Successful construction projects include stakeholder management. However, it still is difficult to communicate stakeholders’ interest in the early planning processes of complex building projects due to different stakeholder groups and their conflicting values. The question of how city relocation processes are influenced by stakeholder values is investigated in a case study. Secondary data from municipality public information and two in-depth interviews made it possible to analyse stakeholder’s action and their values in a city relocation process over time. A time-interest-power model is developed from the analysis. A city relocation project will be influenced by stakeholder’s power and interest. However, power and interests are influenced by the perceived values for the different stakeholders. Therefore, communication is important in order to identify values and needs of the many stakeholders in the city relocation processes. One problem for the decision makers is the development of good communication channels especially with the citizens.

Introduction
Previous studies have shown that stakeholders actively engaged in construction projects may positively or negatively affect the result of the project (Olander & Landin, 2008). Identifying stakeholders by mapping and visualising their influence on project management processes may have a significant impact on the success of projects as well as on project management according to Walker et al. (2008).

A model for analyses of city relocation processes and their influence by stakeholder values with a time-geographic perspective is argued to be of interest for project management. With a city relocation process we describe the complexity of city planning processes ongoing parallel with design and construction processes conducted by actors. Stakeholders influence is investigated in terms of interest and power followed by a discussion of methods for analysing stakeholder values with a time-geographic perspective. Data has been collected within a case study to develop the model discussed in the final section of the paper.

Interests and power
Stakeholders can be identified with different theoretical perspectives. However, these perspectives are in some sense conflicting with each other. One perspective is based on stakeholder roles. Winch (2002, p 67) suggest that stakeholder groups should be described as internal and external stakeholders depending on their relation to the project or organization. According to Winch (2002) internal stakeholders have an active role in the construction project acting as clients, financiers and users on the demand side. External stakeholders on the other hand, act as architects, engineers, contractors and materials suppliers, on the supply side. The research presented by Walker et al. (2008) supports this view by describing how upstream, downstream and external stakeholders may influence internal stakeholders, i.e. project teams. Upstream stakeholders include end users and paying clients organisations. Downstream stakeholders include suppliers and subcontractors. External stakeholders are all groups that in one way or another will be influenced of and by the project (Walker et al., 2008).

Another perspective is when identifying stakeholder groups based on their power influence on the project or organisation. Chinyio and Akintoye (2008) argue that it is important to quickly identify key stakeholders in the early phase of a construction project, i.e. those stakeholders with high power and urgency. Power can be recognized more easily by identifying the one who will authorize a certain key decision, because the urgency of stakeholders changes (Chinyio & Akintoye, 2008). Johnson and Scholes (1999) argue that stakeholder’s relative importance for organisations should be investigating by stakeholder groups’ degree of interest and power related to the specific organisation. Olander (2006) investigated stakeholders’ relationships focusing on roles by identifying their
level of power and interests. Johnson and Scholes (1999) presented a power interest stakeholder map which can be seen in Figure 1. This approach is an attempt to explain the influences of different stakeholders within in a project in relation to interests and power, e.g. a stakeholder high interest and power are defined as key players. Stakeholders with high interest but with a low power impact need be informed of the progress and activities of the organisation or project. Stakeholders with low interest and low power are of minor interest but stakeholders with low interest and high power need to be taken care of. Olander (2006) argued that one problem with the approach is that the scale is limited to either low or high power and interest values.

For all groups it is important to investigate if their level of power and interest change over time due to activities related to the specific categories. Even more complicated are the questions regarding city relocation processes and how the various numbers of related and complex construction projects performed during different time periods are influenced by stakeholder values. According to Freeman (1984) and Mitchell et al. (1997) some stakeholders have a strong influence on society, i.e. legitimate demands and power to use their values when putting pressure on politicians and private and public organizations. Hence analysing changes of stakeholder impact over time, needs a time-space dimension and we suggest a further investigation of how to analyse stakeholder values with a time-geographic perspective.

**Stakeholder values: a time-geographic perspective**

The value concept in construction is in general described in terms of quality referring to product, services, functions, etc. which fulfill the client's needs and requirements according to Wandahl et al. (2007). Saxon (2005) defines value as it is what you give in relation to what you get and it is personal and not an objective fact. Wandahl et al. (2007) argue that values are principles by which we live. Hence, values are visualized by the individuals' habits and manifested in society by people's attitudes presented by Banyard and Hayes (1994: 378-399). According to Barrett (2007) stakeholder values should be managed and balanced in the building processes. Managing stakeholder values also gives an understanding of the business concept according to Saxon (2005). Public construction clients have described their values of public building project for cultural activities, i.e. Houses of Culture (Laurell-Stenlund, 2010). These values were generally described as human beings expectations grounded in personal beliefs, social norms and rules developed in society or related to specific groups, i.e. they are culturally conditioned.

The cumbersome matter is how city relocation processes are influenced by stakeholder groups over time at different locations. Out of this point of view we suggest a time-geographic perspective as one way of developing a model for analyses of stakeholder values including time and space.

Time-geographic builds on a holistic approach of how projects are fulfilled by the resources that the actors have access to and constraints they experience (Hägerstrand, 1985; Thrift, 2005). With a time-geographic perspective we analyse resources and constraints for activities in time and space, which are considered inseparable parts of the time-space dimension. The time-geographical view of the world combines the view of objectivity in natural science with the social science view of subjectivity (Hägerstrand, 1976). The approach has become a foundation of different forms of analysis such as innovation diffusion studies (Rogers, 1962/2003) as well as everyday life in households (Ellegård & Wihlborg, 2001).

Our view on the time-geographical analysis is on the actors' roles, arrangement of resources and constraints in time-space. The use of time and space is fundamental for all social and natural scientific processes, but still not commonly integrated as an explicit precondition for scientific analysis. Hägerstrand's ambition was to create a notation system for making processes (irrespective of whether they were human or non-human) visible in the time-space. As a geographer his starting point was the map as a horizontal illustration with time added as a dimension emerging vertically above the map, and he thereby developed the now classical illustration of time and place (Figure 2).

We suggest that the time-space notation system (Figure 2) could be used to analyse processes in time and space. In the time-space trajectories, e.g. different actors' movements, can be illustrated. By identifying stations in time-space, location for specific activities and the relation between them can be illustrated (Hägerstrand, 1953).
In Figure 3 individuals actions are illustrated by defining two stations indicated by S, which may be for example a home and a school (Hägerstrand, 1970). The thick line f is a trajectory of an actor, leaving S1, visiting S2 and returning to S1. The two stations visualised in Figure 3 could also describe trajectories in virtual spaces, e.g. movements between interest and power.

In Figure 4 the space is presented as an interest-power stakeholder map (Johnson & Scholes, 1999) illustrate movements between stakeholders’ interest and power with a time perspective. By illustrating different actions or activities in a time-space dimension the change between interest and power should be possible to visualize, see Figure 4. There may be many reasons for the outcome in time-space, but they all fall back on the basic issue of who was actually in possession of the time-space when a specific process took place, i.e. who has the power and who is able to influence on the action.

**Research method**

Our research method, a case study, is based on Yin (1994) arguing that case studies are suitable when studying complex processes in general. The case study was chosen based on its possibilities to include different types of data collection and analysis methods within one single case.

**Case selection**

Our case is the city relocation processes taken part in Kiruna which is causing changes in the urban environments by phasing out and the creation of new urban areas. The city relocation in Kiruna is complex causing high pressure on several construction processes taking part during a long time period.

The selected case is a part of a study within the Nya Giron project which is a European Union research financed project for the relocation of the city of Kiruna. The project is a multidisciplinary project consisting of a research cluster with six different research groups from Luleå University of Technology and the Municipality of Kiruna. Focus area of the project is sustainable development within infrastructure and urban environments. The aim of the projects is to create sustainable and innovative technical solutions which include environmental, economical and social aspects for the relocation in Kiruna.

**Secondary data**

Data has been collected by using secondary public data from the municipality. This was mainly public information data collected from the website of the municipality and it was sorted and analysed by the authors.

**Interviews**

Interviews were carried out with the project leader and the town architect, representing the municipality’s interest in the city relocation. By selecting the project manager for the first interview and the town architect for the second, we were able to get a broad picture and deep description of the overall planning processes. The selection of the respondents is based on our view that the project manager represents the municipality as a client of a city relocation project. The town architect represents the construction professionals within the public administration organisation, with a professional architectural knowledge and the city planning administration. The interviews were performed in a semi structured way, recorded and transcribed.

**Data analyses**

From the secondary public information data, a time liner with critical decisions, activities and processes was developed. The activities were also verified by the interviews following a qualitative data analyse method described by Miles & Huberman (1994). The power-interest stakeholder map (Johnson & Scholes 1999) was used in the development of the analysis model with a time-geographic perspective. Key stakeholders were first identified by analysing the official webpage of the municipality. We then made a stakeholder map by identifying different stakeholder groups that we thought were relevant to investigate suggested by Johnson & Scholes, (1999) and Walker et al. (2008). Mapping the stakeholders also lead to our decision to analysis of one stakeholder group and their relation with other stakeholders when developing an analyse model.

We developed our interview guides based on stakeholders’ interest in the city relocation process as well as on their power to act within these processes. When we developed the interview guides we treated the municipality as a single organisation representing one stakeholder group. Based on this view we developed the interview questions from factors influencing change processes described in the change kaleidoscope developed by Balogun and Hope Hailey (1999), e.g. time, scope, preservation, diversity, capability, capacity, readiness for change, power; as well
as on questions specific regarding stakeholder values. Our purpose with collecting data from the two respondents regarding these changes factors was to ensure that we got a satisfactory description of the city relocation processes and the factors influencing this process out of one stakeholder perspective, the municipality's, see Appendix were the interview guide is summarized.

The transcribed data files together with secondary data files were exported to the qualitative data analysis tool Nvivo (QSR N6, version 2002) for further analysis. Nvivo allowed us to create categories from theory with focus on one stakeholder: the municipality, the change processes and on stakeholder values. We analysed the data from the interviews and secondary data by coding the data into the categories. The data analysis was the performed with a grounded theory methodology perspective developed by Glaser and Strauss (1967) and Glaser (1992) where new categories were developed from analysing the data within the categories created from theory.

A study of city relocation
In this section the analysis of the city relocation processes is presented after giving a short introduction to the city and the need of city relocation.

City history
Due to rich ore deposits in the northern part of Sweden, the company LKAB has come to a critical point in their activities. After more than hundred years of mining activities, together with their mining technology the company has reached deep ore deposits stretching under the central city of Kiruna. People have been living in the area over 6000 years. The Lappish culture and the Finnish culture have been together as long as we know. The first settlers and mine-workers came during the 1600-century. However, Kiruna or Giron the Lappish name of the city, is a young city, once built on wealth created by the mining activities in Kirunavaara together with the first company directors, Hjalmar Lundbohm, visions and efforts of creating a modern ideal city. The city, just 100 years old, was built on the foot of the mountain with a special street system hindering the cold winds to blow thru the city. Some buildings are also specially mentioned for their architecture, e.g. the church at Kiruna, which was voted Sweden’s most beautiful building in 2001 and the City Hall, which got the Kasper Salin price for Swedens most beautiful public building in 1964.

Need of a city relocation
In 2004 the mining company LKAB informed the municipality with a formal letter. It was important for the company to continue their future mining activities and that these activities would affect the city and its buildings. Continuing the exploration of ore funding, if possible, solutions of moving critical blocks in the city as well as developing the city into a new direction are a must. The public administration received the letter and handed over the question to the politicians according to the project manager:

“It was the start of our journey. The first thing we noticed [the public administration] was that we needed the opinions from the politicians and their view on Kiruna. That is, we needed a program for the city with the politicians’ values that we, the public administration, could rely on.” Project manager 20101116.

Results of analyses of stakeholder influence and values
A time liner is presented in Figure 5 showing different milestones and construction processes related to a city relocation process in Kiruna. Milestones are defined as important activities and decisions that have or will be carried out by the different stakeholders.

Stakeholders as decision makers and informants
By analysing activities performed within the Kiruna case, i.e. city relocation processes consisting of different activities, stakeholders’ involvement in the activities and their power of making decisions have been analysed. The results from the analysis show that stakeholders have different roles in the city relocation process closely related to their power and influence in accordance with previous studies. Key players are in the position of decision makers for all kinds of activities related to the city relocation processes. Stakeholders with high power and lower interest in one specific activity or construction project, still have the power of giving their approval to the decisions made, i.e. stakeholders that should be kept satisfied need to be satisfied due to the power position in the city relocation project, and thus they put a pressure on the decision makers. Stakeholders that need to be kept informed, e.g. interest groups. Stakeholder groups do not have any power of putting a direct influence on the decision makers, however their interests in specific activities taking part in the city relocation process is very strong. This interest gives the interest groups a specific influence. The decision makers need to consider this influence by informing the interest groups before the decisions are made. Finally stakeholders with low power and low interest, in our case the citizens with no interest in specific activities and construction projects performed in the early phases of the city relocation process.

Our analysis has resulted in defin-
Questions to project manager and town architect

Interviews with project manager and town architect were conducted on the 16th and 17th of November 2010 and took approx. one hour.

Presentation of the respondent

What is your profession and what are your working tasks in the municipality? For how long have you been working for the municipality? How your professional career does looks like?

The planning processes

Describe your image of the planning processes in Kiruna as it looks today. What is good and what is less good.

The organization structure of the planning office

Describe the organization of the planning office. What is good and what is less good in current structure? In what ways does relocation of the city influence the organizational structure?

City relocation and its stakeholders

Describe the different change forces of the municipality? What is the value of the city relocation for the municipality? For a successful relocation change, which are the main internal and external stakeholders within the municipalities, which interests should be reviewed, expressed, adapted, agitated? Show mindmap. Kiruna Kommun (municipality), LKAB (mining company), Trafikverket (Swedish transport administration), Vattenfall (power company). Describe how you perceive the different stakeholders change forces behind the city relocation. Describe how you perceive the value of the city relocation for different stakeholders

Power configuration between different stakeholders

Who has the legitimate power in the municipality? How much acting space has the municipality to pull and push the transformation? How do you perceive the responsibility distribution between the municipality and the other stakeholders? Is it a dividing line between how you want to influence and how you can influence and how do you handle that. Describe how your own organisation and other stakeholders influence you. What are the main difficulties for your work within planning for a new Kiruna.

Questions regarding visualization model

In what way do you think visualization can be used for decision making and communication? What are the challenges in that? How do you think that virtual models can be used to support visualization in decision making and communication? What are the difficulties to use a variety of visualization in the city relocation? Do you have any ideas about how the planning can be improved? What kind of feedback do you get for such ideas within the organisation? Your response/responsible/relations to colleagues/acting space.

Shift in level of power and interest over time, due to stakeholder values

Figure 6 illustrated our results from the analysis of stakeholders’ interest and power over time within the time-interest-power stakeholder map.

In Figure 6 the green colored trajectory is one example of how a stakeholder can change role. The example illustrates the process of the energy company. This is related to that the company already finished their construction process in the city relocation. A possible shift in power and interests is a reasonable outcome. In order to manage city relocation process there is need of managing the different stakeholders’ right in relation with time. In that process communication is vital in order to satisfy and inform stakeholder groups.

From initial analyses of stakeholder groups and their values over time, we can see that there is a shift in their level of power and interest in the city relocation process. The municipality expressed that they initially had a plan of saving the city by moving the city to the new location. Firstly the municipality thought it was possible to keep the main infrastructure, such as the railway and the main road and only move the buildings. After the mining company found new ore deposits, this no longer was an option. The municipality had to develop new infrastructure solutions in the community by initiating sanitary sewer construction processes. Studies of how it should be technical possible to move valuable buildings were accomplished resulting in very expensive solutions and in some cases also technical impossible. One argument from an architectural perspective has also been that some of the identified unique buildings are close connected to the place were they are built. Thus moving for example the City Hall should make the building less attractive.

We can see that traditions from early years still live imbedded in the city articulated by the municipality’s vision of developing the “new” city influence by the spirit of the first company directors, Hjalmar Lundbohm, visions and efforts of creating a modern city. The municipality is acting as a decision maker. The municipality makes the decisions regarding the infrastructure and rebuilding public houses, influenced by the mining company’s power of exploring the land resources.
Discussions and Conclusions
An analysis of stakeholder power and interest, driven by values within a time-geographic perspective has been presented. The time-power-interests stakeholder model is used to visualize and explain how different stakeholders' interest and power change over time. This approach connects stakeholder's interests-power with time and space relationships.

Our main conclusions are that when relocating a city, stakeholder roles influenced by their power and interest are not only related to specific activities and construction processes, they are also related to stakeholder values. Thus, it is important to make these values transparent for the decision makers through proper communication. One of problem discovered for the decision makers in the case study is the development of good communication channels especially with the citizens. Little feedback was found from this group in the secondary data. The potential benefits of including these stakeholders groups are therefore high.

To support communication and decision making processes needs information of future activities, both in and time and space, to be disseminated to all stakeholders. This is a major challenge in the city relocation project studied, where the power-interests map is continuously changing over time. Therefore, time-space information needs to be created, shared and used in a simple and efficient way to handle the different stakeholder's values, power and interests.

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