

ORGANIZATIONAL POWER IN BUILDING DESIGN MANAGEMENT

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ABSTRACT

In every new building project, there usually is a new organization assembled that needs to function as a team. The organization will vary through the project. This paper analyses the organizational sources of power in the design phase, using 14 main sources of power in organizations as described by Morgan (2006).

The methodical approach of this paper is a single case study, with interviews of participants in the building design phase who describe their experience with the sources of power in building design.

The aim of this pilot study is to learn more about how the sources of power appear in the building design process. Much has been written about how power works in static organizations but less in the context of building design teams and how this affects the design process. This paper contributes with new empirical research. The key finding is that the sources can be regarded as strength, a challenge or a threat to the design process. This knowledge can be used for the design manager to set up a design process. To enhance the sources that strengthen and to diminish the sources that threaten the process, a more efficient design process can be achieved, increasing value and reducing waste.

KEYWORDS

Design management, organizational power, value, process, last planner

INTRODUCTION

The building design process can be viewed in a simplified way as transforming ideas and thoughts to a practical solution for both the construction team and the client. The organization of the building design team will vary throughout the different stages of the design phase, in order to solve the different challenges in a best way possible, maximizing the value for the client. Value can be regarded as something that improves the project, either at the final product or in a successful process (Eikeland, 2001). Power (organizational) is recognized by some organizational and management

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theorists as an important factor to explain organizational affairs (Morgan, 2006). It is therefore likely to assume that power also has a great impact on the building design process and its management, yet there is done little previous research on the subject. The aim of this pilot study is to learn more about how the sources of power appear in the building design process.

BACKGROUND

Building design

In order to describe the process of building design it is important to start at the beginning. The process usually starts with a client having an idea, a need, a property or a combination (Blyth and Worthington, 2001).

Typically the client will engage an architect in order to help him explore the feasibility or options of his needs. During this process the client and the architect end up with a building program or definition for the project. The design phase is important in order to create value for the project (El. Reifi and Emmitt, 2013; Hansen and Olsson, 2011).

There are different approaches to manage the building design phase. This could be based on lean construction principles as e.g. Last Planner, where the designers plan and re-plan their own work (Hamzeh, Ballard and Tommelein, 2009). This is also the basis of CDM (Collaborative design management), and CPD (Collaborative Planning in Design) (Bølviken, Gullbrekken and Nyseth, 2010; Veidekke, 2013; Fundli and Drevland, 2014). The use of VDC (Virtual Design and Construction) is another approach to improve the building design phase (Kunz and Fischer, 2009). With the use of ICE (Integrated Concurrent Engineering) you can reduce latency in the design process by involving the right stakeholders and working on specific issues together (Mark, 2001; McManus, Haggerty and Murman, 2005; Kunz and Fischer, 2009; Choo and Fischer, 2010).

Typically new buildings are organized as projects. "A project is a temporary endeavour undertaken to create a unique product, service or result" (PMBOK, 2004). Regardless of contract form the most usual way to organize a project is through agreements on a company level and not on a personal level. The professionals representing their company are then "teamed" together with the other companies' representatives. This means that the organization is often new and unfamiliar at each new project. The organization will also vary throughout the project. "Organizations are coalitions and are made up of coalitions, and coalition buildings is an important dimension of almost all organizational life." (Morgan, 2006)

Organizational power

Killian and Pammer (2003) describes power as "one party's attempt to impose an outcome on the other party". Power can be exercised at an individual level or as a group (Killian and Pammer, 2003; Engelstad, 2005). In all organizations the power balance of the stakeholders will influence the work and processes. The design process, as an open, creative process is a difficult process to control for a design manager (Knotten, et al., 2015). Will the power imposed by stakeholders be more or less influential in a design process than in other processes? How will this affect management of the design process? Does it increase the design manager's power or make him powerless? Powerlessness is if the manager lacks resources, information,

and the decision making authority (Ivancevich, Matteson and Konopaske, 2013). Should the power be spread in the team? Empowerment is sharing power and authority with subordinates to increase their confidence and effectiveness (Ivancevich, Matteson and Konopaske, 2013).

There is written much about power in permanent organizations. Even though they address the same issues they seldom define the sources or interactions in exactly the same way (e.g. Daft, 1997; Engelstad, 2005; Morgan, 2006; Ivancevich, Matteson and Konopaske, 2013). This paper does not dwell directly on the different ways to describe power but looks at 14 different sources of power predefined by Morgan (2006). The definition of Morgan (2006) was chosen because of the more explicit definition of the sources makes it easier to compare with the building design context. The 14 sources of Morgan (2006) are listed and explained below;

1. Formal Authority; can consist of different types of authority, such as legitimate authority, charismatic authority, traditional authority or rule of law.
2. Control of scarce resources; means to have control of special competence, products or funding.
3. Use of organizational structure rules, regulations and procedures; is a structure to ensure the right power at the right actor, yet it also can be a source power if played right.
4. Control of the decision process is an important power source. Controlling the decision premises, process, issues and objectives can give someone a big influence.
5. Control of knowledge and information. The ability to gain knowledge and information and control it creates a power situation. Being able to control who gets the information and when, creates a dependency for the rest.
6. Control of boundaries. By creating and controlling boundaries you can control the information going between groups, which enables you to control the information. This can be done through blocking some information and encourage some.
7. Ability to cope with uncertainty. The ability to cope with uncertainty has always been seen upon as a key managerial characteristic. Morgan (2006) describes uncertainty as an environmental uncertainty and operational uncertainty. The environmental uncertainty is the external influences that affects your organization, and the operational uncertainties are the once that's influences you directly. Ivancevich, Matteson and Konopaske (2013) lists 3 ways of dealing with uncertainty, coping by prevention, coping by information and coping by absorption. Coping by prevention means to reduce the probability of some difficult to happen, coping by information is the ability to use information to forecast what will happen and then be prepared. Coping by absorption is to deal with the uncertainty as it appears.
8. Control of technology. The rapid change of technology and our dependency of it make us both vulnerable and make technology a source of power. Technology influenced work placed in a sequential dependency, makes the whole process vulnerable to the function and operation of the technology

9. Interpersonal alliances, networks and control of informal organizations. Informal alliances and networks can be staged or coincidental. They can be developed in the organization or in spare time. The effect these informal alliances can have on the organization will vary. These informal networks can affect the organizations in different ways, both positively and negatively.
10. Control of counter organizations. Whenever a small group of people manages to build up a concentration of power, it is not uncommon for the opposing forces to organize themselves to rival power. This is typically how the unions were established, trying to establish a counterbalance
11. Symbolism and the management of meaning. An important source of power is how you can persuade the others to follow your lead and intentions.
12. Gender and the management of gender relations. “Many organizations are dominated by gender-related values that bias organizational life in favour of one sex over another” (Morgan, 2006).
13. Structural factors that define the stage of action. Even though you have a personal power trough e.g. legitimate authority the structure of your organization might limit your possibilities to do as you wish.
14. The power one already has. Power is a route to power and can help one to achieve more power either by using the power to manoeuvre yourself right or by others allowing you to lead them.

METHODICAL APPROACH

In order to study the sources of power in building design organizations the research was designed as a case study. The focus of the research was to learn more about how the sources of power appear in the building design process. This argued for a qualitative research approach. Qualitative research is focused to get an in-depth understanding of human behaviour and of the circumstance around (Creswell, 2003). This is best achieved with the perspectives from those who are studied (Creswell, 2003; Alvesson and Sköldberg, 2009).

The research was set up as a single case study, by using semi-structured interviews with participants of building design projects (Creswell, 2003; Yin, 2014). The interviews were audio recorded and transcribed over a period of a month giving the researcher an opportunity to reflect and improve the next session (Kvale and Brinkmann, 2009). The interviews were conducted in two different ways with 5 persons. The first way was to talk about the building design process in general with out mentioning any of the 14 sources and the second way was specifically to ask in reference to the 14 sources. Both approaches gave interesting information, but the latter was easier to code afterwards.

The five persons had different educational and working experience. There were 3 female and 2 male persons. All the Design managers (DM) were currently employed by the same Norwegian constructor, but working at different projects (see table 1). Even though 5 persons is not a large data sample both Flyvbjerg (2006) and Ragin and Becker (1992) argues that also a small number of cases will contribute to new and important learning.

The analysis of the interviews is based by on the six steps of Creswell (2012) as a variant of the constant comparative method as described by Corbin and Strauss

(2008). The coding ended up as a mix of using the 14 sources as codes and other codes that emerged through the analysis. For this paper the analysis is concentrated around the 14 sources of power. The findings were then arranged in a matrix to be able to compare the informants view towards the 14 sources.

Table 1: Case study subjects

Subject	Design Manager	Design Manager	Design Manager	Design Manager	Architect
Work Experience	7 years. As a consultant and constructor	17 years. As a house builder, architect, and constructor.	23 years. As a consultant and constructor	22 years. As a consultant, governmental agencies, and constructor	10 years. As an architect

RESULTS

The key findings are presented in this chapter.

The informants identified the client as the formal authority in projects, acknowledging the legitimate authority. *“What the client wants he gets.”* It is important to have a formal authority in order to be clear about who makes different decisions and that the role is executed dynamically throughout the project. The formal authority of the design managers was commented more as *“a source of power to influence the solutions”* than as a formal authority.

The informants emphasized the major scarce resource as time. Short time between contracts and the construction start could put the design period in a squeeze, yet this could also be interpreted as a lack of sufficient resources available. This makes it important to get a design team started as early as possible. Scarce resources in form of low budgets might lead to sub-cultures and sub teams.

The informants emphasize the important of a well functioning team. To be efficient the design organization needs a flat structure and to be transparent. The transparency regards to an open and clear understanding of everyone’s responsibilities and tasks in the project. The organizational structures need to be formalized to have well functional teams.

Designing is very much about the decision process and the informants agreed on that fact. To ensure the right decisions at the right time the informants agreed this process needs to be planned and that the results of the decisions informed to the team members. As a design manager said: *“All client decisions were in the plan together with permit applications, and drawing deliveries. By a common run through of the plan every week, everyone was aware of what decisions that had to be made.”* It is important for the design team to agree on what decisions can be made by team members and which needs to be addressed in common. The results of the different decisions need to be informed to the whole team.

The design manager needs to have the total knowledge to be able to manage the process, but also the designer need to have knowledge of what the others are doing. As an informant described the work as a junior engineer *“I just got handed a scope of my work (MEP) and a finish date. This was executed with little concern of other trades.”* There is also a possibility that you withheld knowledge of new technology in order to reuse old solution in order to save your fee. *“ I have the enough experience*

to solve this problem, but with the time and this scope I'd rather present something I'm comfortable with"

Controlling boundaries and interfaces is a challenge in the design process. One of the design managers allocates responsibilities between the designers by making a matrix with the most common interfaces. *" It is important to balance and acknowledge the different interfaces in the project but also to keep an openness to cross the borders and to learn from each other. If you understand the challenges of the others then you better can solve them. "*

One of the most challenging boundaries is between the design team and the production team. To get the foreman's attention into the drawings process and be a proactive asset, instead of the latter complaining. As one design manager said: *"the production (team) don't see how much better the design result could have been if they'd only participated a little in the design"*

Even though uncertainty in design cannot be removed all together, the informants agree that planning can reduce it considerably. The planning process needs to be collective. The more involved the team members are in the plan the better the plan is. As a design manager said about collaborative planning: *" It is not the mapping process, but the discussions that are important "*

Being able to use the new technology and tools of e.g. BIM might give you or your organization an advantage in a project. At the same time if you do not know how to use the technology you are obsolete and might miss out on opportunities. Investing in technology cost, but can give some crucial advantages. The aspects of technological challenges in a design process can vary. It can be from design tools as BIM, to process tools as collaborative planning and to actual construction tools as new materials, a new concept of structure etc.

By the informants there is an acceptance that the control of technology must be trusted to be with the different team members, all the time they are specialist. A poor or a low compliance solution with the project needs would result that they were not reengaged in other projects. Yet the informants came back to an open, common team culture so the knowledge and technology is spread.

Informal networks could work both ways. As an informant said *"Knowing people in the business, who to call, who is positive is important. Phoning the right clients representative is crucial to get the first meeting "*

Trying to pin down counter organizations in the design phase was one of the questions that were least coherent. It was recognized that there are a lot of actors in the process who have a sub-agenda of the project's. This could e.g. be personal agendas, or a goal to make money for your employer on expense of the project.

The informants agreed that symbolism is not at typical sources in the Norwegian AEC industry. As one said, *" I think it is a pretty casual and democratic platform and structure"*

The AEC industry is male dominated but the female informants felt that they were almost never treated different because of their gender. Episodes that had happened were linked when they were newly educated and happened many years ago. Their opinion was that you are much more judged by your knowledge and attitude than by gender. Yet the male informants felt that there was discrimination in the Norwegian AEC industry. As a male design manager said; *"I'm a blue eyed middle-aged guy*

working as a design manager in a construction company. Do you think I'd this job if I were a middle-aged woman from the Middle East? "

One of the most important structural factors is that the AEC industry is project based and the fact that members of the design team changes for each project. This makes the contracts structures important, but especially also the way clients are organized. E.g. a private real estate developer has a short distance between decisions and money, while most public companies have rigid structures and forms of decision-making. This can lead to a culture of "insecurity" and long decision time.

The power one already has will influence the design process in some degree. If you are the client or the formal leader this will enhance your power. Are you on the other hand an architect or consultant this might result in a poorer process and creation of a counter organization. As one informant had experienced: *"The architect was strong and forcing his solutions on the design team. He was able to do this since the team didn't know each other well."* This didn't contribute to the projects goal and wishes and created an extra challenge for the design manager.

DISCUSSION

It is difficult to clearly divide the influence of the power sources in the design phase into Morgan's 14 sources. One power source may have a direct or indirect influence on the other sources and the momentum of the sources varies as well with the stages of the design process.

Through the work with analysing the material, the main focus was how the organizational sources of power appear in the building design process. A natural step was to look at how they influence the design process. Through the analysis we found that the sources of power influenced the process in three major ways. They could contribute to strengthen the process. Several of the sources represented the main challenges in the design process and some also represented a threat to the design process.

There are sources that are important to empower the design manager. We could refer to these sources as strength. These sources need to be addressed and organized so they support the management process. These are typical: Formal authority, the use of organizational structures, symbolism and the management of meaning, structural factors and the power one already have. The informants felt that the structure and roles should be clear to everyone.

There are sources that directly influences the design processes and creates challenges to control. These are control of scarce resources, decisions, boundaries, technology, information, and to cope with uncertainties. From the informants it was emphasized the importance of transparency in the design process to diminish the sources negative effect on the process. By involving every team member in the planning process, by using e.g. Last Planner, CDM, CPD the informants felt that the transparency increased, everyone had agreed on critical decisions points, and the interfaces were discussed in advanced. In newer approaches such as ICE where all important stakeholders are present, the negative power of decisions processes are reduced.

A common opinion by the informants is that time is a scarce resource in the design phase. With parallel design and construction leading to "fast-tracks" initiative

the time aspect influences the whole design team. This again influences decisions, knowledge transfer, uncertainty and boundaries.

There are also sources that can work against the management and the design process. These sources create a threat to the design manager and are; interpersonal alliances, counter organizations, gender issues, and powerful individuals. These can create sub-cultures, which are different of the project goals. The informants emphasized the importance of the design team. It is important to get the different members of the design group to function as a team and to establish common cultures, and goals. This is coinciding with the work of Bell and Kozolowski (2002) who emphasizes the team and common project culture in complex projects.

The establishment of the design team with a transparent organization and good communication is also identified as a way to diminish and clarify each team member's source of power. By having a good kick-off session the organization of the projects design team is discussed and presented making the formal roles open to all. By a common collaborative planning session like Last Planner everyone is involved in the process, and have to contribute to the process, reducing uncertainties (Fundli and Drevland, 2014). By including a decision plan in this plan everyone knows of and can influence on what decisions need to be taken and when. The transparency in the project organizations helps to keep everyone updated about what the project is about reducing the information "hub" as a source of power. There has been some efforts in trying to increase the information flow in projects (e.g. (Loría-Arcila and Vanegas, 2005; Thibelsky and Sacks, 2010) These have the focus of e.g. reducing bottle necks, which is a source of power. A bottleneck of information usually occurs when a lot of information has to go through one or a few people. A good tool to share information and knowledge is Integrated Concurrent Engineering (ICE). A strong coherent team will also be less side-tracked by informal or counter organizations.

CONCLUDING REMARKS

This paper describes the sources of power and the influence they can have on the design process. To the design process the sources can be viewed either as a: (See Table 2)

- Strength - where the sources contributes to empower the management
- Challenge –where the sources directly influences the design process
- Threat – where the sources contributes to create powerlessness

By investing time in building a good team and using tools as e.g. Last Planner and VDC you are able reduce the sources of power that can create problems for the design process. By enhancing the sources that empowers the management you strengthen the design process. If you reduce the sources that threaten the process you will reduce waste in the design process. By first dealing with these sources the team can better focus on the sources creating challenges for the design process.

The knowledge of how organizational power appears in the building design process can be used for the design manager to better organize the design process. By focusing on how the sources of power influences the process a more efficient design process can be achieved increasing value and reducing waste for the project.

We acknowledge that this is a limited case study concerning the topic and that a future next step would be to compare the findings with other management literature.

Table 2: Summarizing the findings.

	Source of Power (Morgan, 2006)	Influence	Tools
Strength	1. Formal Authority	Increase the control for the Design manager	Good teams
	11. Symbolism and the management of meaning		
	13. Structural factors that define the stage of action		
	14. The power one already has		
Challenges	3. Use of organizational structure rules, regulations and procedures	Reduce Impact on the design process	Last Planner, CDM, ICE.
	2. Control of scarce resources		
	4. Control of the decision process		
	5. Control of knowledge and information		
	6. Control of boundaries		
Threats	7. Ability to cope with uncertainty	Reduces the control of the design manager	Good Teams, ICE, CDM, Last Planner
	8. Control of technology		
	10. Control of counter organizations		
	12. Gender and the management of gender relations		
	9. Interpersonal alliances, networks and control of informal organizations		

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