Institutional Complexity Affecting the Outcomes of Global Projects

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Title

Institutional Complexity Affecting the Outcomes of Global Projects

Abstract

This report is of the findings of a project that aims at understanding the effect of institutional and cultural differences to outcomes of global projects. The aim of this research is to model institutional complexity in global projects accurately enough that one can predict their impact on the project performance, build tools and procedures for project managers for predicting project performance, managing risks and creating better foundations for improved project performance.

It is a complex endeavor to start gaining understanding from global projects, creating a theory that applies to a range of practical solutions and giving predictably to project managers without being impractical. This has to begin by describing the chain of phenomena from the outcomes backwards toward the inception of a project. After this chain has been thoroughly characterized, researchers can begin the second stage, which is to classify the phenomenon into categories. In the third stage, researchers articulate a theory that asserts what causes the phenomenon to occur, and why. The scope of the research was intentionally limited to a sub-set of institutional complexity in this first phase. We chose to collect data from cultural differences in projects. The first hypothesis was that cultural differences are likely to have an effect on project performance and coordination. At this stage, the correlation between, for example, most commonly used dimensions of culture and performance was not understood thoroughly enough to actually model any behavior. However, a basic framework for categorizing the basic phenomena was found.

Altogether seven case studies were conducted concerning global projects executed by Kone Oyj, Foster Wheeler Energia Oy and LT Consultants Ltd.

These case study projects provided a basis that can be described as the Finnish project management culture. As we recognized to follow the basic thinking that every project and encounter is context specific, one could come up with dozens of different sets of attributes depending on the projects studied. This one is one of many alternatives and might be typical to the company, persons and professions. After identifying some of the main characteristics of Finnish project management culture encountering, and in some situations colliding with more than 10 European and Middle East project management cultures, the following main conclusions are presented concerning the mechanisms affecting in these encounters:

- ***Decisive is not the "size" of the differences between the cultures rather than the situational match/mismatch between the differences***
- ***The nature of previous encounters define some of the nature of future encounters.***
- ***Situational adaptation of one party reduces the need for adaptation of the other party***

Based on these observations we recommend the following:

1. *Acquire local institutional knowledge as much as possible and as early as possible.*
2. *Cooperate and utilize knowledge of local partners who have the right connections to right people and authorities and who know the correct way of working with them.*
3. *Practice self-reflection*
4. *Pay attention to situational characteristics and not so much to the stereotypes of national cultural differences.*

Further empirical data from these two groups of variables should be generated by conducting more case studies with systematic way of documenting all dependencies between the variables and project performance.

Keywords
institutions, cultures, project management

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Preface

This report is a major milestone in a joint Finnish - American effort to understand and eventually to predict and model institutional and cultural complexities in global projects. The long-term goals of this effort were laid out at Stanford by Prof. Raymond Levitt, who has pioneered in research on designing complex project organizations. His initial idea of complementing a very mono-culturally oriented, often mechanistic modelling tools and approaches with research data on "softer" issues of project management picked momentum very fast – also in Finland. Very early on, the researchers at Stanford sought ways of combining benefits from the work by scholars in social and cognitive sciences as well as in economics and legal disciplines. In the beginning of the year 2003, the Stanford team got support from the National Science foundation and by fall 2003, Stanford launched a new affiliate program called the "Collaboratory for the Research on Global Projects", CRGP. This research team was lead by Prof. Levitt and includes Prof. Douglass North, business historian, institutional economists and Nobel laureate (1993), Prof. Richard Scott, organizational sociologist as well as Stephen Barley, world-leading anthropologist.

Technical Research Center of Finland (VTT) was privileged to be in the forefront this evolvement and fortunate to launch the first phase of a project called the "Managing Institutional Costs in Global Projects" parallel to the Stanford team's efforts. At very early stages of the research, the Helsinki School of Economics (HSE) got involved. The Finnish research team was lead by Dr. Tapio Koivu and includes Prof. Risto Tainio (HSE), Prof. Brian Atkin (VTT), Dr. Antti Ainamo (HSE), Mr. Sampo Tukiainen (HSE) and Ms. Johanna Nummelin (VTT).

The project got support from the Technology Agency of Finland as well as three companies, Kone Oyj, Foster Wheeler and LT Consulting. The company representatives provided the researchers access to case study projects, which was crucial to the success of this research.

The research team wants to express gratitude and to acknowledge and to Tekes and particularly Mr. Tom Warras and Dr. Ari Ahonen for valuable input as well as financial support. Also, Mr. Peter Eagling (Kone Oyj), Mrs. Lea Rosqvist (Foster Wheeler) and Mr. Hans Weckman (LT Consulting) have actively contributed by their insights as well as members of the project steering group. Special thanks are owed to all the interviewed persons working in a global business environment.

The research group owes thanks to the following members of the steering group as well: Mr. Henrik Eklund, Lemcon ltd., Mr. Tom Schmidt, Skanska Oy, Mr. Harto Räty, and Tom Warras representing Tekes. Special thanks are given also to Mr. Rauno Puskala,

who has been an invaluable contributor to the project in terms of networking with the companies and arranging joint events.

The Finnish research group expresses also its warmest thanks to prof. Raymond Levitt and his team of Ph.D. students, Mr. Ryan Orr, Mr. Ashwin Mahalingam, Mr. Tamaki Horii and Mr. John Taylor. The team's attitude and level of effort has been remarkable and it has been a privilege and honor to be able to cooperate with this group.

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Appendix A: Tools developed

1. Introduction

1.1 Background

Institutions, cultural differences and their effects on behavior and performance of organizations has been a topic for decades by numbers of distinguished scholars representing economics, social sciences, management disciplines and even engineering. However, when it comes to combining institutions and culture to temporary organizations such as projects, the volume of research activities is more limited. When global projects that are operated in often very multicultural and turbulent environments are in focus, the subset of studies becomes very small. Furthermore, approaches that take on the challenge of creating tools or operational means to predict the effects of institutional complexities on project performance, are yet to be explored.

The most interesting practical and research challenges in terms of project management skills, processes, and knowledge are found at the "fuzzy front ends" of large and complex projects, where scope of a project, goals, time pressures, budgeting indeterminacy, and sometimes even ignorance reign [Miller & Lessard 2000, 33–34]. Given globalization, the sizes of the global project-based business and the economic significance of the "fuzzy front ends" of the global projects have grown significantly. The prediction of the scope, treatment and avoidance of risks that arise from cultural and institutional differences between actors from different participants in large global projects, for example, has not been studied to an extent that would have produced ways to systematically avoid often significant budget and cost overruns.

1.2 The aim of this research

The long-term aim of this research is to model institutional complexity in global projects accurately enough that one can predict their impact on the project performance, build tools and procedures for project managers for predicting project performance, managing risks and creating better foundations for improved project performance. Figure 1 illustrates the anticipated generation of results that can be used in practice. The spider web diagram depicts the potential set of factors of institutional complexity and phenomena dependent on it can be covered by research findings. At the time of publishing this report, the first ethnographies and case studies have been finalized to produce initial hypothesis for validation and modeling.

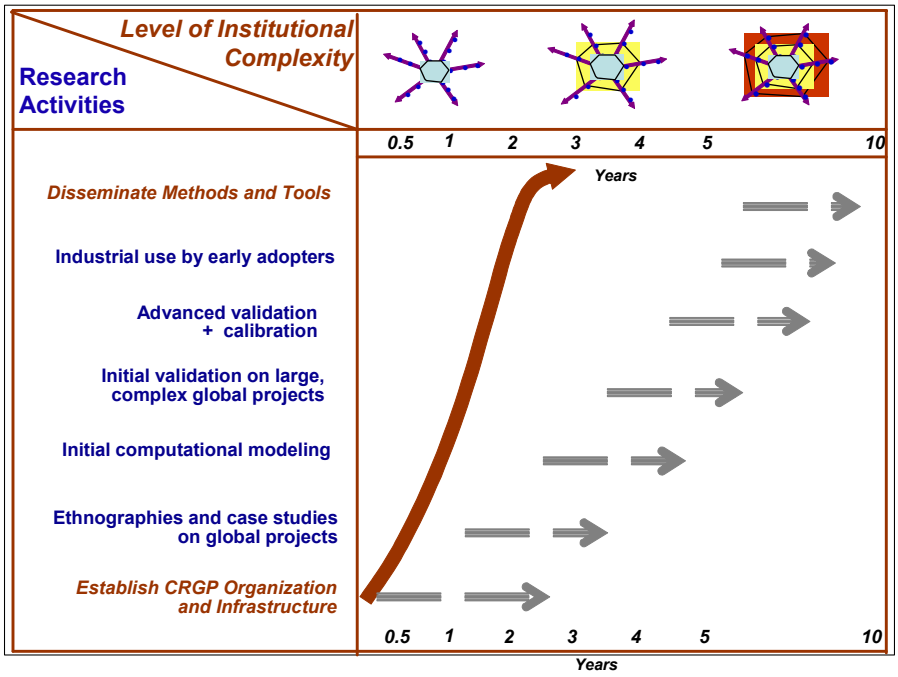

Figure 1. The long-term view on generating operational results.

The aim of the first phase was to determine dependencies between institutional settings and their differences and shape the basic theory for managing institutional complexity in global projects. In order to reach this first phase goal, we set out to explore institutional complexity and some of its consequences in seven global projects executed by three Finnish companies outside of Finland.

First-phase deliverables were to include:

- Significant results and findings on the impacts of institutional complexities in the projects studied,
- Comparisons of the approaches and findings of case studies between the results of the Finnish and American research teams,
- Based on the previous, recommendations on ways to improve management approaches, methodologies and tools.
- Articles and conference papers, final report.

In addition, an initial description of a tool to be used by project teams and managers for the purpose of self-diagnosing the capabilities of team members for global project work was to be created.

In the long-term, it is anticipated that this research work will help companies significantly to engage in global projects in ways such as:

- Improve abilities to identify, assess and evaluate sources of institutional complexity in global project work,
- Improve abilities to predict and assess situations and events where institutional complexities might occur,
- Create means to avoid unwanted conflicts (improved risk analysis) or to foster creativity,
- Improve negotiation and communication within the project organization and with clients, and
- Possibility for cost/time savings in projects, more competitive bids and more satisfied clients.

1.3 Execution

As indicated, this report lays out the findings of the first initial phase. This phase included:

1. A literature survey
2. Refining of research methodology
3. Case analysis – Examples of Finnish institutional settings,
4. Creation of theoretical basis for understanding and modeling of institutional complexities in global projects,
5. Taking part in the creation of mathematical and computational models at Stanford university,
6. Preparing for the expanded next phases of the research and its international collaboration,
7. Creating first initial demos or mock-ups of possible tools to start validation of the theories,
8. Interim reporting for the companies as well as a public final report.

The relationships of the tasks of the project are laid out in Figure 2.

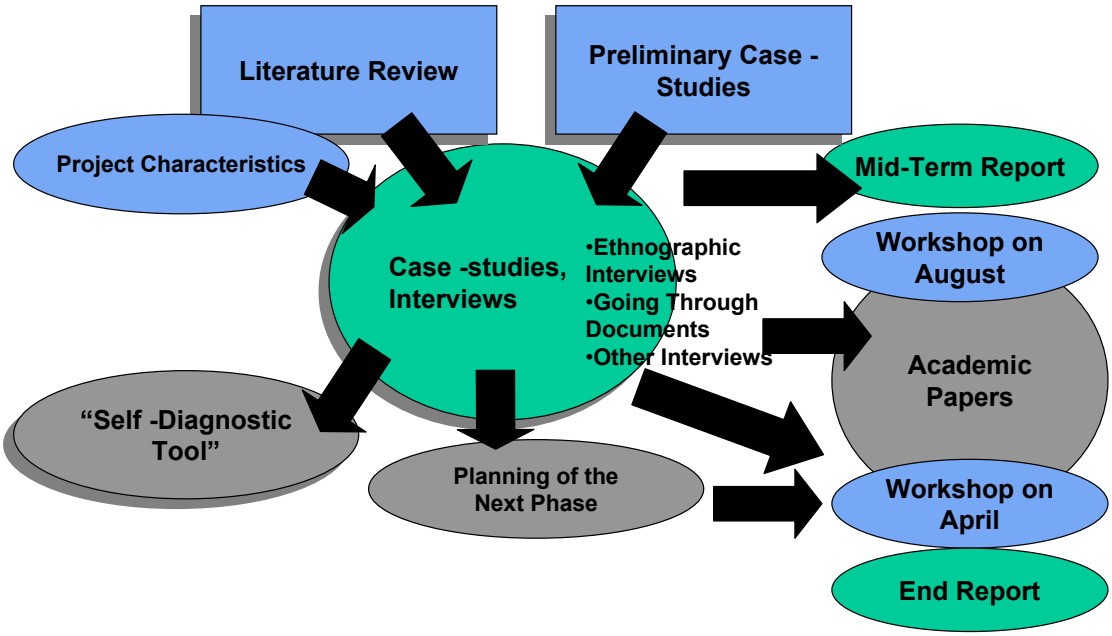

Figure 2. Work plan for phase 1.

2. Institutional complexity related to the outcomes of global projects

2.1 Globalization and projects

Globalization poses a challenging new agenda for social and engineering scientists who are confronted with new levels of complexity. Most of the research and commentary to date has focused on macro-economic processes (e.g. Held et al. 1999), the political challenge posed to the nation-state (e.g. Sassen 1998), the role of technology in spreading information and ideas (e.g. Appardurai 1996), and to the rise of the multi-national corporation (e.g. Nohria and Ghoshal 1997). However, with the exception of several studies of the problems of development projects in developing societies (e.g. Bigman 2002; Korten and Klauss 1984), and some isolated case studies of large engineering or construction projects (e.g. Miller & Lessard 2000), there has been little research on the distinctive problems confronted by global projects.

2.2 Institutions – an additional form of complexity in global projects

Institutional and cultural differences between societies and organizations give rise to institutional complexity, the additional form of uncertainty in global projects when compared to projects with participants coming from one single country and culture.

New information technology and developments in transportation, legislation, and governing arrangements have created a new type of global connections between people, companies and nations. Domestic work groups are increasingly sent overseas for assignments, and significant proportions of work force are currently employed outside their home countries.

At the same time previously stable and permanent organizational structures have become temporary and disposable (March 1995). Projects, as forms of organizing, are becoming an inherent feature of modern life. We have been heading towards something, that can been called a “projectified society” [Lundin & Söderholm 1998].

Taken together this has led to a surge in the number of global projects over the past 25-years [Beamish & Delios 1997]. These kinds of projects face the same risks and complexities as well as coordination and integration challenges as projects built in, and composing of participants coming from one single country and culture.

In addition global projects are organizationally complex with participants from multiple cultures, have complex institutional issues and concerns stemming from encounters of different goals, values, cultural norms, work practices, and technology and are usually large enough to have regional and even national economic and social impact. This gives rise to an additional form of complexity and uncertainty peculiar to global projects. This kind of institutional complexity stems basically from differences in institutional and cultural backgrounds, origins and environments between various project participants.

In general, the increased use of projects as a way of organizing can be described as somewhat paradoxical, since they are seldom completed as planned [Engwall 2002]. Thus, projects frequently encounter problems, which lead to time and cost overruns as well as quality deficiencies. For example, the World Bank has reported that fewer than 30% of its projects meet the stipulated objectives. In global projects this often amounts to significant financial and social problems and costs.

This seemingly paradoxical development – increasing frequency of global projects with poor performance record – leads to ask what kind of role institutional complexity, as defined above, plays in affecting the outcomes of global projects. In the following sections, the constituents of institutional complexity in global projects will be examined in detail.

It is noteworthy that although the constituents of institutional complexity – institutional and cultural diversity – are treated separately below, it is merely because of scientific traditions. In practice culture and institutions are intertwined, one shaping the other and vice versa.

2.3 Institutional theory and research

Institutional theory draws from multiple, diverse disciplines and provides important bridges to connect work in cognitive psychology [Schank & Abelson 1977], cultural anthropology [Geertz 1973], economics [North 1990, 2004], management theory, political science [March & Olsen 1984], and sociology [Berger & Luckmann 1967]. Developments in the interdisciplinary field of organizational studies have been particularly influential [Meyer & Rowan 1977; Meyer & Scott 1983; DiMaggio & Powell 1983]. The latter "neo-institutional" work emphasized the importance of cultural and cognitive influences as overlooked elements in institutional frameworks, supplementing earlier attention to regulative and normative processes. [Powell & DiMaggio 1991; Scott 2001]

Thus important disciplinary differences in emphasis remain. Economists and rational choice theorists in political science have developed an "agency" based view of

institutions, defining institutions as rules governing economic interactions and contracts among economic agents. Their studies emphasize the processes through which rules and contracts are chosen. Based on these studies institutions can be defined as relatively stable collections of practices and rules defining appropriate behavior for specific groups of actors in specific situations [March & Olsen 1998]. They consist of humanly devised informal (sanctions, taboos, customs, traditions, and codes of conduct), as well as formal constraints (constitutions, laws, property rights) shaping human interaction [North 1990, 1991].

The earlier approaches in this strand suffered from being overly functionalist and treating the agent's motivation as exogenous. More recent work (e.g. Aoki 2001; Greif 1994, 2004) emphasizes the importance of combining structural and agency views. Institutions are treated as exogenous to each individual whose behavior they influence, but as endogenous to the society at large. Game theory enables studying institutions as equilibrium thereby allowing investigators to capture the structure and agency perspectives within the same analytic framework.

In addition to such views emphasizing regulative features and institutions as systems of rules or as governance systems there are also definitions of institutions that emphasize other, more unconscious aspects. For example early sociologists, such as Cooley, Weber, Selznick and Parsons viewed institutions as normative structures providing a moral framework for the conduct of social life. According to such views, instead of externally enforced rules and laws as emphasized by regulative institutionalists, norms act as internalized sense of appropriateness guiding social life. [Scott 1998]

Yet another approach to institutions emphasizes the role of cognitive-cultural processes in social life. Such views as proposed by e.g. Berger and Luckmann (1967) link institutions to such constructs as culture and cultural rules operating in wider institutional environments. According to this approach social life is only possible because and to the extent that individuals in interaction create common frameworks and understandings that support collective action. Thus institutionalization refers to the process by which actions are repeated and given similar meaning by self and others. [Scott 1998]

Early sociological and historical institutionalists within political science favored deterministic structural accounts. But, as in economics, more recent work has shifted attention from a concern with institutional effects to institutional processes, giving much greater play to agency and to strategic responses. And both approaches increasingly recognize the complexity and multiplexity of institutional systems, as regimes frequently compete and as institutional elements — regulative, normative, and cultural-cognitive — often impose competing guidelines for behavior.

Finally, all contemporary approaches are informed by and draw heavily upon the insights of Giddens' (1979) *structuration* framework, which recognizes the duality of social behavior: actors and their actions are both constrained and empowered by their institutional context; and, at the same time, their activities work to both reproduce and alter their institutional context through time.

Based on such definitions it becomes evident that institutions manifest and operate on different dimensions and levels ranging from the conscious to unconscious. This is illustrated in the following three-layered classification of institutions:

Table 2. Three Pillars of Institutions [Scott 2001].

	Pillar		
	Regulative	***Normative***	***Cultural-Cognitive***
Basis of compliance	Expedience	Social obligation	Taken-for-grantedness, Shared understanding
Basis of order	Regulative rules	Binding expectations	Constitutive schema
Mechanisms	Coercive	Normative	Mimetic
Logic	Instrumentality	Appropriateness	Orthodoxy
Indicators	Rules, Laws, Sanctions	Certification, Accreditation	Common beliefs, Shared logics of action
Basis of legitimacy	Legally sanctioned	Morally governed	Comprehensible, Recognizable, Culturally supported

Institutions can be expected to differ across nations causing institutional complexity in global projects in different host countries. One way of structuring the differences is to look at the institutional rational-technical structuration of the host country; the degree of cultural distance between leading company and the host country. The degree of institutional structuration [DiMaggio & Powell 1983, Barley & Tolbert 1997, Scott et al. 2000] refers to the extent to which societal institutions exist to provide clear and consistent guidelines for Behavior Structuration may occur around a variety of bases, including traditional or religious belief systems. Models stressing rational-technical (scientific values are expected to be most conducive to project performance. North American and Western European societies have a well-developed complex of rational-legal and political institutions supporting, for example, construction projects in most sectors. South American and Eastern European countries would be intermediate in this respect; and the institutions impacting on large projects would be less structured in most

African and some Asian countries. Of course, important variations also exist within each category. For example, within more highly developed societies, we find distinctive patterns of structuration that have been categorized as "liberal market economies" e.g. the U.S. and UK – vs. "coordinated market economies" – e.g. Finland, Germany, France [Hall & Soskice 2001].

2.4 Anthropological views of culture and behavior

More so than other perspectives, anthropological conceptions have emphasized the importance of cross-cultural differences. Hofstede (1984, 1991) has pioneered in developing measurable dimensions of culture and in showing the relevance of these differences for organizations working in multi-cultural contexts.

Cultural distance [Hofstede 1984, 1991; House et al. 2004] refers to the extent to which the culture of the host country varies in cultural values from the national cultural values of the lead company carrying out the project. Greater difficulties are normally expected to be associated with higher level of conflict. Recently completed research by House et al (2004) based on systematic data from 63 countries will provide the basis even for vector metrics of this parameter.

Anthropological and sociological field methods, such as ethno-semantic interviewing and participant observation, were developed to document the patterns of action and interaction and the cultural frameworks that animate institutionalized interaction orders (e.g. Barley 1986). These techniques are also well suited for documenting the conflicts that arise when institutional systems collide and the order that people negotiate as they attempt to manage such collisions. Our field research on international construction projects will draw on these theoretical frameworks and methods to document and analyze points of conflict and their resolution.

2.5 Cultural diversity as a constituent of institutional complexity

On the basis of the studies of Hall (1960s), Hofstede (1970s and '80s), and Trompenaars (1980s) we know that human interaction does not happen in a vacuum or isolation. Instead it takes place in a social environment governed by a complex set of formal and informal values, norms, rules, codes of conduct, laws and regulations, policies and polities as well as a variety of organizations. Shaping as well as being shaped by these governing mechanisms is something that we are used to refer as culture. The primary function of culture is to reduce ambiguity and uncertainty in everyday human behavior,

interaction, and decision-making by providing a framework for situational interpretation and limiting options for appropriate behavior and response [Schein 1985].

Schein has proposed the following three-layered approach for defining culture and its constituents:

Table 3. Three layers of culture [Schein 1985].

Layer	
Artifacts	Technology, Art, Observable behavior
Values	Testable only through mediation of physical environment and societal consensus
Basic assumptions	Relationship with nature
	Nature of reality, time and space
	Nature of human nature
	Nature of human activities
	Nature of human relationships

Cultures emerge and evolve in response to social craving for answers to a set of problems common to all groups [Hofstede 1991]. In order to survive and to exist as a social identity, every group regardless of its size has to find its solutions to these problems. These solutions then become distinctive for the group separating them from others. [Schein 1985]

These groups can be clustered and analyzed in a variety of ways of which nationality is one of the most common. The underlying argument is that real differences between national cultures exist, since in each national culture sets of partly differing solutions to the universal societal problems have evolved over time and attained high degree of constancy and resilience [Hofstede 1991]. The most notable dimensions through which these differences become observable are presented in Table 1.

Table 1. Some dimensions of national cultures.

Hall (1959)	• Communication style – low vs. high context
Hofstede (1980)	• Social inequality, relationship with time – low vs. high power distance • Relationship between the individual and the group – individualism vs. collectivism • Masculinity vs. femininity • Ways of dealing with uncertainty – low vs. high uncertainty avoidance
Hall and Hall (1987)	• Relation to time – monochronic vs. polychromic
Trompenaars (1993)	• Societal rules vs. personal circumstances – universalism vs. particularism • Relation to time – sequential vs. synchronic

3. Relationship between culture, institutions and project outcomes[1]

This research builds on previous work institutional complexity, various fields of science, work on project management and teams, studies of globalization, ideas from many branches of the "new institutionalism" across the social sciences, anthropological work on culture and social structure, and from agent-based computational modeling, mathematical modeling and related project management research. A brief review of each of these strands is provided.

3.1 Agent-based computational modeling & simulation of organizations

We can discern the forerunners of modern agent-based computational models of organizations in the increasingly accurate and refined "finite element method" analysis programs that structural engineering researchers developed to analyze the behavior of engineering structures and complex fluid flows in the 1970s. These programs modeled the well-understood physical micro-behavior of elements representing small portions of an engineering system such as a bridge or spacecraft, specified constraints, and then proceeded to predict the emergent behavior of complex structural systems whose degrees of freedom far exceeded the capabilities of currently available mathematical representations and their manual solution. By the end of the 20th century, the power, fidelity and ease-of-use of these computational models had advanced to the point that they had almost completely replaced the use of physical scale models in both science and practice, with a few exceptions.

Research modalities in the social and management sciences followed a roughly similar path of development. Until about 1970, social scientists built theories—sometimes formalized in mathematical or computational form (especially in economics), but more commonly expressed in words and diagrams. To test and refine these theories, they gathered empirical data from natural experiments, or obtained data from synthetic experiments that they designed and managed. Starting with the pioneering work of Cyert and March (1963) and Bonini (1967) in the 1960s, and accelerating after 1970 with the work of Cohen, March & Olson (1972) and Masuch & Lapotin (1989), computational modeling and simulation has provided a valuable supplement to empirical approaches. Social science research based on computational modeling and

[1] This section is adopted from a proposal to the National Science Foundation by Professors Dick Scott and Raymond Levitt. The original section is mostly generated by Prof. Scott.

simulation has not yet come close to replacing synthetic experiments in the same way that computational modeling in the physical sciences almost totally replaced physical scale models, but it is beginning to augment traditional theory building, synthetic and natural empirical experiments in psychology, sociology, economics and political science [Levitt 2004].

Current research involving computational modeling of organizations breaks down into two threads. The first involves *intellective* or *theorem proving* models [Burton & Obel 1995] in which researchers model idealized organizations and test model predictions against predictions from sociological or economic theories (e.g Axtel et al. 1996, Carley & Svoboda 1996). These researchers seldom compare their model predictions against outcomes for specific real cases, so the models can help to develop general theory, but cannot guide managers' interventions in specific cases. In contrast, other researchers have developed *emulation* models, in which researchers attempt to model and simulate detailed characteristics of specific organizations, and then attempt to validate and calibrate model predictions against the outcomes of real world organizations in a set of "training cases" and "validation cases" (e.g. Thomsen et al 1999; Cyert & March 1963). Perhaps the most serious shortcoming of traditional social science experiments—one that can readily be addressed through computational modeling and simulation—is the difficulty of developing and rigorously testing unified, multi-level theories. Thus, theories and empirical findings developed in micro-social science—cognitive and social psychology—stand in relative isolation from theories and empirical findings developed in the macro social sciences—sociology, political science, and economics. The result has been a series of largely unconnected, discipline-based "islands of theorizing" in the social sciences. Arguably the most significant exception to this has been the integration of findings about individual cognitive psychology into economic theories at the level of firms or markets in economics, using mathematics to build bridges between the micro-assumptions and the macro outcomes. However, the simplifying assumptions at both micro- and macro-level required to make the mathematics tractable have often limited the applicability of findings from these mathematical models to real world situations.

Agent-based computational modeling and simulation naturally address this weakness in traditional social science research. Mature, validated, micro-social science findings can be embedded in computational agents as sets of "canonical" micro-behaviors. The designer of the simulation experiment then models the way in which these canonical agents interact with their experimental environment, which includes other computational agents as well as aspects of the task and/or environment, and generate meso-and macro-level outcomes that can be validated against macro empirical data.

3.2 Mathematical models of institutional conflict & adaptation

Classical, evolutionary, and learning game theory are powerful analytical tools that have been successfully applied to studying institutions and their dynamics. Game theory provides an integrated analytical framework to capture relatively well the complex interactions between the objective environment, peoples' cognitive understanding of it, and institutions. Of particular usefulness is that game theory enables one to formalize one's perception of the environment within which he or she operates, and study the set of shared self-enforcing beliefs about others' behavior that can prevail in this environment.

This intuitive analytical framework has been found very useful for advancing the study of institutions as systems of institutional elements while combining the agency and the structural perspective on institutions [Greif 1994]. This is because, in particular, it enables us to explicitly present a conjecture regarding the relevant institution and evaluate this conjecture in various ways. In evaluating such conjectures, the restrictions that game theory imposes on the set of admissible shared beliefs on- and off-the-equilibrium-path for those associated with an equilibrium were found to be particularly useful. This analytical framework has almost never been used to study institutional conflicts and adaptations, although it appears suitable for this task. What are the implications of interactions among individuals who perceive that they are "playing different games together"? What are the implications of interactions among individuals with the same perception, when each holds distinct beliefs regarding how the game will be played? What are the learning processes in each of these cases? How does the ability to coordinate or reassign tasks influence outcomes in such cases? Empirical case studies of global projects will provide us with guidance to advance the theory in this direction; new theory, in turn, can help us conduct more focused empirical analysis in subsequent cases to refine the theory and enhance the predictive power of the model.

3.3 Project groups and teams

An important transformation in the nature of work and work systems is the shift from a focus on individual jobs as the basic unit of organization to a reliance on projects and teams [Powell 2001]. Such arrangements facilitate closer cross-functional cooperation, encourage cross-training and broader skill sets, and facilitate flexibility. They enable closer attention to interdependence and involvement. In many arenas, particularly construction, team composition crosses organizational boundaries, as team members come together for specified periods to carry out particular tasks. [Eccles & Crane 1988; Gunnarson & Levitt 1982] Project group structures clearly pose new challenges and demand new skills of both members and leaders.

3.4 Project governance & institutions

One of the most recent and widely referred ways of approaching projects is laid out by Miller and Lessard (2000). This pioneering work has been conducted in the IMEC (International Program in the Management of Engineering and Construction) research program lead by Roger Miller.

The research program was divided into five groups one of which concentrated on institutions and strategy lead by Donald Lessard and Xavier Olleros [Miller & Lessard 2000]. The study reviewed sixty projects and placed particular emphasis on front-end development decisions. The basic notion in this research is that instead of "planning the journey, one needs to plan for the journey", i.e. by shaping projects during the front-end phases, one can plan contractual and institutional setting that enables better governance.

This study states that front-end engineering of institutional arrangements and strategic systems is a far greater determinant of the success or failure of large engineering projects (LEPs) than are the more tangible aspects of project engineering and management. The final IMEC report [Miller & Lessard 2000] lists several examples of other studies conducted that conclude by stating the need for new types of institutional settings for projects as well as the need for woving together the separate strands of management science, organizational behavior, and policy. Miller and Lessard acknowledges the definitions of institutions by Scott (1994) but also states that institutions are sets of laws, regulations and agreed to practices that form symbiotic relationships and provide effective ways of developing projects. North (1990) advocates for the action-enabling role of these arrangements, which form the public good that can benefit all parties. They help to make risk management and the infusion of governability possible by providing the structure for contracts, binding agreements, legal actions and so forth [Miller & Lessard 2000, 23].

Miller and Lessard also look deeper into three types of institutional arrangements and their transformation, namely entrepreneurial, rational and governance [Miller & Lessard 2000, 55-62]. As said above, the focus of this research has been on the front-end and contractual arrangements of projects and the scope does not take into account the planning of the delivery phase and especially the cultural-cognitive level of institutions in a very detailed way.

To somewhat parallel to this research, Miller and Lessard also recognize episodes of successive project shaping efforts. Projects are shaped in episodes to transform the initial hypothesis, make progress on issues, and solidify initial coalitions of players to achieve temporary and eventually final commitment. Each episode opens new options and closes old ones until sponsors and partners achieve final lock-in, thus binding their commitments and losing most of their degrees of freedom. Shaping episodes start with

momentum building, continue with countering opposing forces, and end with closure. The IMEC research also looks at turbulence and how better governance of unexpected events can be applied. Naturally, project sponsors do manage risks, but in spite of their best efforts to design what they believe to be rational matches of project risks with strategies, however, failures occur.

3.5 Managerial approaches

3.5.1 Managing project based business [Artto et al. 2004]

Management of a large global project involves management of complexities that relate not only to the project product or deliverable, but also to the environment with many institutional complexities, and to the complex networked organization with many networked actors and stakeholders. These issues as well as the large scope, technical uncertainties and long time span often imply, that the large project entity is subdivided into smaller manageable sub-projects that may begin and end somewhere within the time frame of the overall large project, or sub-projects for which the responsibilities are assigned to specific actors, organizations or companies in the overall network. Due to the significant uncertainty with technology, scope and length of the project, the project does not often proceed as planned. Furthermore, it is often reasonable even not to try to plan the project with too much detail, but to keep the objectives of the project as more ambiguous. Understanding of decreasing complexity from long-term research projects through mid-term technology development to short-term product and process development with their timely and content interactions is relevant. (see e.g. Shenhar et al. 2002; Wheelwright & Clark 1992) This also makes innovation management as one of the important reference contexts to understand complexities in large global projects.

As the management of a large global project involves management of several parallel or sequential projects with complex organizational and cultural settings, we consider the concept of a program even more worthwhile than just that of a project. The program concept leads us further to the management of other multiple project settings such as project portfolios, which often are more strategically oriented schemes than just that of a single project. We outline the program management and project portfolio management contents in the following.

According to Platje et al. (1994), a portfolio is a set of projects that are managed in a coordinated way to deliver benefits which would not be possible if the projects were managed independently. This definition is similar to many definitions introduced for a project program. For example, Turner (1999) and Poskela et al. (2001) emphasize that projects in a program are a coherent group that is managed in a coordinated way for

added benefit. Programs usually represent entities that have a determined purpose, predefined expectations related to the benefits scheme, and an organisation, or at least a plan for organising the effort. A program is set up to produce a specific outcome that may be defined at a high abstraction level of a 'vision'. According to PMBOK (2000), a program consists of several associated projects that will contribute to the achievement of a strategic plan. Program management includes the management of interfaces between projects, prioritisation of resources and a reduction in overall management effort [Turner 1999]. The objectives of projects under the same project program are interdependent [Platje et al. 1994]. Turner (1999) emphasizes the importance of the overall strategic resource sharing scheme related to program management. Such strategic resource sharing is implemented through a well-organized balance of responsibility, where the program directors' responsibility is to link programs with corporate objectives, the overall corporate plan, and corporate resource plan. The strategic linking of projects is one important objective that is emphasized even more in the portfolio management context [Cooper et al. 1998].

3.5.2 Managing risks in projects [Artto et al. 2004]

The management of risk and uncertainty can appear in different ways. For example, in the R&D area, the important task of a business manager may be to increase risk to balance the portfolio of projects for business benefit. We can see this from findings illustrating how radical projects with high risk have the highest business potential [Loch 2000].

Literature on analyses on anatomies of major projects is relevant for finding answers to the research questions for this "Program Strategies" research. Such anatomies include those by Morris and Hough (1987), Miller and Lessard (2000), and Engwall (1995).

In the 1980's, project risk management had already become a well-recognized area in project management literature. Applications in industries were mainly time and cost risk analysis applications [Lightfoot 1983, Skogen et. al. 1986]. Important principles associated with risk sharing by construction contracts were defined. Such methodologies were recognized in the literature (see e.g. Hayes et. al. 1986, Artto 1986a, and Artto 1986b). Risks and post-project analyses were reported in literature, for example, as concerning the 80's to the Fjordbridge bridge construction project between Denmark and Sweden [Lichtenberg 1982], and the North Sea oil drilling platform construction project [Lightfoot 1983, Granli et. al. 1986].

During the 1990's new project management focus areas have been developed around cooperation and networking approaches, and managing business processes as projects. The rapid development of international business, and information and communication

technology (ICT) has opened up many new opportunities to apply project management in a geographically distributed business environment. The focus on project risk management development has also changed during this time. An increasing number of risk management studies can be found in the 90's which report on project failures, or unfavorable project outcomes. Project failures and measures to be taken are discussed in Kharbanda and Stallworthy (1983), Standish Group (1995), Kharbanda and Pinto (1996), Kähkönen (1997), Artto (1997), and Pinto (1997). The knowledge accumulated from project failures or unfavorable events in projects can be used for learning - or understanding - their outcomes, and the reasons and responses associated with these.

3.6 Project success factors and institutional complexity

Projects can be successful for many reasons and can fail for other reasons. Understanding the factors that lead to project success (or failure) has been the subject of a number of studies [Atkin & Leiringer 2000, Morris 1994, Walker 2002]. If success is based on meeting budget, schedule and users' expectations, some factors or attributes contributing to project success or failures can include:

- Time performance is linked to the client's relationship with the project team [Walker 1995],
- Project objectives and their interdependencies have an impact on the process and implications for project performance [Ward et al. 1991]
- The client must be active in project management [Davenport & Smith 1995]
- Choice of procurement methods must be linked to required project outcomes [Kumaraswamy & Dissanayaka 1998],
- Experience and skills of the project team can signifanctly influence project cost and time [Naoum & Mustapha 1995],
- Client briefing must be rigorous [Bowen et al. 1999, Smith & Wilkins 1996],
- For project success, the client must set clear objectives, be financially sound, not be litigious and trust project team members [Lim & Ling, 2002].

The success domains/dimensions in some project success studies are analogous to the four perspectives of balanced scorecard introduced by Kaplan and Norton (1992, 1996). According to Kaplan and Norton, the strategic objectives to be measured fall into four perspectives: customer; financial; internal business process; and learning and growth. Employee capabilities, technology, and corporate climate contribute to the organization's capability for learning and growth [Kaplan & Norton 2001]. Shenhar et al. (1997) introduce the following four dimensions of project success: project efficiency; impact on customer; business success; and preparing for the future. In general, project

success studies contribute to definition of requirements for decision-related information used e.g. in project selection criteria or in performance measures.

Another contribution of project success studies is their indication of the most relevant managerial areas and even managerial practices that can serve as enablers for success. Although many project success studies still limit their views to the success and successful management of one single project only, they can also introduce the important aspect of the overall context where a single project occurs. This extends the evaluation of success towards strategic issues that take a viewpoint of the whole business. According to Saravirta (2001) and Kotsalo-Mustonen (1996), the relevant success domains are related to: strategy; situation; product/service; and project implementation. Furthermore, evaluation of success depends on the stakeholder and its perspective on the project. From Morris and Hough (1987) and Rouhiainen (1997) we can derive the following synthesis of what the three important success domains are: 1) Technical performance, project functionality, client satisfaction, and technical and financial performance of the deliverable for the sponsor/customer; 2) Project management: on budget, on schedule, and to technical specification; 3) Supplier's commercial performance: commercial benefit for the project service providers; 4) The learning that project stakeholders acquire.

Important factors – or enablers – for project success often represent issues that are important from the viewpoint of organizational design. For example, Mikkelsen et al. (1991) studied internal organizational and operational development projects and reported that the characteristics and roles of project managers and top managers were important drivers for project success. Furthermore, according to Brown and Eisenhardt (1995), important success factors of product development include cross-functional teams enabling cross-organizational integration, effective internal and external communication, powerful project leader, and senior management support. Brown and Eisenhardt also discuss the important role of team tenure that reflects the effectiveness of the pattern of working together, the important role of gatekeepers who are individuals that supply external information to the team, and the important role of team group process that enables effective internal and external communication within the team and with customers, suppliers, and other individuals in the organization. Loch (2000) investigated a larger body of work on new product development and concluded that the following success drivers that would represent good management practices: customer orientation and demand pull, cross-functional co-operation, top management support, existence of a champion, good planning and execution with a strong project manager, and the use of a well-defined process with formal measures. The success factors of new product development have slight differences according to the industry though (e.g. Eisenhardt & Tabrizi 1995; Terwiesch et al. 1998).

3.7 Institutional costs as a possible framework

The notion of institutional costs is based on the theory of transaction costs. Transaction costs are all the costs associated with making an exchange [North et al. 1986]. They can often be broken down into two major areas, one being the cost of exchange and the second being the cost of enforcement of transactions. Measuring the cost of exchange is very complex; it is contingent on several factors, and not limited to the condition, state and means of delivery of a good or service. The cost of enforcement is related to the mechanism or lack thereof, that enforces the transfer of a good or service [North et al. 1986]. The notion of transaction costs can be extended to the more general notion of "institutional costs—all of the costs associated with conflict between project objectives vs. individual goals, group norms and institutional norms, and lack of market enforcement mechanisms.

For global projects whose participants do not have congruent goals, values, cultures, and norms, these *"institutional costs"* cause conflict and extra work for participants, leading to fatigue and loss of motivation. Individual fatigue and demoralization translate into increased project costs, reduced work quality and stretched out durations for the project, to the point that returns for stakeholders and investors may fall so low that they abandon the projects, as shown in Fig. 3.

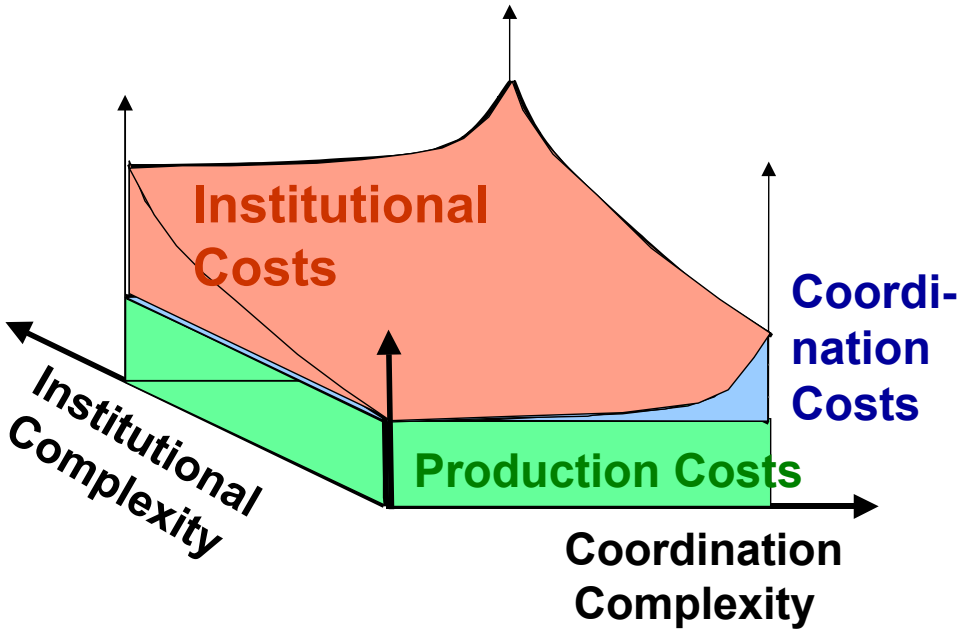

Figure 3. The role of institutional costs related to production and coordination costs [Levitt & Shariq, 2002].

The axes in Figure 4 represent an initial set of variables the research team has identified that contribute to institutional complexity and cost in global projects. Going counter-clockwise around the circle starting with conflict between project goals vs. participant goals, the time constant for changing these variables increases. A global project contending with deep cultural conflicts or value conflicts needs to be realistic about the costs that will be incurred in proceeding with the project, and the length of time it will take to begin to reduce these costs. Forewarned with this kind of prediction, planners of global projects can set realistic goals, and can begin to initiate effective institutional interventions, with a clear notion of how long they will take to implement.

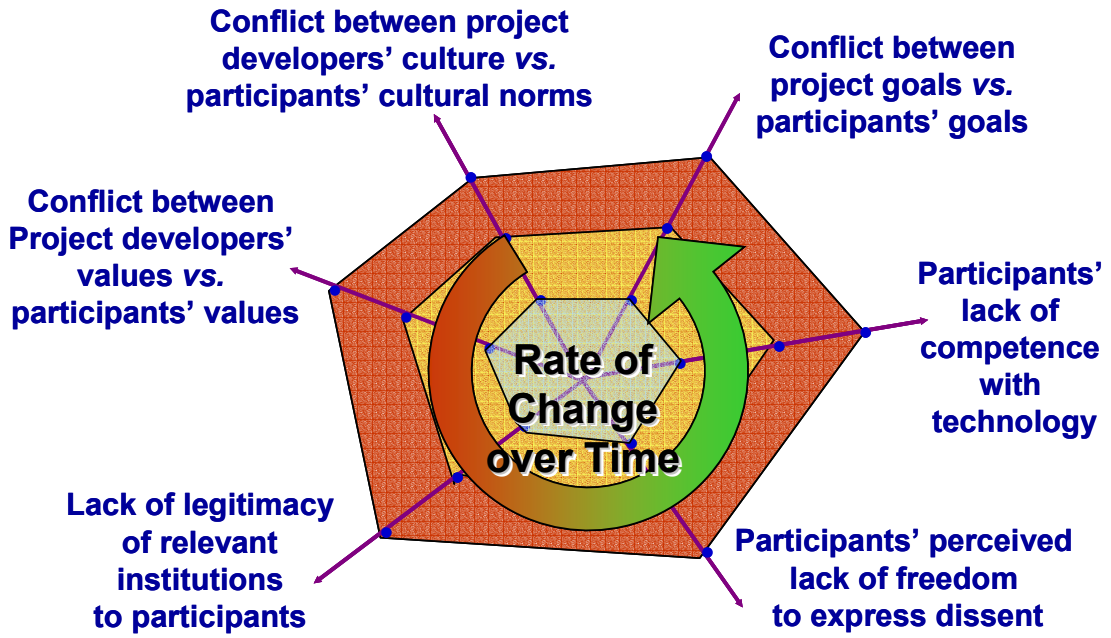

Figure 4. Sources of institutional costs in global projects [Levitt & Shariq, 2002].

Global change projects for which these variables have relatively low values (close to the center of the diagram) will have relatively low institutional costs. As one or more of these variables moves toward higher values (closer to the outside of the diagram) institutional costs increase.

4. Projects are context specific

4.1 Differences in approaches

Studies on large, international projects have been conducted since the early 1980's. However, until recently research has not covered managerial challenges and issues outside traditional engineering disciplines. Most of the research and development efforts have been aimed at improving the performance of the actual project teams whereas the involvement of end users as adopters of new technologies in sustainable ways has not been a primary focus.

The structures of projects naturally vary as well as do the environments where they are implemented. In one end of the spectrum one can recognize large, investment intensive products in rather stable institutional conditions. The more traditional approaches for planning-doing-checking-acting can be more easily applied in these projects. In the other end very fast-track projects with perhaps less investing involved. In this end of the spectrum projects encounter more turbulence. Due to constant changes, the level of detail in project planning cannot be very fine and rather than planning, one can merely prepare oneself to be flexible and act in sensible ways when change occurs.

Based on the previous as well as on the different research approaches, one could state that the basic schools of thought can be put into two main categories. The other states that projects have universal characteristics that can be managed with a common approach. For example, Project Management Institute (PMI) and most commonly used quality management standards offer universal guidelines for managers to be used in all projects.

The opposite school of thought states that projects are never alike and they always are context specific. According to this view projects are comparable to permanent forms of organizing in the sense that they are embedded in their social context [Levitt & Scott 2004]. They shape and are being shaped by the institutional and cultural configurations generated by various project participants as well as the project environments. The context and practices that apply to one project are not directly transferable to other projects with different institutional and cultural configurations, which have to be taken into account in the processes of project management and leadership. [Hofstede 1980; Schein 1985; Scott 2001]. Obviously the discussion so far points out to the emphasis on the latter approach being applied in this research.

4.2 Approaches applied in this research

It is a complex endeavor to start gaining understanding from global projects, creating a theory that applies to a range of practical solutions and giving predictably to project managers without being impractical. This has to begin by describing the chain of phenomena from the outcomes backwards toward the inception of a project. After this chain has been thoroughly characterized, researchers can begin the second stage, which is to classify the phenomenon into categories. Researchers need to categorize in order to highlight the most meaningful differences in the array of phenomena. In the third stage, researchers articulate a theory that asserts what causes the phenomenon to occur, and why. The theory must also show whether and why the same causal mechanism might result in different outcomes, depending on the category or situation. The process of theory building is iterative, as researchers and managers keep cycling through these three steps, refining their ability to predict what actions will cause what results, under what circumstances.

Getting the categories right is the key to developing useful theory. [Christensen & Raynor 2003]. According to Christensen & Raynor, what theory-building scholars normally struggle with is a right and relevant categorization of circumstances that apply to the theory being created. Early studies, such as this, almost always sort researchers' observations into categories defined by the attributes of the phenomena themselves. Their assertions about the actions or events that lead to the results at this point can only be statements about correlation between attributes and results, not about causality. This is the best researchers can do in early theory-building cycles, such as this research laid out in this report.

Having stated the above, it can be said that the approach to be adapted for our research had to include a phase when the researchers gained knowledge about institutional complexity. By observing outcomes and practices they were able to start categorizing and building a feasible framework. In this first phase, we have adopted the case study approach as the main thread of research.

The scope of the research was intentionally limited to a sub-set of institutional complexity in this first phase. We chose to collect data from cultural differences in projects. The first hypothesis was that cultural differences are likely to have an effect on project performance and coordination. At this stage, the correlation between, for example, Hofstede's dimensions and performance was not understood thoroughly enough to actually model any behaviour.

The first hypotheses also included the notion that one can find a specific style or set of factors that would be typical of Finns. Although the basic approach followed more the context specific school of thought rather than the universal one, we assumed that some

Finnish characteristics can be found and that there is a possibility that these characteristics can have a correlation with performance.

The approach was based on case studies of actual projects. Data was collected by interviews and project documentation. The projects were analyzed as well by re-constructing the chains of encounters that had an influence on performance. The approach was analogous to the work of a crime investigator who re-constructs the chain of events backwards from the moment the crime was revealed.

5. The encounters of project management cultures in critical events of global projects

5.1 Encounters of project management cultures

As stated earlier, this research is an effort to combine some of the relevant concepts of both institutional and cultural theories of organizing as well as their diverse layers and focus on the implications on global project performance. In order to understand how such institutional complexity mediates into project performance, we concluded that the research needs to recognize the context and events where such diversity has an impact. Based on the theoretical constructs described in chapters 2 and 3, the following framework is presented for examining the impact of institutional complexity in global projects:

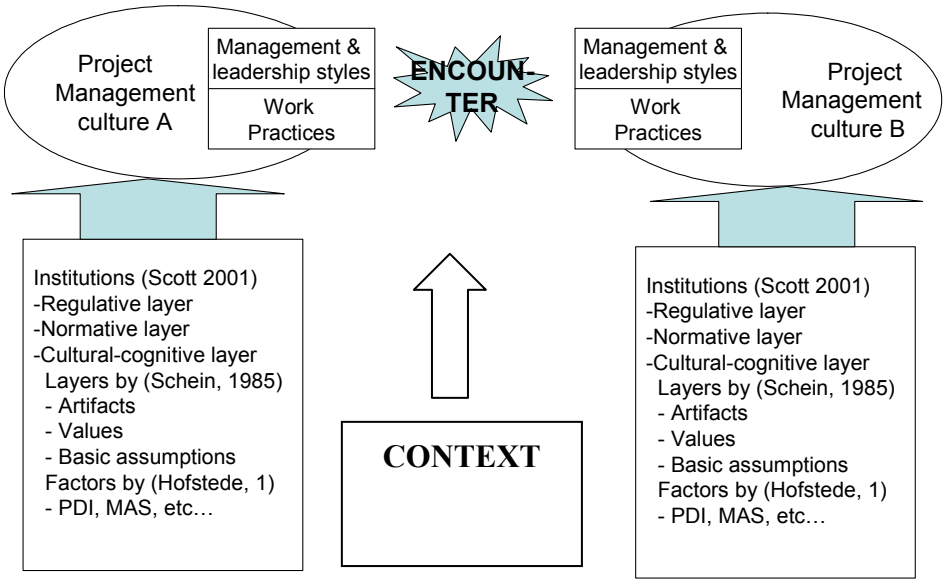

Figure 5. Hypothesis for a framework for studying institutional complexity in global projects.

The main point in the hypothesized framework for this research suggests that institutions and cultures shape managerial and organizational processes while forming the basis for management and project execution culture specific or typical to a team or a part of a project. It is argued, that in global projects there exist as many project management and execution cultures as there are distinctive participative groups in a given project. These groups can be distinguished e.g. by profession (engineers, lawyers,

designers etc.), by function (contractors, sponsors, financiers etc.), by hierarchy (project managers, installers, supervisors etc.), by organization and by nationality[2].

It is well documented in multitude of studies, that all of these differentiating denominators serve as a basis for group and culture formation (e.g. Schein 1985). Also the basic proposition of institutional and cultural theories of organizing is that culture and institutions of a society form the overall cultural and institutional fabric affecting various groups and processes, including processes of doing business and managing [Hofstede 1980; Trompenaars 1993; Scott 2001]. Thus, based on these studies it is assumed that a project management culture typical e.g. to Finns and Finnish organizations could be distinguished.

In global projects each of these cultures "encounter" one another countless times in varying situations and events as well as in varying combinations during project progress. From the perspective of this study, i.e. project management culture, what actually encounter in these events are diverse project management and leadership styles as well as work practices originating from diverse institutional and cultural backgrounds and environments.

It is in these encounters where the institutional complexity of global projects comes into play. Whether it is a dispute of landownership, surprising soil conditions, contractual disagreement or discrepancies concerning appropriate working methods, the implications of institutional complexity are dependent on the outcome of encounters between diverse project management and leadership styles and work practices in these divergent situations during project progress. Thus in a nutshell, the problematics due to institutional complexity in global projects become evident in encounters between diverse project management and execution cultures originating and being shaped by multiple institutional and cultural backgrounds and environments.

5.2 The logic of studying encounters of project management cultures in critical events

Identifying various value dimensions (e.g. Hofstede 1980) in national cultures as well as different layers of institutions [Scott 2001] and cultures [Schein 1985] provides a basis for recognizing differences and understanding why people representing e.g. various nationalities or organizations behave dissimilarly.

[2] This list of distinctive groups is ment to be illustrative. It is by no means complete or exhaustive.

However, in this study it is argued that based on extant theory it is difficult to predict the outcomes of encounters between specific project management cultures, and thus the implications of institutional complexity on project performance. This is because outcomes of encounters and interaction between specific project management cultures vary depending on the situation. Thus, in other words the interaction between actors from two or more different cultures might result in a conflict in one situation and something of an opposite in another.

Therefore, our preliminary, hypothetical framework is built on an assumption that an additional set of factors also has a role to play in these encounters. These factors are situational and set the context for the encounter. For example, the nature and encounters in a sales meeting might be very different from coordinating work with the design team members. It is not that uncommon for two different parties to collaborate in a sales meeting as an offense against a third party, and later on experience conflicts between the two while sitting around the drawing table.

Additionally projects are path dependent in the sense that the outcome and performance of every project is dependent on the path set by critical events during project progress. Thus, it is encounters of specific project management cultures in critical events of the project that we have turned attention to in order to explore factors causing institutional complexity and some of its consequences and mechanisms in global projects.

6. Methodology and cases studied

6.1 Longitudinal, qualitative case studies

The case study approach implemented in this research can be characterized as follows:

- Altogether seven (7) case studies were conducted concerning global projects executed by Kone Oyj, Foster Wheeler Energia Oy and LT Consultants Ltd.

- In KONE Oyj these projects were the Paveletskaya Tower in Russia and the National Bank of Abu Dhabi in United Arab Emirates. In Foster Wheeler Energia Oy the projects were the Elcho, the MVV and the ESB power plant projects executed in Poland, Germany and Ireland respectively. In LT Consultants Ltd the studied projects were two EU-research projects, Propolis and Spartacus.

- Main selection criteria for the projects were the degree of success in the project (both successful as well as projects leading to failure were selected) and, in order to raise the degree of comparability between case projects of a specific company, technological similarity. The case projects were suggested by company representatives.

- In all of the case study projects, the responsible project managers were interviewed up to three (3) times each.

- Also interviews among project specific foreign key persons were conducted whenever possible.

- The interviews were analyzed in workshops between the researchers and the professor leading the research process.

- The analyses were checked and commented by the interviewed project managers.

- Comparisons were made between the analyzed projects and the data was also compared to that of the Stanford research team in order to enable generalizations and conclusions.

- In addition secondary data (e.g. organizational charts, reports, articles) was utilized in the analyses.

Thus the methodology comprised of and combined in-depth interviews as well as data- and researcher-triangulation.

6.2 Cases studied

Out of the seven cases studied, a total of five represented construction and engineering industries and they were executed outside of Finland. Three of these projects were power plant deliveries and two were commercial buildings. Host countries in these projects were EU-countries, former Eastern European countries and Middle Eastern countries. In these projects the Finnish participants were either main contractors or major subcontractors. The budget of these projects ranged from a couple of millions of Euros to a couple of hundred millions of Euros. Also the time scope of the projects ranged from little less than a year to over three years.

Two out of the seven projects were research projects by nature. They consisted of participants representing various EU-countries. Each group of participants operated based in their home countries. The budget for these projects ranged approx. between 1 – 2 M Euros and the time scope for each of the projects was 2 – 3 years.

As was noted in previous chapter, our task was to identify critical events in a specific project and to examine outcomes of multi-cultural encounters in them. Both of these tasks are briefly discussed below.

Critical events

According to the first goal of the interviews, a view of the project specific critical events contributing to overall project progress and outcomes was to be established. Project specific critical events were sought for in the interviews and then concluded on, based on the data gathered, by the researchers and the professor. The conclusions in relation to criticality of various events were then discussed with and approved by the project managers.

Encounters between specific cultures

Once the project specific critical events were identified, the occurrences and encounters of specific project management cultures in those events were discussed with the interviewees. Thus, it became necessary to begin by attempting to unravel some of the special characteristics of the project management cultures encountering in these critical events.

Since the projects under scrutiny were managed and executed by the Finns, we began by trying to establish a view of whether or not there exists some sort of "Finnish project management culture" across the projects studied, what kind of characteristics it might be comprised of, and in relation to mechanisms of institutional complexity in global

projects, what can one learn from encounters of such project management culture with that of the others in critical events of the projects.

These descriptions were analyzed in the research team and the analyses were then discussed with the interviewees as well as company representatives. In order to increase the reliability of the conclusions, interviews also among foreign key personnel of the projects were conducted whenever possible.

7. Main findings

In previous sections multiple reasons for studying encounters of specific project management cultures in global projects have been laid out. The main reason for this has been that the outcomes of these encounters vary according to the situation. It was also noted that before we could analyze these encounters any further, we were compelled to develop an understanding of whether or not there might be some kind of project management culture with national peculiarities to it – and if so, what might be some of its main characteristics.

Since all the case projects under scrutiny were executed by Finnish project managers in cooperation with foreign counterparts, and as most of the interviews were conducted among Finnish project managers, the natural starting point for this study was to look for characteristics of Finnish project management culture. Some data was also gathered concerning some of the foreign cultures. However, this data was deemed not adequate enough therefore it is not presented in this report.

Thus the starting point in the following sections is characteristics of Finnish project management culture. Some generalizations are then made on mechanisms of institutional complexity in global projects based on encounters of peculiarities in Finnish project management culture and that of others in the global projects under scrutiny.

7.1 Characteristics and outcomes of Finnish project management culture

All the characteristics (= attributes, see chapter 3) listed below (Figure 6) became evident across cases analyzed. It seems that these characteristics provide the basis that can be described as the Finnish project management culture in the studied projects. As we recognized to follow the basic thinking that every project and encounter is context specific, one could come up with dozens of different sets of attributes depending on the projects studied. This one is one of many alternatives and might be typical to the company, persons and professions. Therefore making generalizations based on this figure is not recommended without an understanding of specific circumstances and context.

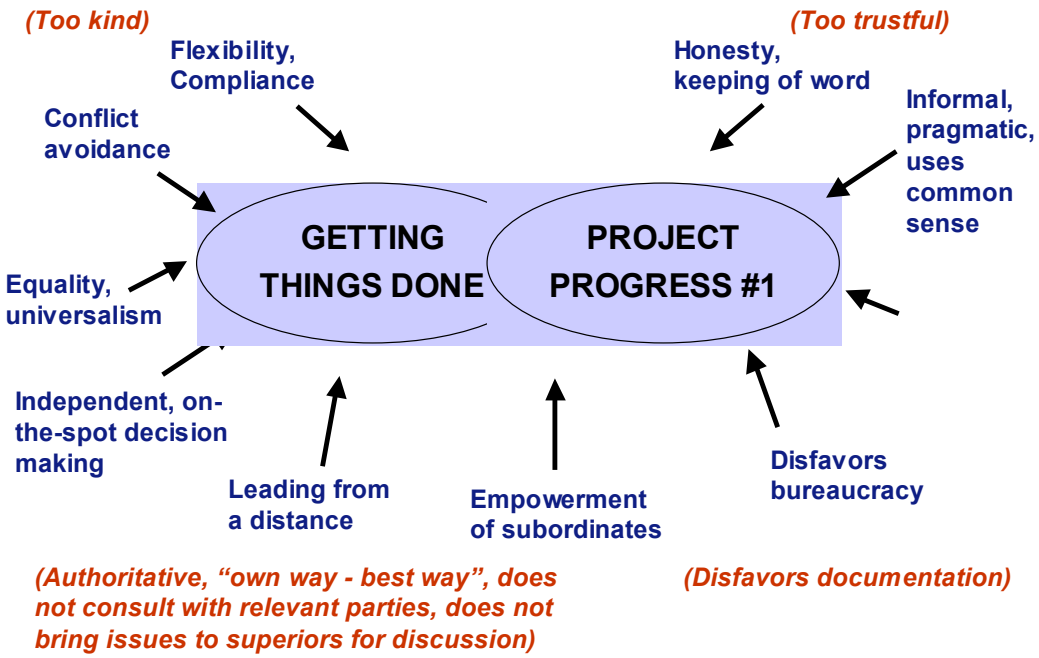

Figure 6. Some characteristics of Finnish project management culture.

Getting things done and project progress is #1

Above all it seems that of utmost importance to the Finnish project managers is the pervasive concern in relation to project progress. In other words, it was generally deemed that most important is to keep the project rolling at all times in order to secure the delivery as agreed. This also reflects e.g. to Finnish project manager's way of emphasizing flexibility, conflict avoidance, on-the-spot decision making as well as disfavoring bureaucracy and documentation.

Disfavors bureaucracy, informal, pragmatic, uses common sense

It was often admitted by the Finnish project managers that documentation requirements are something that were not as carefully prepared for as should have been. Failure to provide adequate documentation from the perspective of e.g. the client evoked complaints in multiple occasions. It was also admitted that this is an area of growing importance, especially in the sense of information and knowledge sharing, and in some cases it was addressed accordingly. However this seems to be also an area often in conflict with the Finnish sense of priority, pragmatism and attitude of "getting things done". Oftentimes it was considered frustrating to provide documents just for the sake of it – documents that "nobody will ever read".

Independent on-the-spot decision making, leading from a distance, empowerment

In the studied cases the Finns seemed to favor de-centralized decision-making, which was also related to pragmatism and use of (Finnish) common sense. The superiors

trusted the subordinates to possess the relevant understanding, special knowledge, skills and competence for his/her position and to make the required decisions. This is described in the excerpt below. However, some foreign participants considered that the Finns were in some occasions forcing too hard for their own work practices, those that the Finns had grown accustomed to. It was considered that e.g. local knowledge was not taken enough into account. Thus, it was considered that the Finns tend to make decisions and move forward without due consideration of all the relevant parties and viewpoints, and also that the Finnish subordinates have a hard time for taking issues for discussion with superiors.

Flexibility, compliance, conflict avoidance, honesty, keeping of word

Characteristic for the Finns in the studied projects was a certain kind of flexibility and conflict avoidance. Conflicts and problems are preferred to be solved locally on site rather than taking issues into court. In other words, the preferred problem solving methods for disputes and discrepancies were negotiation and settlement. This relates to keeping the project rolling on constantly. The Finns also try to avoid over promises. Things that are said out loud are taken quite literally and often as "formally" agreed, even without e.g. a written contract. Taken together these lead to a pursuit to fulfill these agreements as promised and to accomplish that in a pragmatic, conflict avoiding, manner. However, in some occasions the Finnish project managers admitted that they are being too good-hearted. It became evident, that there exists a call for a certain degree of assertiveness in global projects. Usually this need was related to managing changes in project execution and e.g. the financial issues in them.

7.2 Findings from encounters depicted in the case studies

After identifying some of the main characteristics of Finnish project management culture encountering, and in some situations colliding with more than 10 European and Middle East project management cultures, the following main conclusions are presented concerning the mechanisms affecting in these encounters. The overarching question in these conclusions has been why do encounters of Finnish and other project management cultures sometimes produce a positive effect, sometimes a negative effect or sometimes no significant effect at all in relation to project progress and outcomes.

7.2.1 Match/mismatch between the differences

Decisive is not the "size" of the differences between the cultures rather than the situational match/mismatch between the differences

"We are accustomed to make decisions independently, get things done, inform other people. We try to have a flat organization. Our aim is to man every organizational position with people who can be trusted, that he or she will take care of whatever happens in that slot. Project managers won't go in and tell that person what to do. We observe and try to keep in touch, but we also believe that the person is capable of taking care of things on his or her own."

This is an excerpt from one of the interviews, where a Finnish project manager describes their way of managing projects. Empowerment, autonomy and low hierarchy are emphasized. However this type of leadership style might collide with that of the opposite, i.e. one that emphasizes more hierarchical leadership style, or using Hofstede's dimensions, project management culture with high power distance. This becomes evident in the following quotation, again from a Finnish project manager in the same project:

"They [host country superiors and project managers] give tasks and assignments from the top, the boss makes the decisions. Then the person in his or her own slot down there might ask some guidance from above, which might lead to some feedback. But then there are these occasions where the supervisor comes to that person and makes the decisions whether or not there'd been any need for that. There were a couple of times when I was forced to ask the supervisor, why on earth do you make these decisions when you have people hired for that exact task?"

However, in this particular project some unexpected, major delays occurred. To keep up with the planned schedule some rearrangements of project phases were in order, which called for tight coordination among others:

"We [the Finns and the host country participants in cooperation] managed to pull it off, because we had extra manpower. We worked longer days, gathered experience, pushed the project forward sometimes by force. With tight coordination we were able to execute some phases in parallel, which normally would've been done sequentially. Unlike in any other project that we've [the Finns] executed so far, we were all there, on site, and you did not have to look far for decision makers… By being there, at arm's length, it turned out to be an unexpected benefit in that problematic situation towards the end of the project."

This excerpt from the same Finnish project manager points out to something that could be described as "situational narrowing down of cultural distance/difference". The unexpected, problematic situation called for drastic measures and forced also the Finnish project managers to make decisions sometimes in not-so-diplomatic ways. Because the two Finnish project managers had already built up a substantial track record in the host country, they also managed to pull these off. And most of all, as noted above, also the host country personnel (superiors and subordinates) were used to superiors for

decision-making. At the end, this project was deemed successful with regard to time, costs and quality.

At this point, however, a word of caution is in order: However appealing the Finnish way of project management (described in the first excerpt of this section) might initially feel, when it comes to culturally bounded issues there is no right or wrong. In some instances the Finnish emphasis for empowerment and autonomy was regarded as authoritative, non-informative and not taking all the relevant issues and parties into consideration when making independent decisions.

7.2.2 ”Track record” of previous encounters

The nature of previous encounters define some of the nature of future encounters

One of the most significant findings of the research was that the nature of previous encounters defines some of the nature of future encounters. The significance of this conclusion is that the encounters may at their worst enhance unwanted behavior, they can fortify stereotypes and accumulate to an unsuccessful project outcome. Evidence of this basic pattern was found in almost all of the case projects studied. Most of these patterns stemmed from very tangible cultural differences between Finnish and other nationalities. The mechanism of accumulating either positive or negative outcomes can be exemplified as:

> *“It usually is so that when things start to go wrong, there's nothing you can do to change the direction.”*
>
> *“We had lot of conversations, which finally led to win the confidence of the consultant. He started to talk also on our behalf. Then things started to move forward.”*

The companies and individuals in some cases were able to take action to break the unwanted negative spin. However, taking action in often very delicate situations like these, one needs to be very careful in choosing the right approach. What works in one environment and with teams with certain cultural backgrounds might miserably fail in other environments. For example, in one of the cases studied, the Finnish managers took a very hands-on, micro-managerial approach and not to delegate responsibility nor authority to make decisions. This approach is opposite to the normal Finnish way of managing, but was needed to break the foreseen series of conflicts. Since the other nationalities seemed to be inclined towards very high uncertainty avoidance, the presence of a strong decision maker near to the project site was a necessity and it turned the project from a state of confusion into a success.

7.2.3 Nested cultural adaptation

Situational adaptation of one party reduces the need for adaptation of the other party

> *"The documentation requirements of the customer are endless… They literally live on paperwork. It's like the more the merrier. We could easily engage all our supervisors in correspondence and paperwork with the customer. But that's just something that we don't want to do. We just want to build the plant and minimize all the paperwork."*

Here is another quotation from a Finnish project manager describing the documentation requirements of the customer. In this particular case, these requirements were related to host country regulative institutions, and especially to a particular directive stipulating the premises for documentation requirements. Or once again, utilizing Hofstede's dimensions, this could also point out to high uncertainty avoidance.

For Finns used to more pragmatic and informal way of project management and execution this, however, seemed unnecessary and difficult to understand. In many cases it evoked collisions between the two project management styles:

> *"It's like all the time, we get complaints and groaning on behalf of the customer, because from their point of view we're not providing them with adequate documentation."*

However, during project progress some unexpected developments took place that put the project under considerable risk of schedule and budget overrun. From the Finnish project managers perspective these developments then evoked the following reaction:

> *"We are now going to finish the plant with whatever documentation we're used to provide. And the customer, they'll just have to follow the progress and settle for whatever we're providing them with. Should we produce additional documentation, it will be only for the benefit of the project, not just nice-to-know –documentation… They'll just have to comply with this, there's no other way. It'll be a constant groaning from the customer, but no can do."*

This quotation points out to a situation, which could be described as "nested cultural adaptation". I.e. in a critical situation or phase of the project one party operates with project management and execution style most familiar to them. If in that particular situation the other party is compelled to adapt, it reduces the need for the first party to change its normal project management and execution style.

Thus in this particular case adaptation of the customer and settling for (from their viewpoint) less-than-required documentation decreases the need for the Finns to adapt, to change their behavior, thus making it easier to operate in a manner most familiar to

them. This project is still under progress, and it is constantly on a critical path both schedule- and budgetwise.

Once again, a word of caution: The Finns themselves admit that in some cases providing more documentation would have promoted more efficient knowledge sharing between various participants, which would have also been beneficial for the project progress. This however was something to be learned. It was not an inherent way to manage a project in many of the cases under scrutiny.

7.3 Comparative findings of the U.S. research team

Parallel to the work of the research team in Finland, Stanford University has had its team of scholars working on global projects as well. During this collaborative project, Stanford launched a new industry affiliate program, the Collaboratory for the Research on Global Projects, CRGP[3]. This new research initiative is set up to understand, and ultimately help to mitigate, the significant "institutional costs" that frequently arise in such projects.

The basic CRGP research approach is three-pronged - theory building, ethnographic research and computational modeling. The research team has combed the literature and conducted ethnographic research to understand how national differences in work practices, values, cultural norms, economic and legal institutions affect the behavior and interactions of project team members from different countries working in global projects. The gained understanding of how the micro-behaviors of project participants are affected by differences in national institutions, will be used to develop computational tools to model these behaviors. The predictions of these models will then be progressively validated and calibrated against the performance outcomes of real projects.

Ultimately, the validated theory and and calibrated computational models can provide much needed improvements to current industry capabilities for predicting and mitigating institutional costs in global projects.

Some work has already been able of explore ways to operationalize, for example, the dimensions of culture as laid out by Hofstede. In particular the work by Horii (2003), deserves attention. His project is one of the first attempts to generate guidelines or tools for improving understanding and predict cultural influences. Horii aims at modeling

[3] See http://crgp.stanford.edu

cultural factors emerging in cross-cultural teams between Japanese and American firms. He uses the approach adopted by Stanford's Virtual Design Team (VDT) [Levitt et al. 1994, Jin & Levitt 1996]. Originally, Levitt did not consider cultural or institutional factors when modeling and simulating project organizations. However, the VDT approach offers an useful platform for incorporating possible cultural variables and creating and testing iteratively possible hypothesis on correlations between cultural complexity and project performance. Horii's work focused on work practices and value differences, a sub-set of cultural dimensions by Hofstede (1991). In addition, he considered task complexity (as suggested by Galbraith 1977), and its relation to possible models and outcomes. An analysis of the impact of these cultural dimensions on relationships among task complexity, organization structure system and team behavior was carried out.

Horii's simulated results show that the American project organization structure has less tolerance for low team experience, in comparison to the Japanese structure. In the case of high team experience, the two structures had no significant differences in performance. As for the organization system-cultural relationship, both Japanese and American teams show better performance when each works with their own preferred organization structure, in the cases of medium and high task complexities. Horii also concludes that changes in cultural behavior patterns appear to have less impact than changes in organization structures [Horii 2004].

Orr's (2004) project introduces the concept of cultural distance in global projects. The point of departure states that global managers report that high unforeseen costs impact project outcomes and they report that many unforeseen costs arise from national institutional differences – differences in participants' core values and beliefs, cultural norms, laws and regulations. Research questions how the institutional differences impact firm success rates and whether these costs be quantified, measured, modeled and predicted. The research also questions if it is possible to find out approaches that can help in lessening the costs through trial-and-error accumulation of global experience. Orr's proposal posits a mathematical model of institutional learning [Lave & March 1975], to show that unforeseen institutional transaction costs [Williamson 1979] arise as a function of institutional distance [Hall & Soskice 2001; Hofstede 1991; North 2004; Scott 2001] and that firms adaptively mitigate these costs by developing two knowledge competencies – global process knowledge (a general capability to successfully enter into any foreign environment) and local institutional knowledge (a specific capability to maneuver within the framework of cognitive-cultural, normative, and regulative institutions in a particular local environment) [Grant 1996]. Orr aims to prove – or refute – this learning model through the collection of empirical data gathered via structured interviews on 10-active global projects in 5-countries. Data collection is to measure unforeseen transaction costs, foreseen transaction costs, global and local firm experience, and experience of the key field management individuals.

Another example of this work is by prof. Christian Brockmann. He proposes the use of Hofstede's dimensions of culture in preparation Brockmann [2003] analyzed some of the differences between Thai and German institutions on cognitive-cultural level using Hofstede's framework. He listed some of the different functions relevant to managing joint ventures as well as the rankings of the two different cultures and came up with a matrix shown in Figure 7.

		Planning	Organization	HR	Leadership	Control
PDI	T: 64 G: 35		+++ T⬇		+++ T⬇	+++ T⬇
UAI	T: 64 G: 65	+++		++		+
MAS	T: 34 G: 66			++ G:⬇	++ G:⬇	
IDV	T: 20 G: 67		++ G:⬇		++ G:⬇	++ G:⬇
ILO	T: 56 G: 31	++ G:⬇	+ G:⬆			

Figure 7. Using Hofstede's dimensions to evaluate differences in project functions.

This matrix looks at key aspects of project work on the horizontal axis of the matrix. The vertical axis displays numbers for the indexes of cultural dimensions [Hofstede 1991]: Power Distance (PDI), Uncertainty Avoidance (UAI), Masculinity-Femininity (MAS), Individualism – Collectivism (IDV) and (ILO) indexes. In each cell of the matrix, the plus signs indicate the significance of the index to the particular aspect of project management. For example, differences PDI has a very strong impact on how project organization is designed, as well as to leadership styles and how the work in the project should be controlled. The lightning signs indicate a potential conflict whereas the smiley indicates a potential (hypothetical) positive correlation.

Also, since the team lead already The proposed research will first design and develop a "post-processing" optimizer for VDT using evolutionary computational methods to help project managers find near optimal designs for their project organizations. Next, we will validate our post-processor by comparing its recommended organization designs to predictions of organizational "contingency" theory. Finally, we plan to conduct organization design charrettes to verify whether or not our model can help project managers design better organizations.

8. Conclusions

8.1 Lessons learnt

In this report it is proposed that institutional complexity (stemming from cultural and institutional diversity) is an additional form of uncertainty in global projects, when compared to purely domestic projects. A large body of knowledge from multiple scientific disciplines and traditions touches upon the issue of institutional and cultural diversity. The main argument in these studies is that institutional and cultural differences between societies exist, and that these shape and are shaped by processes of managing and doing business in a given society.

However, outcomes of encounters between two or more specific project management cultures in a given situation still remain largely unclear, which lead to frequent unforeseen and surprising (both negative and positive) occurrences and consequences during the execution of global projects. Despite this unclarity, we were able to reach the goal of this phase of the research which was to find useful categorization and basis for theory.

Institutional complexity manifests and affects the project in events and phases critical in relation to the progress and outcomes of global projects. The implications of institutional complexity in these events depend on the situation. Thus the implications are context-dependent. Evidence suggests that this is not dependent on any national characteristics, even not Finnish ones. The context dependency therefore constitutes a different set of characteristics than, for example, the cultural dimensions. These "context variables" can vary according to situation and its purpose (decision making, sales, coordination, etc.), time (in relation to the project duration, day, time difference), place (who's "home turf", physical location and environment, etc.) and motive of individuals at that particular moment.

The problematized area causing institutional complexity in critical events of a global project is the encounter of diverse project management and leadership styles as well as work practices. Thus in order to study implications and mechanisms of institutional complexity, one has to study encounters of specific project management cultures with origins to various institutional and cultural backgrounds and environments.

In order to study encounters of specific project management cultures in critical events of a global project, one has to know the characteristics of the cultures encountering one another. Based on this one can make inferences on mechanisms produced by as well as causing institutional complexity. In this study three of these mechanisms were

identified: match/mismatch between cultural and institutional differences, "track record" of previous encounters, and nested cultural adaptation.

8.2 Recommendations

Based on these observations we recommend the following:

1. *Acquire local institutional knowledge as much as possible and as early as possible.*

Local institutional knowledge provides a capability to understand and maneuver within the local institutional environment. This includes e.g. understanding local legislation and standards, understanding the local way of interpreting the project contract as well as managing and dealing with various authorities. Oftentimes gaining appropriate local institutional knowledge requires either a local subsidiary or at least a local agent. Although this is highly important at the beginning of the project, it also applies equally to every phase of the project. Acquiring local institutional knowledge is an area, which was deemed to have a direct impact on advancing project progress. It was also acknowledged that organizing for acquiring this knowledge should begin even before the project contract is officially signed.

2. *Cooperate and utilize knowledge of local partners who have the right connections to right people and authorities and who know the correct way of working with them.*

This is a direct consequence of the previous recommendation. It became evident that it is not adequate enough to understand the "what" of delivering projects, i.e. what is it that needs to be done in a technical sense. Managing e.g. turnkey projects dramatically expands the scope of contractor responsibilities when compared subcontractor deliveries. Turnkey deliveries require managing third parties in the local institutional context. Thus in addition to the "what" of executing a global project, one needs to understand also *how* a particular task or process is accomplished in the local institutional context as well as *why* it has to be accomplished in such a manner. This calls for the skills and competencies of local partners.

3. *Practice self-reflection*

As was described earlier, the problematized area causing institutional complexity in global projects is the encounter of diverse project management cultures. It also became evident that successful execution of global projects requires understanding of project management and execution practices and cultures of multiple project participants. From this perspective especially important are the peculiarities of the host country.

Understanding the related differences requires self-reflection on both project execution and individual level. In other words, when delivering a global project in a foreign country it is of vital importance to understand not only the own way of managing and executing projects as a company but also that of the other participant companies. And the same also applies to individual project managers. For self-reflection and for raising cultural awareness on an individual level, a self-evaluation tool has been developed during this research process.

4. *Pay attention to situational characteristics and not so much to the stereotypes of national cultural differences.*

Oftentimes one tends to form a stereotyped or sweeping image of a party representing certain nationality or culture. However as this study suggests, the outcomes of encounters between various nationalities as well as project management cultures are situation-specific. Thus in some occasions stereotypes might even be misleading. Therefore the question here is what is it in particular situational characteristics that reduce or enlarge differences between cultures, break or enhance the pattern of previous encounters, and make one or the other party more adaptive. In various situations, such as in contract negotiations, site meetings or dispute settlements to name but a few, one needs not only to consider the situational motives, capacity and resources of one's own but also those of the other party. Oftentimes experienced project managers accomplish this "intuitively" based on their experience. However, sharing this knowledge and understanding between projects becomes a crucial question in order to avoid the "re-inventing the wheel in every project" –syndrome.

8.3 Discussion, further research

At this point, one of the key question regarding this research is how far can one generalize the findings or the conclusions. The scope of evidence collected is limited at this phase and the work has really focused on gaining basic understanding. The hypothesis is not tested and no actual computational models made. However, the preliminary categories of institutional complexity are valid Use of the models found in literature were useful to gain basic understanding of the phenomena and especially the mechanisms of how complexities affect projects. The research approach of analyzing case projects and finding critical encounters was found robust and useful as well.

Further research and the continuance of this work should put the emphasis on refining possible variables. The suggestion is that they ought to fall in two main categories:

- Variables resembling institutional complexities (this set can contain a number of subsets, such as cultural dimensions)

- Variables resembling context specific features (purpose, time, place, etc.)

Further empirical data from these two groups of variables should be generated by conducting more case studies with systematic way of documenting all dependencies between the variables and project performance.

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Appendix A: Tools developed

Self-diagnostics tool

The self-diagnostic tool is used to measure a person's awareness of cultural issues. A series of statements is put before the individual, who selects the response that is most appropriate to his or her understanding. The success of the exercise clearly depends on the honesty of the individual, but this should not represent any difficulty in using the tool in an industrial setting. Presently, there are 93 statements and these could be increased or reduced as the research team sees fit. For now, they address a wide-range of topics and issues of a cultural nature that have been derived from the findings of the research so far and published findings elsewhere. They are not exhaustive, but indicative of the issues involved and can be deleted or modified. The word culture has not been used in drafting any of the statements; instead, words that might describe how culture manifests have been used.

Each response to a statement is allocated to one of four dimensions:

1. Awareness of the needs of others (**Others**)
    a. Perspectives on life
    b. Working relationships
2. Awareness of the individual (**Individual**)
    a. Respect for people as individuals
    b. Communication and contact
3. Awareness of religions, customs and practices (**Customs**)
    a. Beliefs and attitudes
    b. Work and ethics
4. Awareness of institutions and protocols (**Institutions**)
    a. PEST framework
    b. Rules and regulations

The above are not set in 'tablets of stone' and can, like the statements themselves, be modified if felt necessary. That said, they seem to offer a sensible categorisation of the dimensions of culture in terms of a person's orientation and sensitivity. Each statement can be modified in terms of the response that is expected for a close correlation with what might be described as a 'robust understanding' of cultural issues in the context of international projects. There is no right or wrong answer – simply an indication of where the individual stands relative to this understanding. Moreover, the latter is likely to change over time.

The value of the tool is that the content can be modified, without restructuring or significantly redesigning the tool. Thus, the effectiveness of the tool can be expected to

improve over time as the findings of more research and a better-developed understanding of cultural issues are introduced.

There are two versions of the tool: one paper-based and the other web-based. Within these there are also some differences, so that it should be possible to select the most appropriate format for the on-going project. The content of each element (file) of the tool is described on a separate sheet.

Intended use of the tool

The purpose of the tool, i.e. the questionnaire, is three-fold:

1. To help managers and other personnel with responsibility for managing international projects identify their current orientation and sensitivity towards cultural issues.
2. To provide a basis for discussion and further skills development.
3. To provide a basis for comparing individuals' awareness as part of a process of continual improvement.

The tool is thus aimed at all managers with responsibility or involvement in international projects to help generate awareness of their current orientation and sensitivity towards cultural differences that may affect the performance of those projects. Completion of the questionnaire takes approximately 30 minutes. Responses are used to produce scores against the four dimensions of culture outlined earlier. The results can be returned to the individual within minutes, depending on which type of questionnaire is used. In both cases, they take the form of a graph, which shows how the results (i.e. scores) relate to each of the above-described dimensions.

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