Some projects are successful. But many projects experience so many project crises along the way that they are ultimately remembered as failures. This sometimes has the effect that the results are in fact produced are not implemented anyway and that project managers and participants become disillusioned.

This paper seek to offer explanations as well as solutions in order to avoid waste and worries so that the organisation gains more from project work and project parties. On the basis of a case study in the organisation a model addressing the uncertainties present in projects dealing with pursuing interests is developed.

2. The research question

How can uncertainties be handled appropriately in projects dealing with pursuing interests in the base organisation?

1. How should uncertainty management take place in projects dealing with the pursuit of interests in general?
2. How should uncertainty management be practiced in projects dealing with the pursuit of interests in the base organisation dealt with in this study?
3. What approaches to uncertainty management should the organisation consider prospectively?

In this study 'uncertainty management' is defined as the way the project responds to opportunities and threats following unknown conditions.

'Appropriate uncertainty management' refers to specific steps taken to ensure that the organisation is better capable of completing projects under high levels of uncertainty.

'Projects dealing with pursuing interests' refer to projects undertaken with the aim of pursuing the political interests of a selected group of significant stakeholders (hereafter Projects Pursuing Interests – or simply PPI).

3. Methodology

The underlying assumptions on project management and organisational theory will be presented as the first part of the literature study. Then the literature on uncertainty management in projects will be examined in order to identify issues to address when producing an ideal model for managing uncertainties in PPI's. On the basis of an empirical study based on interviews with internal project parties involved in the project case recommendations for the organisation will be presented.

The project case was selected because it has some typical characteristics of PPI. The project goal is to develop a tool used by consumers to compare different pension and life insurance products in Denmark. The project manager is experienced with a long track record of managing IT-projects in other organisations. The assumption is that by choosing this project case there will be good opportunities for generalizing and using the findings and conclusions in future projects with similar PPI characteristics.

The literature analysis aims at producing the following: 1. an understanding of the term "uncertainty", 2. a description of the most central strategies for uncertainty management, 3. an assessment of the relevance of project typology for uncertainty management, 4. an ideal model for uncertainty management in PPI.

The empirical study is based on qualitative data. Primary data consist of interviews with a project participant, the project manager, the project owner and a member of the project steering group. Secondary data in the form of various project documents are collected from the organisation's IT-systems and the author's own experience.
On the basis of the gaps between the ideal models for uncertainty management on the one hand and the established practice in the project case on the other specific steps to improve uncertainty management are recommended together with further recommendations for the organisation of the case.

4. Exploring literature

The central theoretical area for this study is literature on uncertainty management. Uncertainty management is well described in classic project management theory. The descriptions furthermore have a long history– especially when classical organisation theory is included as a supplement to project management literature.

A number of authors have a special focus on uncertainty management. In this context Ward and Chapman should be singled out as central theoreticians in the

field. A red thread is to be found from the works of earlier authors like organisational theorist Galbraith (1977) and Christensen & Kreiner (1991) all the way up to Erling Andersen's development of the organisational perspective on project management (2008).

Besides the main focus on uncertainty management a central subject in the study is project typology. This area is less thoroughly described in the literature. Often "project typology" is cursorily described in literature on "strategy". Specific literature on projects pursuing interests (PPI) have not been identified, but some literature mentions "political" organisations and projects (Erling Andersen 2008).

As a way of "framing" the analysis, literature on "organisational design" and "system theory" is included though at a very general level (Galbraith, 1977).

5. Basic assumptions on projects and organisations

The basic assumptions that are necessary in order to explain and understand the subject "uncertainty management in PPI's" are found in social constructivism. With regard to project management theory, the organisational perspective on project management developed by Erling Andersen constitutes the foundation of the analysis.

In social constructivism the assumption is that reality is socially created by the actors in this reality. The actors will interpret reality quite differently depending on their subjective roles, experiences etc. and these interpretations will affect the actions of each individual. This is a subjective approach whereby "organisational culture" is not something organisations "possess" but rather something organisations "are" as a result of a constant development of social norms (Saunders, 2009, p. 111).

Though temporary by nature - projects are also organisations and thereby social systems. The realm of understanding that the theory on social systems offers can therefore be applied to projects.

If a social system has clear borders, borders are not extended or changed arbitrarily. Important borders are also defined by the clarity of what an organisation's scope is - and what is not. By defining clear borders complexity is reduced and the system becomes more "manageable". In projects clear project goals will increase the manageability of the project while unclear goals will decrease manageability.

Some types of projects have very vaguely formulated goals. Sometimes goals in such projects are negotiated among the project parties and clarified and changed continuously throughout the project process. When theory identifies vagueness and changeability of goals as unclear borders leading to a decrease in manageability it is clear that such projects face difficulties. Project crises occur as a result of the often numerous project parties making enquiries for changes or clarifications of goals in the project process. When clear project goals detach the project as a social sub-system in relation to the base organisation, vague goals – on the other hand -

weaken this detachment, boarders become blurred and the project becomes less manageable.

The vagueness of goals in itself suggests the use of an organisational perspective on project management as opposed to a task perspective which is not suitable as a basis of project management. The organisational perspective on project management is introduced by Erling Andersen in his book: "Rethinking project management – an organisational perspective" (2008). He acknowledges that project managers and project participants dislike changing directions in the mid-flow but stresses the fundamental feature of a project by defining it as: "A temporary organisation, established by its base organisation to carry out an assignment on its behalf" (Erling Andersen, 2008, p. 10). He argues that remembering this may make changes easier to swallow. This ultimately leads to the conclusion that if changes are necessary for the base organisation's progress they should be introduced. And in PPI´s this happens all the time because of rapidly changing environments and stakeholders' changing needs.

Project goals shouldn't be carved in stone at the beginning of the project - according to the organisational perspective. Only the main reasons for having the project can be established early in the project process. This ensures the continuous relevance of project deliveries all through the project Christensen & Kreiner focused strongly on securing the relevance of project in shifting environments (Christensen & Kreiner, 1991, and Kreiner, 1995). According to them projects are learning processes for everyone involved. Protecting immaturely defined goals by isolating the project from its environment results in cutting off the possibility of learning. A project living its own life independent of its base organisation faces severe risk of deliveries that have lost their relevance along the way.

6. Uncertainty management strategies

Galbraith defines uncertainty in organisations as follows: "Uncertainty is the difference between the amount of information required to perform the task and the amount of information already possessed by the organisation" (Galbraith, 1977, p. 36-37). According to this definition uncertainty has everything to do with lack of information. Or put in another way: Lack of relevant information equals lack of certainty.

Erling Andersen (2008) points out that uncertainty is a subjective experience – it varies from one person to another. And groups accept risks to a greater extent than individuals. When the theoretical base is social constructivism this is not insignificant. The perceptions of uncertainty of project participants, project managers and owners are important. Important for the PPI's is also the uncertainty perception of the numerous decisive stakeholders. But from an organisational perspective the base organisation's perception of - and strategies towards - uncertainty are crucial.

Organisations have attitudes towards uncertainty as well as individuals. On organisation's uncertainty attitudes Galbraith writes: "The greater the task

uncertainty, the greater the amount of information that must be processed among decision makers during task execution in order to achieve a given level of performance" (1977, p. 36). The consequence of this statement is that many activities can be planned if a task is well understood before its execution. If the task is not well understood – regardless of the reasons for this – knowledge will be gained during task execution that will lead to changes in deadlines, resource allocation and other priorities.

According to a hypothesis put forward by Galbraith (1977), organisations vary according to the way they chose to deal with uncertainties. There are tree main approaches: 1. Increase organisation's ability to re-design, 2. Increase organisation's flexibility to adjust to their lack of ability to redesign or 3. Lower the level of performance necessary to perform the task.

Galbraith refers to studies showing that when an organisation is met with high levels of uncertainty, it will try to obtain the necessary/missing information and react upon it. This activity entails decision-making. When much information is present, many decisions have to be made. This increases the need for management at the expense of executing tasks. The effect is an organisational design with fewer employees per manager. Uncertainty thus decreases the level of control at lower organisational levels and pushes control upwards in the organisational hierarchy. This tendency is an expensive experience and Galbraith suggests five strategies to deal with this: 1. Manage the environments whereby the organisation changes its surroundings instead of changing itself. 2. Provide extra resources as buffers in order to reduce the level of performance necessary. 3. Create independent tasks to be performed by independent groups. 4. Invest in vertical information systems in order to handle information without burdening the hierarchical channels of communication. 5. Use horizontal decision processes that cut through line organisations.

According to the interviews, information in the case project is pushed upwards in the organisation at the expense of task execution. During the formation of a supplementary steering group at board level the project lost pace and momentum, which caused delays. Many resources are used on high level decision-making while most often the project manager was the sole collector and provider of the information going upwards.

Turning away from general theory on organisational design and back to project management theory - authors like Christensen & Kreiner (1991) and Erling Andersen (2008) have built on Galbraiths thoughts and developed them further. Erling Andersen writes that organisations can reduce uncertainties by improving information and enter into alliances and partnerships. Organisations can also choose to increase uncertainties by exposing themselves to new possibilities and at the same time reduce the level of control. Despite every effort made some uncertainties will always exist. These are the contextual uncertainties over which the organisation has no control.

The basic shared aspects of uncertainty management strategies among the authors Galbraith (1977), Christensen & Kreiner (1991) and Erling Andersen (2008) are shown in table 1.

Table 1: Uncertainty management stragies

Strategy	Strategy goals	Effect of strategies on operational and contextual uncertainty?	Examples of specific actions
1. Increase information	Reduce undertainty	Operational uncertainty is reduced Contextual uncertainty is not necessarily reduced	Introduce technology to handle large amount of information
2. Determine the dependency on others	Reduce the number of possible outcomes by shielding the project from its surroundings	Operational uncertainty is decreased Contextual uncertainty is increased	Insert buffers to reduce effects of failing suppliers and customers
3. Let others handle the uncertainty	Increase the number of possible outcomes by exposing the project to uncertainty	Operational uncertainty is increased Contextual uncertainty is decreased	Outsource uncertainties to external project parties or other suppliers
4. Accept uncertainties and reduce the negative effects of these	Increase the number of possible outcomes but investing in unchanged level of uncertainty	Operational Uncertainty unchanged Contextual uncertainty reduced	Invite project parties into the project organisation – e.g. into the steering group

7. The concept of risk and uncertainty

The term "risk" is discussed in great depth in the project management literature. First Ward and Chapman (2003b) criticise the term for having a negative effect on the mindset since risk is seen as something important to avoid. Secondly in continuation of this they criticise risk management for residing over the management of possibilities at the expense of a more nuanced approach to project strategies towards uncertainty (2003b). Thirdly many professional project management guidelines do not distinguish appropriately between considerations on high level strategic elements of uncertainty management and considerations on more operational procedures at a lower level (R. Atkinson et al., 2006). Atkinson is of the opinion that books and teachers often focus primarily on the more "teachable" elements in the different stages of the projects. This happens at the expense of the more strategic elements which should be considered at all times through the project life circle. "Unfortunately", Atkinson writes, "it is the later that includes the most fundamental sources of uncertainty" (R. Atkinson et al., 2006, s. 691).

Uncertainty management is also about harnessing the opportunities that arises: "In any given decision situation both threats and opportunities are usually involved, and both should be managed", (Ward and Chapman, 2003b, s. 98). Uncertainty management involves even more than a combination of risk management and opportunity management. It also presupposes a scrutiny and understanding of sources of uncertainty. These sources are described and categorized in various ways. Two approaches are considered particularly useful in this context: Christensen & Kreiners distinction between contextual and operational uncertainties and Ward and Chapmans classification of uncertainties into five subdivisions.

The distinction between contextual and operational sources of uncertainties where introduced by Christensen & Kreiner in 1991 and later developed further by Erling Andersen.

Operational uncertainties relate to the preconditions for a smooth and efficient completion of the project. Operational uncertainties relate to the project's own activities and control sphere. Uncertainty can stem from simple lack of time or resources. But also faulty assumptions that the task is similar to previous tasks and therefore should proceed with similar resources and deadlines can be the cause of operational uncertainty. Erling Andersen refers to Ward and Chapman as he names the operational uncertainties "variability uncertainties" (2008, p. 75). Ward and Chapman write that uncertainty concerning variability relates to the classical performance measures cost, duration and quality (Ward and Chapman, 2003).

Contextual uncertainties relate to circumstances that can lead to more or less useful, effective and meaningful project results. They stem from the project surroundings – both the base organisation and the wider context. Especially the wider surroundings can give rise to new possibilities for the project to pursue. Managing contextual uncertainties are of utmost importance for projects pursuing interests (PPI´s). Therefore more attention will be given to contextual uncertainties in the following.

Contextual uncertainties are described as follows: "The more turbulent surroundings the project has and the more development character the project task has the more considerable the contextual uncertainty will be" (Christensen & Kreiner 1991, p. 40, translated). This description also actualises the classical project dilemma that projects – just as lives - are executed forward but best understood backward! Christensen & Kreiner explains contextual uncertainty as the difference between the knowledge and premises according to which the project originally was designed and planned and the knowledge and premises on the basis which the project is initially evaluated. Contextual uncertainty can only be assessed retrospectively as opposed to operational uncertainties which can – in principle – be assessed and managed continuously.

Again we are back at the starting point and Galbraith's perception of uncertainties as lack of information. Information is often scarce at the beginning at a project where the most important decisions are taken and more plentiful towards the completion of the project where the need for decisions dries out. When a project is decided upon it is done with the knowledge and the preconditions possessed by the stakeholders at the time being. When we know that both knowledge and preconditions develop along the way, project managers should adapt to this in the first place – according to Christensen & Kreiner (1991).

When prioritizing resources used for managing operational and contextual uncertainties it is tempting to focus on managing the operational uncertainties within the project's control sphere instead of dealing with the contextual uncertainties. Christensen & Kreiner warn against misinterpreting the situation by focussing resources on avoiding specific turbulence within the project at the expense of

investigating contextual developments. This can lead to an isolation of the project reducing the chances of realising that it is the project – and not the rest of the world – that is heading for the sideline.

This apparently unsolvable dilemma should not lead to the consequence that organising work in the form of projects should be shelved. On the contrary, the target should be to "strive towards efficiency under notorious imperfect conditions" (Christensen & Kreiner, 1991, p. 45, translated). Concluding initially on research sub-questions no. 1 and 2, a model for managing uncertainties in PPI's will have to deal with this challenge. In line with Galbraith organisations should not abandon the use of horizontal decision processes that cut through line organisations - such as project organisations (se strategy no. five above). Projects are organisational designs that bring the level of decisions down to the level where the information is present and thereby saves expensive overhead.

Ward and Chapmans classification of uncertainties into five subdivisions has the project itself as its starting point: 1. variability associated with estimates, 2. uncertainty about the basis of estimates, 3. uncertainty about design and logistics, 4. uncertainty about objectives and priorities and 5. uncertainty about fundamental relationships between project parties.

The first of these uncertainties stem mostly from deviations while the later uncertainties stem from inconclusiveness on issues which is far more fundamental. Every one of these sources of uncertainty will be present in all projects. A model for uncertainty management must therefore address all five.

Concluding further on sub-question no. 1 and no. 2 Projects Pursuing Interests (PPI's) will by nature be exposed to very high levels of uncertainty regarding the fundamental relationships between project parties. Therefore the six Ws framework developed by Ward and Chapman is a very appropriate instrument to use. It entails six basic questions to be considered when searching for the roots of uncertainties stemming from the relationship between project parties. To put considerations on the project parties at the centre of an uncertainty management model for PPI's makes sense also in an organisational perspective where the base organisation will have very important project parties as stakeholders – maybe even act as the single most important project party itself. The six W's framework will not be introduced further at this point but the questions can be seen at table 2.

Table 2: The six W's framework by Ward and Chapman (2003a)

1	**Who**	Who are the parties ultimately involved?	Parties
2	**Why**	What do the parties want to achieve?	Motives
3	**What**	What is it that each party is interested in?	Design
4	**Wichway**	Which way (how) is each party's work to be done?	Activities
5	**Wherewithal**	What resources are required?	Resources
6	**When**	When does it have to be done?	Timetable

8. Determining PPI project type

"In considering the appropriate scope for project management and associated uncertainty management, it is useful to characterise the range of project types and contexts in terms of the scope of uncertainty involved." (R. Atkinson et al. (2006), p. 691). Studying the literature within the area of project typology thus aims at identifying and describing those project characteristics that will affect the way uncertainties should be managed.

Project type is categorised in numerous dimensions e.g. size, type of product, familiarity, strategic dimensions etc. When deciding which features of PPI's are decisive for the choice of uncertainty management methods a classical two dimensional approach is chosen: project programmability as one dimension and outcome measurability as the other. Erling Andersen has further developed and merged the ideas of other authors - e.g. Turner & Cochrane, 1993 - into the control strategies shown in table 3 (2008, p. 16).

Table 3: Control strategies depending on project characteristics, By Erling Andersen (2008)

Outcome measurability	*Work progress programmability*	
	Perfect	Imperfect
High	Project type 1 (Earth, 'Painting by numbers'): Behaviour or outcome control Example: House building	Project type 2 (Water, 'Going on a quest'): Outcome control Example: Product development
Low	Project type 3 (Fire, 'Making a movie'): Behaviour control Example: System development	Project type 4 (Air, 'Walking in the fog'): Socialisation, Clan control Example: Research, organisational change

PPI's in the organisation of this case study are generally characterised by a large number of stakeholders. The group whose interests the project pursues is most often big and seldom homogeneous. Furthermore the stakeholders that are supposed to be affected by the efforts of the projects are often a less well defined and not clearly delimited group with unpredictable behaviour and inconstant needs - e.g. "the consumers", "the media", etc.

These conditions influence the determination of goals and course of action in PPI's. Final goals are not defined from the beginning of the project process – and if they do exist from the start they are most likely changed in the process - giving rise to project crises. Though goals are unclear, some form of direction is typically sketched from the very beginning in order to have a preliminary go from decision makers to start the project in the first place. In this project case this direction takes the form of a "Strategic Mission" for the project. Hence outcome measurability is quite low.

The project's work progress programmability – project processes – is not determined from the start. The necessary next steps are decided along the way and thus the process is tailored continuously. Work progress programmability is low and PPI's can be categorized as Type 4 projects.

Contextual uncertainties dominate heavily over operational uncertainties. Concluding further on research sub-question no. 2 strategies should be suited for managing contextual uncertainties such as strategy no. 3 and no. 4 in table 1. On the other hand strategy no. 2 entailing shielding the project from its surroundings could be directly damaging since the project risks getting out of step with its rapidly changing environments. A model for uncertainty management In PPI's should take these findings into account.

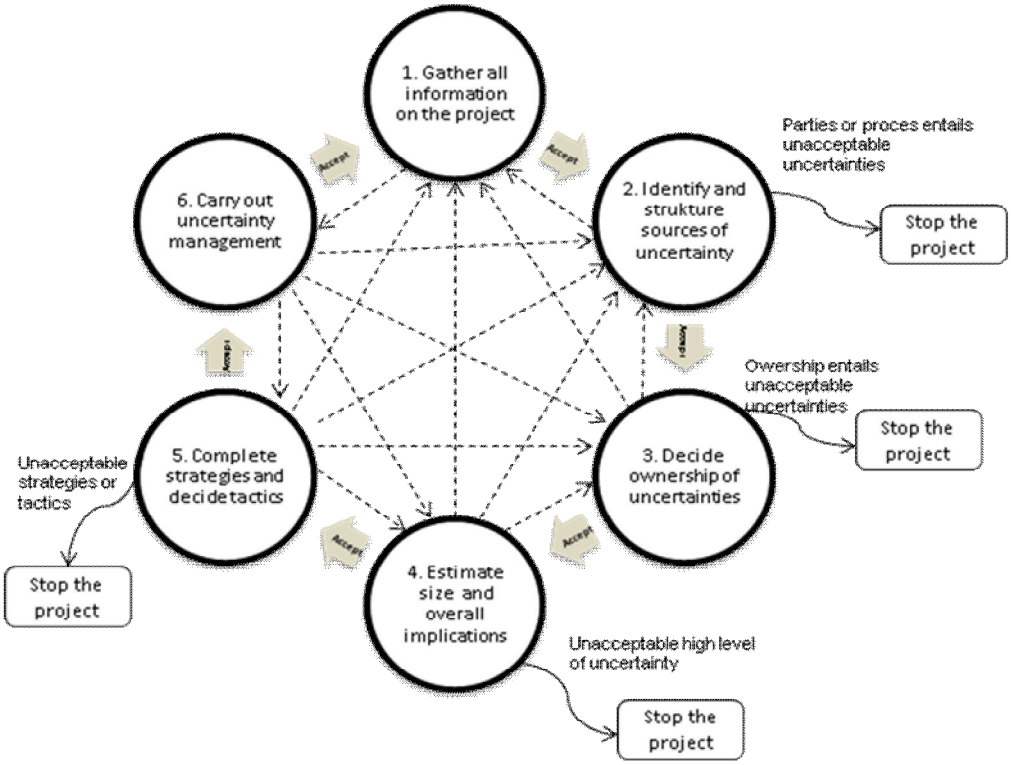
9. Uncertainty management model for PPI's

When concluding finally on research sub-questions no. 1 and no. 2 by developing a model for uncertainty management in PPI's, six requirements should be met: 1. Uncertainty management should be an integrated part of project strategies, 2. uncertainty management should happen throughout the project life circle, 3. uncertainty management should target contextual uncertainties as well as operational ones, 4. Responsibility for uncertainty management should be clearly allocated between project and base organisation, 5. Project goals and organisation should be open to changes and improvements throughout the project and 6. Uncertainty management should lead to good administration of both risks and possibilities in consideration of the success of the project.

Such demands are also fully in line with R. Atkinson's request for better understanding – and development - of less tangible and more generic management processes in connection with high levels of uncertainties (2006).

The structure used in the model developed is Ward and Chapman's iterative SHAMPU-model in a simplified form with fewer steps (see table 4). The model allows return flow from any step (illustrated by the stippled lines) and is flexible enough to adapt to any PPI's performed by the organisation at hand. The model will not be described in detail here – it is merely a first shot at responding to the needs for less tangible, more generic and more suitable processes of uncertainty management in type 4 projects pursuing interests in the organisation of the case study.

Figure 4: Model developed for uncertainty management in PPI's



10. Further considerations and conclusion

Control strategies for type 4-projects are to a large extent socialisation processes that can enhance a tight and distinct culture in both the project organisation and the base organisation (see table 3). Project management style can contribute to this. By using network management to a high degree it can be ensured, that the project and its context "drift together rather than apart" (Kreiner 1995, p. 343). "Under uncertainty, professionalism in the project design is no longer a guarantee of continuing relevance. The project manager is required to make use of transformational leadership and thus making project parties agree to the projects vision and mission" (Bass, 1990). Concluding on research sub-question no. 3 it is therefore recommended that the base organisation at hand focus on network based management. When responding to the impermanent criteria of relevance the continuous relevance of the project can be ensured.

In the organisational perspective an important distinction is made between "action organisations" specialized in performing a single task and "political organisations" focusing on dealing with the expectations of many different groups. The output of political organizations is decisions and talks: "'Talk' is a vital part of acting, and sometimes the only action" (E. Andersen, 2008, p. 156).

The base organisation is primarily a political organisation and so are the projects within. Projects have to perform tasks with both task features and political features – one at a time though. This demands a lot of the project manager. He has to perform lots of transfor-mational leadership being visionary, motivating and stimulating project team members.

Summarizing conclusions on sub-questions and providing an answer to the main question: PPI's are pushed through uncontrollable and unpredictable environments. The projects are defined by the presence of high levels of contextual uncertainties. Under these circumstances an organisational perspective on project management is recommended. It is further recommended that the organisation adjusts its uncertainty management accordingly by implementing the tailored model for uncertainty management in PPI's (se figure 4).

Finally it is recommended that the base organisation of this case study abstains from analysing the projects and their surroundings to find causes and flaws when contextual uncertainties have occurred. In the presence of contextual uncertainties the potential for project crisis is huge. Project crises do occur no matter how well driven the projects are. The efforts themselves are worth celebrating – the organisation cannot do without the results.

11. Perspective

The uncertainty management model developed needs the completion that the limited scope of this paper did not allow. This study focuses on project context and the reduction of uncertainty by decision-making. But the subject of stakeholder management has followed this study of PPI's as a shadow. The subject of stakeholder management would be a natural next step in refining the findings on uncertainty management regarding project parties in PPI's. Finally, the effects on PPI's of the organisation's modes of interpretation and specific decision-making processes such as trial and error could be worth while investigating.

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