

CULTURAL CHANGE IN THE CONSTRUCTION INDUSTRY

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THE ROLE OF PROJECT ALLIANCE ORGANIZATIONAL CULTURE

Abstract: Project alliances are a contemporary approach for managing complex construction projects. In order to succeed, they require the establishment of trust and collaborative ways of working, calling for fundamental changes in the behaviors and values among organizational members taking part in them. The increasing use of project alliancing may therefore influence the underlying values, norms and regulations within the construction sector, and hence contribute to the cultural change within the construction industry by large. The purpose of this paper is to elaborate on the understanding of the cultural change that is produced by the use of project alliances, focused on collaborative behaviors. The research particularly develops knowledge on the mechanisms through which the use of project alliances may shape the industry culture. Data were collected from the Finnish construction sector, where alliance projects are increasingly popular. Central industry representatives were interviewed, and data content was analyzed. The findings reveal that industry-level cultural change related to project alliances is a continuously evolving process and an outcome of change events and purposeful cultural change work at multiple levels including individuals, organizations, networks and construction industry. The results, therefore, draw attention to the role of multi-level interactions in advancing cultural change, which has to date received limited attention. The findings on the role of individuals' career paths and trajectories are also novel, as they implicate that individual level movement and cultural orientation may play a more significant role in cultural change dynamics within project-based industries than has been acknowledged.

1. INTRODUCTION

The leadership, co-operation, and behavior by large in integrated project deliveries – such as project alliances – is noticed to differ from the mainstream in the construction field (Sluyts, Matthyssensa, Martensa, Streukes 2011; Walker et al. 2013, 2015, 2019). As alliance projects have become increasingly popular in Finland and have also shown high success rates, there is a growing interest in the merits of the project alliance model, and how they possibly reflect in and shape other types of projects as well. There is, however, limited research concerning the mechanisms through which these operational models and particularly the behaviors and values characterizing them might transmit into different contexts and circumstances. Moreover, there are only a few studies focusing on the question, how the use of the operational models typical of alliance projects may change the culture of the construction industry by large.

This research develops knowledge on the mechanisms through which alliance culture may shape the industry culture, and on the cultural phenomena that emerge regarding this leadership innovation from the perspectives of individuals, organizations, networks and construction industry.

2. THEORETICAL BACKGROUND

2.1 Project alliances as a mode of integrated project delivery

Collaborative, relational projects have many forms and concepts; from integrated project delivery (IPD) (see i.e., Fischer, Reed, Khanzode, Ashcraft 2014; Matthews, Howell 2005, Walker et al. 2019) - especially in the USA, and project alliance (PA) – developed in UK and Australia, to project partnering (Chen 2012; Lahdenperä 2012). Walker et al. (2019) refer to the IPD as a generic term embracing several project delivery approaches in which there is an intense collaboration between three and often four main project parties. Project partnering resembles alliancing, but the main difference is said to be on the contractual basis of project alliance, which is a legally binding agreement. Attributes most commonly related to the definitions of alliancing represent both hard and soft elements. The hard elements are a formal contract and real gain-share/pain-share agreements and soft elements trust, long-term commitment plus cooperation and communication (Chen et al. 2012; Yeung, Chan, Chan 2007). Partnering instead is more like a management approach for inter-organizational teamwork-based mainly on soft elements of trust and mutual understanding (Chen et al. 2012; Rowlinson, Cheung 2004).

Although these various concepts and definitions have their differences, described i.e., by the scope of cooperation and integration (see i.e., Lahdenperä 2012), they also have much in common. All in all, the relational project delivery integrates actors from several entities

around a common goal and shared information as well as joint practices in a temporary organization. In this study, the term project alliance (PA) is used to describe a certain type of temporary, inter-organizational project contract and organization, representing one form of integrated project delivery. Project alliance is a project delivery model, which is based on open, relational multiparty contracting, transparent information, mutual risk and profit-sharing, and common targets between the actors, who are encouraged to work as an integrated team. (i.e., Aapaoja, Suvanto, Haapasalo 2012; Lahdenperä 2012; Walker et al. 2013).

2.2 Organizational culture

Organizational culture as a collective phenomenon is defined to be constructed in a social context and learned through complicated organizational learning processes (Hofstede 1991, 2005; Schein 2004, 2009; Senge 2006). Interpretation is done through the subjectivity of an individual, but the social context the individual belongs to always affects the interpretations and perceptions of reality (Berger, Luckmann 1998). Individuals transfer cultural information in the organizations and between them. Still, the perceptions of a group tend to be quite persistent and continue to guide the group’s activities even when the individuals in the group change. Schein states that the meaning of organizational culture for a group is equivalent to the meaning of personality or character to an individual. (Schein 2004).

Organizational culture is traditionally referred to as the culture in a certain organizational entity. Today, however, work is often done in temporary project organizations that unite personnel from various companies and organizations, blurring the boundaries of an organization. In the cultural studies also, other terms are used referring to the specific temporal nature of the context studied, like the culture of collaboration (Sutton, Shouse 2016; Smith 2012) and collaborative culture (Sanchez 2012). Still, in most cases, the used term is organizational culture, corporate culture or just culture, although the focus might be especially in the collaboration of diverse actors.

Following that, with the words culture, cultural change or organizational culture is here referred to the culture of a certain limited entity, being it an organization, project organization, networks of organizations or the culture of the whole industry – consisting of a number of different organizations. The culture of those entities is approached by using terms familiar from Schein’s levels of the organizational culture of visible artifacts and behavior, espoused values and the deepest level of basic assumptions, and described as norms, processes, way to behave, beliefs, values and assumptions.

Cultural features form a deep learning cycle that influences cultural bases, i.e., “the way things are” and changing the pattern would require an ultimate act of leadership (Schein 2009; Senge 2006). A critical event is an event that has the power to reach the deep structure

of an organization or a network (Halinen, Salmi, Havila 1999), and it should be seen as an impulse that sets the stage for radical change (Gersick 1991). Cultural change in the industry could thus be seen either as an incremental one influencing only for instance certain work processes and practices, or a radical one shaking the premises and basic assumptions of the organizational culture within the industry network. The concept of organizational culture has been a source for several discussions about the right way to define it (Martin 2002). Here the concept is interpreted using the classical definitions of Hofstede and Schein, but it has been expanded with Martin’s three-perspective theory.

Organizational culture is a socially constructed, path-dependent and contextual phenomenon (Hofstede 2005), consisting of e.g., values, norms and beliefs that are shared (Schein 2004) or incompletely shared (Martin 2002).

In Martins (2002) three-perspective theory the culture is described to be integrated, differentiated, or fragmented - or a combination of these three. Here integration refers to what is common to organizational culture, differentiation have inconsistent interpretation and acknowledges subcultures. Fragmentation then again focuses on ambiguity, individual interpretations.

2.3 Construction industry and project management studies

Construction industry is not evaluated to be the most dynamic field of industry – on the contrary it is stated to be quite traditional, and its productivity is low compared to other major fields of industries and often fails to meet the economic expectations (Chen et al. 2012; Lahdenperä 2012; Lichtig 2006; Pekuri, Haapasalo, Herrala 2011). But also, in this field the game changers like digitalization are triggering the transformation (Castagnino, Rothballer, Gerbert 2016), one answer being collaborative and cooperative project agreements through which dispersed, specialized knowledge is collected and the opportunism inherent in traditional agreements is resisted (Laan et al. 2011; Lahdenperä 2012). However, this can be seen also the other way around; the various IPD forms can be interpreted to be a disruptive force driving value co-creation for the industry, supported by a common digital environment (Walker et al. 2019). Thus, there is room for research about the potential role the relational forms – like alliancing – might have in carrying cultural change to the whole industry.

Temporary organizations (TOs), defined by Burke and Marley (2016) as a temporary bounded group of interdependent organizational actors, formed to complete a complex task, are stated to indicate a new logic of organizing (Powell 1996). Nowadays temporary organizations are the dominant form of organizing

besides in construction, also in theatre productions, software development, in strategic alliances, and in crisis management (Burke et al. 2016). Project alliances would in Burke et al. (2016) definition fall into inter-organizational TO, a between organizations model with multiple parents. When this organization dissolves, resources are assigned to either another temporary organization or to an individual parent’s line organization.

It is stated that part of the value of IPD is how knowledge is captured by project participants’ home organizations (Walker et al. 2019), and this goes certainly as well to alliancing. There is, however, a great risk of so-called learning closure – knowledge created not transferred to permanent organization – especially in project organizations (Burke, Marley 2016). Individuals play a key role in carrying expertise and trust also on the project network level, but the organizations have the capacity to coordinate networks (Manning 2010). Although temporary organizations provide fertile conditions for creating new knowledge, their temporary and unique nature also forms an obstacle for knowledge transfer to parent organizations, the practices surviving beyond single projects might, however, become project network routines (Burke et al. 2016).

In order to enable people to behave in a way that would enhance the co-operational culture, the organizational systems need to be in line (Walker et al. 2019). In fact, Walker et al. (2019) see collaborative, multi-participant processes to be a way to re-organize the whole industry in order to meet the clients’ needs and create value throughout the entire lifecycle of delivered products. This also means a wider understanding of stakeholders’ needs and products as assets.

In integrated projects a network of actors is created. Manning (2010) has studied the established projects networks and suggests that the reason to maintaining core project partnership is the ability to exploit established trust and collaborative routines.

2.4 Cultural features in alliancing

Despite construction industry being a personnel intensive field, research on cultural issues is rather scarce. However, as new relational forms of organizing construction projects - like project alliancing - are increasing in volume, organizational culture from the project perspective has been gaining space. Cultural work in project alliances starts by careful selection of team members and building of integrated teams (Aapaoja et al. 2013; Fong, Lung 2007; Ibrahim et al. 2014). Cornerstones of forming and managing cultural features along the project start from the contract itself, which includes - among other things - rules to resist opportunistic behavior (Laan et al. 2011; Lahdenperä 2013). Suitable culture is reinforced by common goals and incentives, plus co-operative work processes and behavioral norms supporting transparency, open

information and “Best for the project” – attitude (Bresnen, Marshall 2000; Walker et al. 2016, Walker, Rowlinson 2019). Although contractual issues, in the first place, already build a foundation for the quality of cooperative relationships in the project alliance (Laan et al. 2011) the success in alliances requires a certain type of organizational culture, featured by relational competencies, sophisticated team engagement and collaboration, including team behavioral protocols (Walker, Harley, Mills 2013). Trust, open communication, coordination, and goal alignment are among the identified success factors in alliancing projects (Love, Mistry, Davis 2010). There are rather few studies of inter-organizational projects from a purely cultural point of view, however, culture in construction projects has been approached from communication and knowledge management aspect (Cheng, Li, Love, Irani 2001; Fong, Kwok 2009), cooperation and integration (Aapaoja et al. 2013; Fong, Lung 2007; Lahdenperä 2012, 2017; Walker, Lloyd-Walker 2015), and learning and organizational capabilities (Hietajärvi 2017; Love, Ackerman, Morrison 2015; Kale, Corsten 2009; Kale, Singh 2007; Sluyts et al. 2011). Walker (2002) studied the formation of enthusiasm and commitment and Laan et al. (2011) researched developing suitable cultural features to enhance cooperation and teamwork. Walker et al. (2013) as well as Laan et al. (2011) underline the influence of incentives in reinforcing the appropriate attitudes in integrated projects. Moreover, using joint activities and various collaborative instruments to facilitate the building of shared values, trust, and commitment, plus striving to accumulate shared experience are possible measures to smooth the process throughout its various stages (Das, Teng 2001; Walker 2019). Thus, most cultural research of project alliances seems to focus on project organization level emphasizing the questions of what the winning culture looks like and how to achieve it. Another research perspective has covered industry level pondering. Less is said about individuals, parent organizations or networks.

However, Sluyts et al. (2011) has acknowledged the role of the alliance manager as a codifier and mediator of the alliance know-how, and Walker and Lloyd (2019) have identified personal characteristics needed to enhance smooth alliance culture. The importance of selecting the right alliance partners and team members has been of interest (Schreiner, Kale, Corsten 2009; Ibrahim, Costello, Wilkinson 2015). The relationships between stakeholders in project alliances have been less in focus. Burke et al. (2016) mentioned obstacles in transmitting knowledge from temporary organizations to parent organizations, while calling out more research on tension between TOs and permanent organizations. Different owner and professional cultures in alliance projects were found out to be one cultural feature influencing the interaction between the parent organization and temporary project organization (Lehto 2019). When considering the diffusion of organizational culture, the research focuses mainly on the perspectives of knowledge and innovation (Eriksson 2013; Walker 2019). Relational project delivery models include integrating aspects enhancing innovation and knowledge sharing plus reducing the stickiness of knowledge inside the project. But when wider diffusion is in question, not even to mention the culture by large, there is very little if any research from project alliance perspective to lean on.

3. METHODOLOGY

In this qualitative study, the main part of the information was collected through in-depth interviews. Empirical material is based mainly on 9 thematic, semi-structured interviews, with ten informants. The data was qualitatively codified and further analyzed thematically and reported in this article’s results section according to those same themes. To decrease possible biases the questions in interviews have been open-ended. Multiple knowledgeable informants have been invited to tell their stories, and the interviews have been carried out until answers have started to emerge.

Interviews	Themes	Participants
Nine semi-structured interviews between Nov 2019 and May 2020. One interview with two interviewees	Relevant/critical events in proliferation of PAs	5 actors in various roles in project alliances
Duration app. 566 minutes	Changes (norms, processes, roles, assumptions, behavior...) in various levels: Individual, organizational, network and actors, construction industry	5 outside experts representing other companies, consultants and lobbying organizations.
	Future of PAs	

Table 1: Thematic interviews

In order to support the atmosphere of reliability the informants were aware of the confidentiality of the answers and identity of a single answerer. Permission was asked for taping the interview. Research themes covered the changes of organizational culture in the construction field during the last ten years, that is 2010 – 2020. From the data a timeline of critical events was created and significant periods describing the cultural change in the industry, also taking into account the development of alliance projects in volume and quality, in order to visualize the possible power of alliance model to have an impact in changing organizational culture and diffusion of this leadership innovation. Besides the industry level, also individual, organizational and network levels were in focus. On the individual level the emphasis was on how individuals influence the spreading of the model. We were also interested in how people feel in working in alliance projects versus in projects or companies, where there are no alliance capabilities and/or only traditional project models are in use. Organizations in this study would represent the companies that have taken part in alliance projects in a way or another. How cultural change is visible as concrete practices, or cultural values, norms or behavioral rules of those organizations would indicate a possible diffusion of leadership model of project alliances into the home organizations. What kind of organizations have adopted alliance policies, and how subscriber organizations (like municipalities, parishes, etc.) would be described as actors in the alliance model, were among research themes. On the network level the emphasis was on what kind of networks and possible subcultures are emerging in the field. And coming back to the industry level, what are the differences in the culture of different types of actors, and how these differences affect the industry and, how cultural change as a whole is reflected in the industry. What is the future of the alliance model and other co-operation-based models in Finland? This was one of the research questions in interviews.

4. RESULTS

On the network level the emphasis was on what kind of networks and possible subcultures are emerging in the field. And coming back to the industry level, what are the differences in the culture of different types of actors, and how these differences affect the industry and, how cultural change as a whole is reflected in the industry. What is the future of the alliance model and other co-operation-based models in Finland? This was one of the research questions in interviews.

4.1 Development of alliance project model in Finland

In the construction field, relational delivery modes have started to replace transaction-based, fixed contracts (Chen et al. 2012; Lahdenperä 2012). The development is evident in the field of construction, which is recognized

as being project-based and characterized by inter-organizational teamwork (Fong, Lung 2007; Keung, Shen 2013). Collaborative and cooperative project agreements are nowadays a common answer to the need to collect dispersed, specialized knowledge in flexible development or implementation challenges, and resist the opportunism inherent in traditional agreements (Laan et al 2011; Lahdenperä 2012). In complex construction projects the knowledge needed is extensive and specialized, demanding combining competences of actors from several fields. No doubt, also the productivity in the construction field, which is low compared to other major fields of industries, and often fails to meet the economic expectations (Chen et al. 2012; Pekuri, Haapasalo, Herrala 2011; Lahdenperä 2012; Lichting 2006), accelerates this development. The performance in traditional construction projects has been uneven, and in many cases the results fail to meet the economic or quality expectations (Lahdenperä 2012, 2017; Lichting 2006), the silo mentality is one factor behind it (Tell 2016, Walker et al. 2019). The development in Finland has followed the same path. After the first construction work executed by using the project alliance model in 2011, the development has been fast. Now ten years later the project alliance contracts reach about 70 works. The increase was most rapid after two years of the first launches, between 2013-2018, when about 10 new projects began yearly. Launching the alliance model to Finland seems to have been in hands of only a few people, and those individuals are named by many informants. A journey to Australia must have been a legendary voyage, as many informants mentioned it as a starting point in bringing the model to Finland. It was preceded by negotiations with the EU, as it was not certain if the model was in contradiction with the competition law. The interpretation was” no worries mates” and importing the model from Australia could start. Besides Australia learnings were also sought from, for instance, the USA, California, where in Berkley University lean construction and IPD-models had a firm foothold. Finnish Transport Agency was one of the active promotor for a new model, and an important one, as their infrastructure projects were suitable for a project model, that was assumed to require a huge volume to be useful. Moreover, there were consultants and academics related to the launching as well in Finland as in Australia. To the heroes of this story also belongs other model advocates, the most important ones representing potential public procurers. A motive for finding a new way of working stemmed from some major failures, where neither project cost nor timetable was anywhere near the target. Moreover, the constant disputes concerning the construction projects, where considered to be harmful to the whole industry, and its efficiency. This traditional industry needed some fresh air and new ideas.

The first alliance project – Liekki subscribed by the Finnish Transport Agency - was a success, followed by many similar cases. Being such a success might have been diminishing opposing voices, but there is criticism anyway. Critics being mostly – as one might expect- the organizations that have not taken part in alliance projects either in the role of a client or a service provider. The core of criticism is the inability to verify if the target price is on the right level. As the objectives are agreed in cooperation and the incentive program follows the targets, it leaves room to doubt whether the goals are challenging enough. Moreover, some are suspicious about the information given, questioning if the outcome is really so positive that communicated. But as the active defenders - major public or semi-public actors – represents a powerful client sector, the alliance model has got wind under its wings and multiplies by volume, supported also by positive statements in media. However, it still covers quite a small proportion of Finnish construction markets. As the project using alliancing are typically gathering the attention of the public audience and are often politically significant projects, their relative importance to society is quite high. A powerful critical event mentioned by few informants was a report of the former permanent secretary of the Ministry of Finance, Erkki Virtanen, affirming that alliancing is a model to be used in future public projects. Started as a model for public infrastructure projects the alliancing has lately gained new areas and developed. The first information management projects have started, and alliances are remodeled to suit even smaller projects and different areas like maintenance and building construction, or clients with low volumes like housing companies. It was also pondered if facility management should be involved during earlier phases. Reporting is evolving as well, covering value for money reports from many perspectives. Successful projects have, however, been the most critical reason behind the increasing popularity of the alliance model.

4.2 Individuals in the alliance projects

Along with the expanding model more and more individuals got experiences of it. Alliances are challenging the participants to co-operate in a more sophisticated way, and many individuals and teams have experienced a huge learning curve while in the project. It seems that working in an alliance project leaves a mark, as people tend to have an opinion - even a strong one - either against or pro it. People interviewed had a positive view about the alliances, and the ones that had worked in them would want to continue in that type of working culture. They stated, however, that it is not a culture that would suit everyone. Openness and sharing information, working with the group could be challenging if you are used to keeping your work to yourself. However, people that enter alliancing projects are mostly continuing their career by moving from one alliance project to another. It seems that loyalty is

shifting towards the project model itself or towards certain team members that follow each other in alliance projects, instead of an employer.

A project manager describes:
" *Adaptation means understanding the importance of collaboration and communication and being able to internalize that we are working towards a common goal, instead of taking care of one's own site and then not caring about others or, at worst, blaming and criticizing others in the project*".

The positive aspects of being a part of an alliance culture named by the interviewed were, first of all, learning a new way of thinking and cooperating. People can focus into the issues they know best, and is their actual profession, instead of quarrelling about the contract or who should bear the potential or actual risk. A member of a steering group describes working in an alliance project as follows:
" *It is motivating as the meetings are very well prepared and decision-driven. All operations are of high quality*".

Alliance as a model focuses on the behavior of individuals, even more than on the organizations the individuals are representing. Although personality is quite stable, according to recruiting specialists it is possible to modify one's behavior. People get work experience that is an asset for their career.

It is easy to find motivated people for these projects, the only problem being that there is a shortage of competent people experienced in alliances. The projects demand a long commitment of many years, which slows down the pace of moving from one project to another. Moreover, this might not be only a positive factor for specialists working in the project, as merits are still often valued by the number of projects. Negative experiences were thought to be a result of a poor orientation phase and problems in adopting a mindset working in this culture would have demanded. Some were pondering that it could also be partly a question of age due to challenges in off learning old habits. But mostly, after all, it was stated that it is a question of the flexibility of individuals' personality. For some people who have only worked on traditional projects, it takes longer to adapt and for other ones it is easy. A member of a steering group explains:
" *The questions of people stemming from traditional world consider questions like when the subscriber has to provide the data, make decisions, etc. Whereas people from alliance world would ponder how do we settle this matter*".

4.3 Changes on the organizational level

The changes on the organizational level are recognized in practice by the interviewees who work themselves in home organizations pursuing alliance model.

Taking part in the tendering process already has an impact, as it is a concrete case where people can learn a lot besides presenting their offer. It demands a lot of work and preparation, and even rehearsing with a consultant how to behave in a workshop. The alliance project itself requires its own kinds of reporting, the objectives differing from the ones traditional projects have. It might also demand separate ICT-systems. Working closely together with the client and people with different professional backgrounds is a huge learning process also influencing the knowledge base of the home office. Project managers and people attending steering groups have an important role as intermediaries. Some stated clearly that tools learned in alliances – like workshop methods, big room, self-reflecting, informing other parties and co-operating have entered also into traditional projects. How much of the alliance culture is transported to the home organizations via people participating in the projects and how much is learned somewhere else is a question though.

4.4 Actors and networks

Alliancing is stated to bring different parties closer to each other and traditional role boundaries are blurring. Designers and subscribers are pulled towards implementation, and contractors and subcontractors are more able to see the big picture. All are due to thinking about what is best for the project. Construction and development consultants also face somewhat abnormal surroundings:
" *It challenges the developer consultant to be more at the forefront and bring project management issues to everyone's attention*". The traditional tasks of a subscriber seem to flow to the service providers, and the client's organization in the project is rather thin. Constructors and designers have more say as they are involved in the project from the beginning. On the other hand, constructors are obliged to involve designer from the beginning to decision making, and no solo shows are allowed. In the Big Room everyone has one vote equalizing the roles. And that is the ideal situation in project alliances; co-operating from the beginning to bring everyone's views to the production in the early phase, the end goal being cost-effective and efficient implementation.

The subscribers' project organizations being thin brings to the surface the question of where their role is moving. In a way client is more dependent on service providers' competences. The competent and powerful client is, however, for benefit of everyone, mediating between the parties and stakeholders, and ensuring adequate target levels. The limited competence-base in every role is recognized on an individual level, as well as on an organizational level as companies participating in tendering processes are scarce. Only quite large companies have the needed

resources, or systems to support the service process. In Finland there is a pack of fewer than 10 companies dividing the alliance project markets. Even nearer 5 than 10. The skills accumulate for these same companies and it is increasingly hard for newcomers to get involved. This applies even to consultants. In client organizations, though, the resource base is often most limited, as for them an alliance project can be a once in a lifetime task. Here the client organizations own the power to challenge the markets and make space for newcomers. There have been efforts to change the game by for instance splitting the work to smaller parts, thus also enabling companies lesser in size to take part. There is at least a weak signal, that there would be more organizations being interested to get to these markets. Moreover, renewing the workshop process from time to time would trigger the development of the model and allow more space for newcomers, as those who have attended before would not have such advantage of their experience and stick to same rehearsed presentation.

Networks:
Besides volume, there is also a more human reason for project alliances to be a play of the same actors. Learning to co-operate with certain individuals and organizations enhances the success of the next project. So, as long as everything is proceeding smoothly, there is no point in changing the partner. It has been a fast-winning show. For those, who might have been reluctant to take part in this development in the first place, finding a suitable network can be arduous.

NGO leader conveys:
" *Will the others get in these dances but the ones that have not been able to dance in the first round?*" The most unequivocal emerging cultural issue is the network culture itself. Being a relationship-based form of working, the alliance project model strengthens the relevance of networks and individual co-operational competences. A new project starts by getting to know people and building trust and common culture. Maintaining trust between the parties is elementary in the success of a project alliance, but likewise in keeping the network alive through multiple projects. Also, the meaning of support from the home organizations towards the alliance model and the alliance project, is noticed.

Networks are typically formed by the contractor, who then invites others to participate, commonly design organizations. Considering network power, contractors have a key player role. The indicator of the concentration of this field is that about 50 % of these projects are delivered by a certain actor, and the consultant role is almost exclusively in one office. Thus, while alliance culture is uniting contractors, designers, and subscribers, it simultaneously divides small and large actors in the field.

So far, the networks have been rather closed circles of volume companies. But now as alliances are diffusing to smaller entities and other regions besides capital area and few big cities, and, moreover, to new industries – like maintenance work and ICT-projects - we are facing a larger range of actors entering the field. This is a prerequisite for the model to have a more profound influence on culture-wise.

New fields adapting the alliance model generate new types of networks. For instance, an ICT system that is common for multiple clients brings along a need to establish a way to work in a multi-subscriber environment and develop the procedures that support best the smooth co-operation of client network.

4.5 Industry level

On the industry level a concrete change is an additional contract model introduced along with the alliance model. It turns the attention towards competencies, co-operation, early involvement and finding solutions together, questioning simultaneously the weak points in traditional contract models. The informants highlight especially early involvement as a way to get the insight of professionals from every field. For instance, in public procurement defining the qualifications beforehand without the interplay of actors is quite binding and can make problem-solving along the process arduous. Ergo, as alliance project model is considered to be useful but laborious, new contract models for smaller works are under development, adapting suitable features to the traditional project.

Besides early involvement, alliance culture is appreciated of its openness and trustfulness between the actors. There’s wishful thinking, but also clear signals that these features influence the industry, and that co-operation is gaining more space.

In the words of an alliance expert:
" I want to believe that the co-operation in this industry has ameliorated. The fences are lowered between the actors, that is constructors and designers, and moreover, between clients and service providers".

Another expert expresses it as:
“An expanding circle of trust”

Still, the cultural changes were stated to be still on the level of changing norms, instead of on a deep layer of beliefs. There is still quite a lot of fears as a memory of old disputes.

Whether the changes would have emerged without any alliance project, or as a result of lean thinking is a question to ponder. It was stated, however, that without co-operative project models reconciliation demanded in lean production could not have succeeded. In any case, a demanding contract model such as alliance triggers the development of both clients and service providers. Already a tendering process requires a deep commitment and continuous improvement from all parties. The participants must learn new ways to co-

operate and these learnings are bound to influence other circumstances as well.

One practical outcome from alliances reflecting to the whole field is innovations made during the process and reported in the so-called Value for Money – report. The innovations are mostly small operational changes in processes, but there are also significant ones that besides their effect as such also spread the word of alliances as a creative process and increase interest in them.

Cultural features characterizing alliance projects diffuse to other projects also by using concrete methods typical to alliances like Last Planner and Big Room. They have found their way to traditional projects in the first hand by the organizations that have been involved in alliances. Mechanism enhancing co-operation is of interest and streamlining processes by building new interfaces between subscribers, designers and constructors. Examples of these being for instance how plans are approved and what kind of plans are required before actual building works start. It is stated that operative issues are quite easy to transfer if they are not related to contracts or preventing them. The research of Lehto (2019) indicated that both owner culture and professional identities could have a hindering or supporting role in alliance projects. In this study the distinctive professional identities of designers’ and architects’ vs constructors were signaled, the point being that the alliance culture in bridging these differences.

All in all, procurement processes are said to become more transparent and even general atmosphere in the industry to favor increasingly common and open networking and discussion. One-on-one meetings in gatherings are losing popularity. Even competing organizations arrange joint customer events. So, whether these are signs of diffusing alliance culture is hard to say, but the informants seem to link it to the good experiences from alliance models. (Table 2)

4.6 Future

The belief in the future of the alliance model was strong among those interviewed, as there has been such a steep increase in volume during the past ten years, and as projects have been invariably successful. It would need more than one disastrous project outcome to hinder its triumph.

However, few other potential causes were identified that could reverse the process. The first one was the possibly faltering confidence in the accuracy of objectives and target costs – is the value for money in fact on the right level. The skeptical are said to be typically the ones that have not attended alliance projects, but it is a vital issue as most alliance works are public ones and using taxpayer’s money. Although value for money-reports is published for the projects, it is still hard to testify unequivocally how much is the right price for a complex and unique project, where a part of the value comes from streamlined processes. Not even to talk about, how

Level	Key findings
Individual	<ul style="list-style-type: none">Adapting to alliance culture – learning a more open and co-operative way of working – an asset in the work marketsShifting loyalty towards project and team
Organizational	<ul style="list-style-type: none">Alliance project tools in use also in other projects of home organizationsTendering process a valuable possibility to organization’s members to learn alliance culture
Actors and networks	<ul style="list-style-type: none">Blurring role boundaries and more equal roles between actors, but considering network power, contractors have a key player role.Client organization’s role shifting to service providers.Alliance skills accumulating only to few organizations.Alliance culture is uniting contractors, designers and subscribers, but dividing small and large actors in the field.
Industry level	<ul style="list-style-type: none">A contract model that turns the attention towards competences, co-operation, early involvement and finding solutions togetherNew contract models for smaller works under development, adapting suitable features to traditional project.Cultural features characterizing alliance projects diffuse to other projects by using concrete methods typical to alliances.Some signals that features typical in alliances such as co-operation, openness and trust are gaining more space. Procurement processes are said to become more transparent and even general atmosphere in the industry to favor increasingly common and open networking, discussion, and events.Alliance methods triggers the development of both clients and service providers.Innovations made in alliance projects influence the whole industry

Table 2: Key findings at different levels

the experiences of people working in those projects should be considered.

Secondly the limited number of competent resources, which goes as well to the client-side as to the service providers. Major subscribes and service providers have developed their competence base, although this model is still in the hands of few. But in order to enlarge the implementation new client groups and other actors need more knowledge of this leadership innovation. The client’s presence is a prerequisite in an alliance project, so this alone is restricting the pure model to spread to smaller works. But if this leadership innovation doesn’t find more space, the alliance model and other relationship-based project models may lose even the already existing competence base, due to uneven order flow. This was also a third possible threat obscuring the future of alliances. In case the workflow would have interruptions, the experienced and competent ones would naturally have to move on to other jobs. However, the odds for those threats were evaluated to below and in the big picture the future of alliance projects was seen quite bright. It was pondered, however, that is it the alliance or co-operative models in general that will gain space? The alliance model has its

restrictions as it is most suitable in high volume, complex projects. It is, however, adaptable to smaller-scale projects and other fields of industries, and this work is going on as reported earlier in this study. And, moreover, are the cultural features in fact the ones wanted, not necessarily the contract itself. This would expand the vision for the whole industry to renew itself.

One scenario mentioned was a growing gap between extremes. There are small traditional works focusing on the lowest price, and there are the large, complex construction works where new leadership methods are implemented and alliance type of culture emerges.

A project manager explains:
" The alliance model will prevail in big projects, but also the old, traditional way will survive. The traditional actors are in their places, you just give them the plans and they know how to implement according to them".

However, the big companies lead the way and as a result the more relationship and co-operation-based culture could one day become mainstream instead of curiosity. A lot is invested in creating alliance competencies in those forerunner organizations in this field, and the competent people tend to favor being in projects led by alliance leadership principles, an important viewpoint to take into account when competing for the best workforce.

As learned earlier certain tools and cultural features characteristic for alliances have diffused inside the companies involved in alliance projects and even further. If the co-operation and other cultural features are the core point - not the exact name of the contract type - what should be done to enhance this development? Is it not too slow to learn the new way of thinking and alliance type of cooperative practices only by attending the project? For the industry to develop it must adapt a new way of thinking in every aspect.

One way would be through documentation of best practices, creating guidelines, find standardized ways of operating in a new way. Making the model more transparent would enhance its diffusion. But as the alliance model is developed to answer to the challenges of a complex, fast-moving world, guidelines are not an exhaustive answer. A new agile and cooperative way of thinking is needed, allowing unusual, intuitive solutions to emerging. Solutions that the massive challenges of climate change and sustainability needs place to the construction industry.

It was stated by many informants that the alliance contract type is the base for good co-operation. Although it is an essential platform, it is the co-operative atmosphere itself that seems to be a very powerful source of job satisfaction. A job where you can use your actual professional skills, but also develop new competences as a result of adapting to alliance culture. As such, alliance culture could be one herald paving the way to new innovative ways to think and work, which seems to gain space in discussion.

5. DISCUSSION AND CONCLUSIONS

An individual's competence to act cooperatively increases during working in alliances. Whether he or she is able to carry those behavioral features to other projects are, however, related at least partly to the contractual issues. If cooperation, openness and trust is wanted, and their utility is recognized, individuals need to know first that they own back is secured. That openness is really a behavior that they are valued for and not punished. Other prerequisites supporting the influence of an individual is a powerful position and status (Manning 2010), like in this case when launching the model was in hands of only a few.

There is also a clear danger of value conflict, as one finds that working with an alliance is in line with their personal values and some other project forms are not. Our results implicate that cultural change regarding collaboration and co-operation-oriented values within the construction industry is a continuously evolving process and an outcome of change events and purposeful cultural change work at multiple levels. The findings related to the cultural change processes taking place at different levels i.e., of individuals, organizational, actors and networks and industry as well as insights on their linkages are novel in the sense that prior research has tended to focus on change processes typically at one level (Bygballe and Ingemansson, 2014). The results suggest that the organizing solutions at the construction industry level such as change programs related to project alliancing and their interlinkages to other levels, particularly that of organizations, have been crucial for producing cultural change. This notion, therefore, directs the attention to the multi-level interactions and their role in advancing cultural change, which has to date received limited attention. The results on the role of individuals' career paths and trajectories are also novel, as they implicate that individual-level movement and cultural orientation may play a more significant role in cultural change dynamics within project-based industries that have been acknowledged. To date, the role of individual projects, so-called vanguard projects has been highlighted as potential dominating mechanisms for producing industry-level change, for example, in the form of regulation changes (Tukiainen and Granqvist, 2016), whereas the role of individuals' project career paths as a driver of change has been underresearched (Manning, 2010).

The results also indicate that cultural change has been produced in different phases and cycles following the typical cultural change processes where the underlying values and assumptions are the ones where change is unfolding slowly. The focus of the first phase seems to have been in the development and use of new visible practices and tools of collaboration that were used in the first projects and then refined and elaborated in the consecutive ones as well as at the industry level programs. At the same time the regulatory change

processes at the industry level were initiated in multi-disciplinary working groups. Finally, the processes related to the changes of underlying values have been first taking place within the boundaries of individual projects among their members, who have then been then spreading the learnings, attitudes and values in their consecutive projects where they have been engaged in cultural change work and acted as cultural change agents.

6. LIMITATIONS AND FUTURE RESEARCH

A research report based on ten informants is by no means without limitations. However, despite the quite limited number of interviews the answers started to saturate and to be in line with general knowledge. Moreover, answers from informants representing various roles were quite logical with each other.

The study was conducted in a specific country context and it may be that the structural characteristics of the industry, as well as its cultural heritage, may have implications for the results. Therefore, it would be interesting to study the cultural change processes related to collaborative delivery models in other country contexts. Particularly, it would be highly interesting to build a comparative research design and analyze how the situation concerning project alliances and industry culture has developed in Australia, the country from where this model was adopted to Finland. This kind of comparison between Australia and Finland could reveal interesting insights on specific factors that may mediate, facilitate, or on the other hand, hinder the cultural change processes at the industry level. We also specifically focused on the cultural change processes related to the use of project alliances and were able to address the multi-level change processes contributing to the industry level change. However, future studies could focus in a more detailed manner on the different types of interaction processes across the different levels and on their implications on the perceived change processes. In addition, also other potentially fruitful theoretical perspectives such as the institutional or innovation theories could be applied to study the change processes at the industry level in future studies.

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