

Challenges in interventionist Research Methods. Is it possible to balance research intent with stakeholders' expectations?

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1 Introduction

This paper is a critical review of a recently completed longitudinal study that was undertaken in order to study the dynamic transformation of a specific actor within the construction industry: an architecture firm. Initially, the firm requested help from the research team in order to increase collaboration between its various departments and specialties. Later, the architecture firm demanded help on implementing Building Information Modeling. For the research team, these request for help were an opportunity to pursue research on two concepts: the cogeneration of knowledge and the radical transformation of practices through the introduction of BIM as a disruptive technology.

The research perspective guiding the longitudinal study was Construction Engineering and Management (CEM). CEM is a response to the critics made about how research has been done traditionally in the field of construction. Traditional research has been criticized as being overly focused on theoretical and conceptual issues at the expense of the needs expressed by industry, particularly by applied disciplines [1]. Many of the problems researched in CEM are related to the organizational, the managerial and the social dimensions of construction. Consequently, innovations emerging from CEM frequently involve modifications to practices and procedures grounded in the social sciences. Consequently, the idea that “knowledge emerges as aspect of practice - or 'praxis' p. 95” [2] is also relevant to CEM.

2 The longitudinal study: a summary

The study primarily investigates the reconfiguration of practices through transformational technologies, such as BIM, or practices such as Lean construction. To achieve this goal, the team actively seeks industrial partners that are interested in contributing to the production of new practical knowledge: praxis. The team's research perspective is inspired by the concept of co-generated practical [3]. This concept is grounded in the belief that researchers must acquire transdisciplinary skills and engage in the co-generation of knowledge with industry.

The partner, notwithstanding its multidisciplinary nature, defined itself as an architecture firm. The partner employs architects, engineers and other specialties. A key goal that motivated the partner to contact the team was its desire to transform its siloed working environment. The partner's intention for desiring such as transformation was to foster a more collaborative and synergistic approach to construction design.

This was perceived as a great opportunity for the team to study the impact of the introduction of new technologies on work patterns. The study was done across two separate both interdependent projects. It first started with a small research project focused on a very specific problem to demonstrate the value that the partner could achieve by working with the research team. The second project was far more ambitious; its objective was to transform CAD oriented practices to BIM oriented ones.

The theoretical framework guiding the first research project was Activity Theory (AT) [4]. Two reasons motivated the research team to adopt this theory. Firstly, according to the team, it is well suited to explore the realm of professional practices, which are built around specific artefacts. Secondly, in accordance to AT, an intervention method called Change Laboratory (CL) is provided by the literature to fostering work design related change. During the first project, two Change Laboratories [5] were conducted and they were greatly appreciated by the partner, since they exposed issues and contradictions in their organization of work that were hindering collaboration. The results were convincing enough for the partner to engage into a three-year research relationship with the research team for a second project.

For the second project, in conjunction with a theoretical grounding in AT, a Share Lab Workshop (SLW) intervention was used. The reason for using this second intervention will be explained in a subsequent section. The intervention was used in order to guide the implementation of BIM across the organization.

3 The role of a researcher: expert or helper?

The question of what is the nature and the contours of researchers' roles in the context of a working relationship with an industry partner is an important one. Underlying this question are sub-questions such as: "what should the research be expect to do and contribute?" and "what should the partner be expect to do and contribute?"

In this case, BIM related technologies as well as the interventions are considered technologies. If the researcher assumes that technologies may be designed and understood separately from organizational or social concerns, then the research will probably initiate a project with the intention of pursuing knowledge about solving the problem that is adopting technologies. If the researcher selects a research methodology that is congruent with his intention, he will probably select Design Science Research (DSR) [6]. If the researcher assumes that it is necessary to consider technology within a specific organizational or social context, but is still concerned with solving a technology problem, then the researcher will probably select Action Design Research (ADR). However, if the researcher believes that the desired outcome is mostly about changing human systems, then the researcher will adopt an interventionist methodology such as Action Research (AR), Clinical Inquiry Research (CIR), etc.

CEM Researchers are confronted with the requirement to generate new knowledge while helping the industry to move forward with better, more collaborative practices. To achieve this, new research approaches have been adopted in recent years to conduct these field researches. However, from a socioconstructivist perspective, they cannot ignore the bias that could result from the researcher's desire to demonstrate empirically the value of a theory or the changes required to adopt a new technology. Moreover, as explored in this paper, when working with a human system, it is necessary to go beyond strict research methodological concerns if one wishes to be helpful. The critical analysis of the study, which we believe is not atypical from the studies pursued by other research teams in the CEM field, revealed that the research team might not have been helpful in the end. The partner might be happy with the outcome of the activities but that does not mean that the necessary change took place. This is similar to when patient get relief from taking medication that relieves symptoms but do not make the necessary change to solve the underlying problem.

The goal was not to propose solutions but to expose issues related to not questioning the nature of the relationship and the role of the researcher within a partnership. With the acceleration of changes, cogeneration of knowledge was proposed by social science as a means to cope with the need for generating praxis. However, consideration of the needs and expectations of industrial partners as well as a clarification of the researcher's role are required to provide the appropriate conditions to instantiate knowledge cogeneration processes.

References

1. Azhar, S., Ahmad, I., & Sein, M. K. (2009). Action research as a proactive research method for construction engineering and management. *Journal of Construction Engineering and Management*, 136(1), 87-98.
2. Somekh, B., & Nissen, M.: Cultural-historical activity theory and action research. *Mind, Culture and Activity*, 18, 93-97 (2011).
3. Engstrom, y.: Activity theory as a framework for analyzing and redesigning work. *Ergonomics* 43(7), 960-974 (2000).
4. Van de Ven, A. H.: *Engaged Scholarship: A Guide for Organizational and. Social Research*. Oxford, UK: Oxford University Press (2007).
5. Virkkunen, Jaakko. *The Change Laboratory: A tool for collaborative development of work and education*. Springer Science & Business Media, 2013.
6. Hevner, A. R., March, S. T., Park, J., Ram, S.: Design Science in Information Systems Research. *MIS Quarterly* 28(1), 75-105 (2004)