Systems in partnership-based urban residential development

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Abstract

Purpose

This paper aims to increase understanding of partnership-based urban residential development as a system by taking the first steps towards a hypothesis pointing to that direction.

Design and methodology

The data used was collected from two in-depth residential development case studies in Helsinki region, Finland. The general analytic strategy of this study was continuous coding of the data throughout the research phase and also afterwards. As a framework in urban residential development this study used Public-Private-People Partnership (4P), which connects all the relevant parties of urban residential development process.

Findings

It is suggested that a system is a relevant construct with which partnership-based urban residential development processes can be examined.

Research limitations

As the results are based on just two cases under Finnish development legislation and their framework, only analytical generalisations can be made.

Practical implications

Seeing urban residential development process as a system can help to communicate urban development process with other kinds of complexity, such as complexity found in sustainability, and to enhance discussion on systems thinking and complex systems in urban residential development.

Originality/value

So far urban planning and commercial development have been suggested to be systems. This paper contributes to non-linear approach to urban residential development process, which is in contrast with more traditional event-sequence models of development.

Keywords

Urban development, Residential development, Case study, Systems theory, Public-Private People Partnership (4P), Complex systems

Paper type

Research paper

1. Introduction

Systems thinking has gained a strong foothold in urban development research after having been passé for a while. Instead of using systems thinking to mechanistically forecast or model, as were the original aims of systems theorists in urban planning, systems thinking's value lies in explaining phenomena. The theoretical background, systems theory is, in a nutshell, a framework for gaining more understanding of the behaviour of complex systems, be they natural or social systems (Senge, 1992).

Urban residential development and redevelopment processes are multi-stakeholder environments (Healey, 1998). Recent research has introduced the concept of Public-Private-People Partnerships (4P's) into field of urban development (Staffans *et al.*, 2010; Staffans and Väyrynen, 2009; Majamaa, 2008). All of urban developments' participating actors fall into one of these categories of Public, Private or People. The framework of this study is a Public-Private-People Partnership (4P), which is not a tender or agreement-based partnership but an open collaborative way of conducting urban development successfully. Besides the Public (local authorities in charge of planning) and Private (developer) parties, 4P also includes People, the existing and future inhabitants. During the development process, there are several interactions between the three parties. The 4P approach combines economic rationality and participation (Kuronen *et al*. 2010 & 2011; Majamaa, 2008). Other contemporary research also recognises the aforementioned three parties in a development process, although under different label (Healey, 2010; Mandanipour, 2006).

At present, there is a strong branch of literature suggesting that urban development process is a non-recursive series of stages during which certain transactions occur from Public to Private and from Private to People (Miles *et al.*, 2007; Rathcliffe *et al.*, 2004; Harvey, 2000; Balchin *et al.*, 1995; Healey *et al.*, 1995). This event-sequence model concentrates on value-adding and is capable of explaining the rationality of development from developer's point of view but it is a linear model with little or no means of adaptation during the process. Similarly another branch, agency model research, concentrates on decisions of different actors one at a time and sees the development process being based on economically rational decisions with the developer as an allocator of resources (Kotler, 2003; D'Arcy and Keogh, 2002; Guy and Henneberry, 2000; Harvey, 2000).

This paper suggests, based on two holistic case studies, that systems thinking can increase understanding of partnership-based urban residential development and help urban residential development to communicate with other complex issues, such as sustainability. The results of this paper build on the data and results of an Aalto University research program titled *CarbonOFF*.

Structurally, this paper presents the systems thinking approach and a short overview on systems theory in the following section, followed by a section of the research methods, research design and the data used and a findings section. The final section is the discussion in which many open issues concerning the suggestion are presented.

2. Theory

A focal point in systems theory history was in early 1950's, when von Bertalanffy (1951) published his general systems theory and introduced the concept of "open systems". These open systems are defined as systems that in natural or physical systems exchange matter and energy and in social systems exchange information and communication with their environment and thus creating order (Mäntysalo, 2000; Luhmann, 1989; Faludi, 1973; Bertalanffy, 1951). Open systems are more relevant to real-world studies

than closed systems, which seldom exist and could not be observed externally without making the system at least partially open (Robson, 2002; Luhmann, 1995).

Thus, different systems can be categorized into four: open-closed and natural-social. The environment surrounding the system is accordingly either ecosystem or society (Mäntysalo, 2000; Luhmann, 1995 & 1990). A system and its environment exist in reference to each other, and the environment consists of a vast number of systems (Doak and Karadimitriou, 2007; Luhmann, 1995). The boundary between a system and the environment is clear but contested by both internal fluctuations and external perturbations (Doak and Karadimitriou, 2007). Of these four categories, open social systems are the most relevant when examining a process such as urban development.

Complexity in social systems is not due to numerous details but multiple interactions over time within the system and rationalities behind the interactions (Senge, 1992). These interactions generate variables by which Weaver (1958) defined the complexity. Wilson (2006) holds that nonlinearity defines organised complex systems. Any urban development process is highly complex (Innes and Booher, 2010; Rydin, 2010; Rathcliffe *et al.*, 2004).

In social systems the interaction and communication are not without problems. There are contradictions that cause restriction to system operations and may lead to disconnection of some contacts (which Luhmann (1995) aptly for urban development purposes calls "contracts") and to disassembly of the system (Mäntysalo, 2000; Luhmann, 1995). The parts' interaction within a system can only happen in a way which is typical for the parties (Luhmann, 1989).

In relation to its environment, a system can also be understood as an organiser of its environment, a special mode that means that an ecosystem enters into its own organisation – a thought which Mäntysalo (2000) connects back to Spinoza. A system maintains the relationship with its environment with action and communication, but the relationship is not a stable one (Mäntysalo, 2000; Luhmann, 1995).

Systems thinking is a significant contribution to situation analysis; where is the explored organisation at the moment, and where is it going to (Coghlan and Brannick, 2010). Applied this way, open and often asymmetrical systems can explain the phenomena of interest even if they cannot predict the phenomena (Robson, 2002). In social systems the relationships between stakeholders are as important as the stakeholders themselves (Luhmann, 1995). Still, these relationships are too often left outside of inspection.

Besides complexity, another important character of some social systems is their ability to adapt and learn. In built environment research this aspect has been recently discussed, for example, by Innes and Booher (2010), London and Jin (2009) and Doak and Karadimitrou (2007). Any system must contain enough self-description to recognize itself and be separated from its more complex environment (Luhmann, 1995). This self-recognition, seeing system and its boundaries from inside, is critical for learning to occur within the actors in the system. Learning is only possible by feedback loops (Rydin, 2010; Innes and Booher, 2010) and a system must be resilient enough to adapt new things and ideas (Doak and Karadimitriou, 2007). Partnerships often are resilient and thus capable of learning (Wakeman, 1997).

Systems have to deal with wicked problems, by which is meant that the definition of, nor the solution to, the problem are shared (Innes and Booher, 2010). Environmental problems are usually wicked and challenging to social systems. Systems have to react to problems in ways that are not the most effective (Rydin, 2010; Luhmann, 1989) and they have to learn from this. The systems' ability to learn and to change

their goals, observed by Faludi (1973), comes via constant recursive feedback. That is nothing more than trial and error within the system limits and internal communication abilities. Learning in systems is interpreted as happening in two loops. The first loop brings new approaches to the challenge that a system aims to solve; the second loop enables reformation of the problem itself (Innes and Booher, 2010).

3. Method, design and data

The data used in this study consisted of documentation, direct and participant observation, interviews and archival records from two case studies. These were collected to abovementioned research program database. Both cases were urban residential developments in Helsinki region, Finland and reported more thoroughly in, for example, Kuronen *et al.* (2010) and Kuronen *et al.* (2011). One of the cases, Nupurinkartano, was a new residential development in the urban fringe; the another, Siltamäki, was a redevelopment of a 1970's apartment residential development in the suburbs. Both in-depth cases have been interpreted to take place in a 4P framework and they are located within different jurisdictions in charge of planning.

The general analytic strategy of this study was continuous coding of the data from the inductive cases studies throughout the research phase and afterwards, as described in Eisenhardt (1989). Kaplan (1998) supports this iterative coding as advanced implementation. As the analysis is continuous process, new results will affect the constructs and their relations.

In coding, the data were constantly gathered around certain key points as suggested in qualitative research (Creswell, 2009; Miles and Huberman, 1994) and, these formed into concepts and again into constructs. The coding aimed to generate constructs that would be plausible and able to explain the problem field and provide a universal view on the cases, not necessarily something that surfaced directly from the evidence. The concepts and constructs formed by coding were constantly evaluated against their relevancy regarding the quantitative data.

The coding related to the redevelopment case was conducted and further analysed with QSR NVivo 8.0 software. This research found the software useful compared to traditional paper display.

The research process of the cases was relatively long, together more than five years, and contained data from two different cases as well as supportive data and findings from their urban region. This supportive data and connection to existing theories are a way of systematic combining (Dubois and Gadde, 2002), which increases the reliability.

4. Findings

In the early phases of the coding the urban residential development was considered an event-sequence process happening in one of the realms (Public, Private and People) or between Public and Private or Private and People at a time. This view was shaken by collaboration, participation and customership found in the process. There clearly was more collaboration between Public and Private than just purchasing land and delivering plans, more participation than just People participating in the official Public planning process and a form of customership in all three connections.

Even in the partnerships were open, the concentration on certain geographical area, a present or a future development, defined and united the parties around one development process. The parties did not change, nor came there new parties onboard once the process had started, although, of course, actors within the parties could change.

The urban residential development process was in active interaction with its environment, there was communication to several directions.

At the end of the coding chains corresponding constructs emerged. Whereas the emerged constructs already were present in the findings and were deeply rooted in the evidence, they did not necessarily have a straightforward connection with the data.

Now, crucial characteristics of any system are its interdependent parts, interaction and communication between them, system boundaries and interaction of system with its environment. As these were found in the examined urban residential development processes, "system" was chosen as one of the constructs. The construct "system" covers the system-like attributes of the urban development process. 4P resembles very closely an open system, as described in systems theory, whereas sequential urban development process reminds more of a closed and apparently a linear system.

Table 1, below, displays the qualities of event-sequence urban residential development, 4P-based urban residential development and open systems in general.

Approach to a phenomenon	Linear approach to urban residential development process (event-sequence model)	4P-based urban residential development process (findings)	Open systems in general
Openness	n/a	Open process	Open system
Behaviour in the process	The behaviour is determined by the components and two interaction surfaces between them	The behaviour is determined by the interactions and not by the components	The behaviour is determined by the interactions and not by the components
The way of examination	Process is examined via independent components or their linear interactions	Process cannot be broken into parts or examined via independent components	System cannot be broken into parts or examined via independent components
Linearity/nonlinearity	Linearity	Nonlinearity	Nonlinearity
Progression	One process flow	Several direct and indirect feedback loops	Interactions are recursive, iterative and self-referential. Several direct and indirect feedback loops.
Ability to learn and to adapt	n/a	Positive	Positive

Table 1. The qualities of event-sequence urban residential development, 4P-based urban residential development and open systems in general. Where "n/a" is used, the approach does not clearly address the quality.

The suggested open system-like qualities of urban residential development process seems to be a valid viewpoint, and that event-sequence model does not fully address the findings from the cases. As a conclusion, it is suggested that a system is a relevant construct with which partnership-based urban residential development processes can be examined.

5. Discussion

In the context of property research, a systems view has earlier been adopted by Doak and Karadimitriou (2007), Trevillion (2002), and Elliot and Trevillion (1997), although emphasising commercial development or the property market itself as a system. Rydin (2010) defines the urban development process as a social

system. In Public-Private-People Partnership this social system includes three parties - People, Public, and Private. The parties act in collaboration to achieve a common goal of altering the existing urban structure.

The collaboration requires communication. Mäntysalo (2000) interprets, that Private and People communicate via economics, Public and Private communicate via administration and People and Public communicate via politics. Within 4P there are thus at least three modes of communication that can potentially create contradictions. Reflecting on real-world experiences, these modes of communication sound plausible.

Early system theorists aimed at creating powerful computer models to predict and forecast events and phenomena in urban development. These ideas were rather soon buried as too technocratic and impossible to deliver, as the computer models in 1960's and 1970's were not able to model highly complex real-life systems such as cities or urban developments. The first ideas of sustainability surfaced at the time for early system theorists in urban planning viewed the world as ecosystem (Väyrynen, 2010; Taylor, 1998). The idea of competition is central to ecology, where systems thinking originates (McLoughlin, 1969), and the competition is also present between urban development systems and their resources, as suggested in development rationale.

Now, this study sees the value of systems thinking to lie in explaining and not forecasting. Baynes (2009) draws a similar arc for complexity in urban development and management than what was found in systems view: it has developed from forecasting and determinism to observing system dynamics. Still the aim for greater sustainability is a common goal for both early and present systems theorists. The complex systems' potential to embrace the complexity in, for example, sustainability can provide the crucial ability to urban development processes to enhance sustainability. However, applying systems approach for sustainability issues is not a universal approach even if taking advantage of systems thinking could lead to more effective processes (Davidson and Venning, 2011).

Staffans *et al.* (2010) see the success of urban development to lie in the ability to learn – that is, in adaptation and resilience. If it is assumed that the urban development process is not able to change external complex issues which affect it, it has to learn and to adapt.

Whereas the case study method is an excellent way to reveal essentials of any social phenomenon, the findings of this study are based on two inductive cases and some supporting data and theories only. This, combined with the fact that both the cases were located in Helsinki region, Finland, allows the study to conduct only analytical generalisations. In inductive case studies the chain of deduction is always challenging to pass on to audience in a research report, so the chain may at some points be problematic to follow.

This modest study suggested that urban residential development process can be viewed as a system and that this view helps the process to communicate with sustainability issues. This is but a first step towards a hypothesis, which hardly, in its present form, can challenge the prevailing urban development models. The suggestion was based on two cases. In the future, more research is needed to test this hypothesis with several real-life urban residential development cases. As some of this research is already on its way, many questions still remain open. The nature of systems, interactions within the systems and the network of several parallel urban residential developments with partially the same system components are among these open issues. Investigating those could help to form better policies and business models in urban

residential development. Systems approach could, in the future, help to solve some wicked problems in urban development.

Acknowledgments

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