

ACTION RESEARCH AS A RESEARCH METHOD IN ARCHITECTURE AND DESIGN

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SUMMARY

This paper discusses the use of action research as a research method in architecture and design. It addresses the question of how academic work in the fields of architecture and design can pursue research through methods that are appropriate to the nature of design processes. This question is relevant to much research work done in architecture and design, which tends to revert to conventional research methods oriented either towards the sciences or to the humanities in order to be academically acceptable. Action research is introduced as a research method that has much in common with applied design processes, and which allows designers to develop research in the spirit of designing. This paper aims to inform those seeking to preserve the applied nature of designing and the involved nature of the observer/designer while pursuing a higher level of academic rigour.

ACTION RESEARCH AS A RESEARCH METHOD IN DESIGN-BASED FIELDS

Design-based fields are strongly practice-oriented in that designing typically involves the inception and development of ideas as well as their manifestations. Acting (making) thus goes hand in hand with reflection in design processes. In contrast to many other fields, studying design is always linked to practicing design – designing cannot be learned from books and without applied practice. This characteristic distinguishes departments of architecture or product design from other departments within universities, and has been a constant source of debate as to whether these fields can be considered properly “academic”. Among designers working academically, this generates challenging questions regarding the validity of their methods of inquiry in the wider academic context. In particular in research-based degree programmes, this often means that academics as well as their Master or PhD students choose to shift to research methods considered more formal and defensible. Typically, such methods are taken from either the humanities or the sciences. Only rarely however does academic work in these fields acknowledge and employ design as a research method. While I focus on the field of architecture in the following, the insights developed are to a large extent generalizable to other design-based fields.

Research methods employed in the field of architecture vary considerably depending on the particular aspect of architecture under investigation, and range from scientific methods used in areas such as building physics and construction to qualitative methods of inquiry common in

Action Research as a Research Method in Architecture and Design

areas such as housing research or history. The nature of design related research, however, remains subject to an ongoing debate: Groat and Wang (2002), reviewing diverse research methods available to researchers in architecture, clearly distinguish research from applied design. Laurel (2003) emphasizes the synergy of both domains, while Downton (2003) argues that design can be a form of research and refers to the descriptions put forward by Archer (1981) and Frayling (1993) of three areas of investigation: “research for design”, “research about design” and “research through design”. In Downton’s (2003) view, the process of designing can be regarded as form of investigation that produces individual knowing as well as shareable knowledge and thus qualifies as research. Glanville (1998) even holds that scientific research is a restricted form of designing. More recently, designers working academically have increasingly emphasized the necessity of including designing in the methodological canon of academic inquiry. These efforts have been developed to a large extent in the context of the Design Research Society and its Special Interest Group on Experiential Knowledge (EKSIG). In addition to this, action research as well as design-based approaches are also discussed in fields such as management and business, which, like design-based fields, are strongly practice-oriented (Fendt and Kaminska-Labbe 2011). In the following, I discuss the potential role of action research in this ongoing discourse, with a particular focus on employing it in the writing of a postgraduate thesis. I introduce and examine in detail a case study (Herr 2008) that demonstrates how action research may be integrated into academic work that involves applied designing. The case study is a PhD thesis in architecture written by the author.

CASE STUDY: AN ACTION RESEARCH THESIS IN ARCHITECTURE

The positions outlined above indicate the importance of both design and research in the field of architecture as well as their complementary nature. In the context of architectural design, it is widely agreed that design research is difficult to contain for empirical research purposes (Lawson 1997, p. 39) and may require flexible modes of investigation. For this reason, the case study discussed in the following employs a mixed methods approach (Creswell 2003) as it combines an initial proposition developed from a literature review with an explorative action research process. The aim of the study was to explore how cellular automata (CA) – an established method of mathematical modelling and investigation in scientific fields of inquiry such as mathematics or biology – can support the conceptual architectural design process.

In the first stage of the study, a review of previous work in the field was conducted. This led to the creation of a preliminary extended CA model that was then subjected to a design process that simultaneously constituted the research inquiry. The testing and further development of the initial CA model required applied design, which in the context of the study was understood as the process of developing software implementations based on initial assumptions, and applying (testing) them in architectural design processes. Results from five successive software implementations were used throughout the study to inform further developments of the initially proposed CA model as well as subsequent software implementations. This iterative research process is primarily qualitative in nature, with both research questions and the type of collected data subject to changes from one software implementation to the next. Moreover, the nature of results in this type of design-based research process is open-ended, as design processes cannot easily be predicted. For this reason, the study focused primarily on collecting qualitative data, as quantitative data collection is restricted to data of a predefined nature. The purpose of this applied phase of research was to allow for open-ended development of initial assumptions to

Action Research as a Research Method in Architecture and Design

capture unexpected results as they are commonly found in design processes. Data collection methods however changed over the course of the five software implementations this study.

CHOOSING ACTION RESEARCH AS A DESIGN-ORIENTED RESEARCH METHOD

In order to choose a formal method of inquiry for the case study, the following criteria were initially identified as essential characteristics: The research method should allow for an actively involved researcher and be flexible enough to accommodate various modes of action. It should furthermore accommodate unexpected results as well as changing or emergent variables during the research process. Finally, it should allow for the research process to be based on initial assumptions. According to these criteria, action research was found to be the research method most appropriate to the case study. Groat and Wang (2002, p. 111) characterize action research as construction of knowledge through the process of change, with a focus on developing practical results through improving specific situations. While not the same (McMahon 1999), action research is closely related to Schön's (1983) approach to reflective practice, who grounds his approach to an epistemology of practice on a close examination of practitioners, including architects. Schön (1983, p. ix) argues that reflection-in-action "is susceptible to a kind of rigor that is both like and unlike the rigor of scholarly research and controlled experiment". Swann (2002) argues that the design process can be considered a research process, with a clear focus on action. He suggests "...that action research and the action of designing are so close that it would require only a few words to be substituted for the theoretical frameworks of action research to make it applicable to design" (Swann 2002, p. 56). The similarities between the process of design and action research are further emphasized by Stapleton (2005), who regards both approaches as "activities for changing social reality":

"Both are cyclical and emergent, with action research having a plan-act-observe-reflect cycle and design a problem-analysis-synthesis-evaluation cycle. Action research, as a qualitative methodology, can also successfully combine both qualitative and quantitative approaches that are necessary to investigate the craft of game design." (Stapleton 2005)

The emergent nature of action research in Stapleton's (2005) description refers to the flexibility of action research to accommodate insights resulting from unexpected outcomes of action. If necessary, even the research approach itself may be modified: new variables may only emerge during the process of investigation through action.

The full paper will extend the above as follows:

Action research will be discussed in further detail, in particular those aspects that are most relevant to applied designing.

Implications of demands for academic rigour will be discussed in the context of action research as well as design-based research.

Links between cybernetics and design will be discussed and analysed for their mutually enhancing potential.

An analysis and summary of insights gained from the case study and literature review will list challenges and opportunities likely encountered by researchers when employing action research as a research method in design-based fields.