5-15-2012

ACTION RESEARCH AS A NETWORK: COLLECTIVE PRODUCTION OF ROLES AND INTERVENTIONS

Nina Boulus-Rødje

IT university of Copenhagen

ACTION RESEARCH AS A NETWORK: COLLECTIVE PRODUCTION OF ROLES AND INTERVENTIONS

Boulus-Rødje, Nina, IT University of Copenhagen, Rued Langgaardsvej 7, 2300 Copenhagen S, Denmark, nbou@itu.dk

Abstract

This paper explores roles and interventions in IS action research. I draw upon a four-year research project about electronic medical records, conducted in close collaboration with a community partner. Following a self-reflexive stance, I trace the trajectory of the research engagement and the different roles I occupied. To better understand the complex nature of collaboration found within action research projects, I propose conceptualizing action research as a network. The network framework directs our attention to the collective production and the conditions through which roles and interventions come to exist. Thus, interventions and roles can be seen as network effects—they are enacted and supported by the network. Accordingly, roles and interventions are neither simply static and fixed nor fluid and flexible; rather, these are products of past and present attachments. I demonstrate how the different attachments existing in the network at different points in time enable the configuration of particular actors with capacities to enact different roles and interventions in a diversity of contexts and settings. Finally, I illustrate what happens when these attachments are missing and how this influences the researcher's agency.

Keywords: Actor-Network Theory, Action Research, Information Systems, Science and Technology Studies, Reflexive Methodology, Agency.

1   Introduction

Action research is distinguished by its dual agenda where the research is expected to have both a theoretical contribution to science and a practical contribution to research partners (Rapoport, 1970). This dual agenda sets action research apart from traditional academic research as it has a different *purpose*, is built upon a different *engagement*, and has different views on *knowledge* and *practice* (Reason and Bradbury, 2006). Action research's primary *purpose* is to respond to local and practical concerns of organizations. It is, therefore, founded on collaborative and participatory *engagement* in which the community partner's degree of involvement varies. Action researchers have a different epistemological starting point where they privilege *doing/acting* over *thinking* (Reason and Bradbury, 2006). Thus, action research strives to develop theories that are grounded in the particularities of the specific situations confronting practitioners. This is done through the cyclic relation between theory and practice, reflection and action. The underlying idea with these on-going cycles is to identify a problematic situation, plan the researcher's activities, and conduct and evaluate the activities (Mumford, 2001).

The research engagement established within action research is complex with its dual commitment to research and practice, and the high degree of dependency on the community partner (Guggenheim, 2004). The researcher often has to juggle multiple roles and responsibilities, and alternate between different relationships with various stakeholders. This paper investigates the engagements between the action researcher and the community partner, focusing particularly on the researcher's roles and interventions. For this purpose, I draw upon literature from two IT related fields, namely Information Systems (IS) and Science and Technology Studies (STS). The STS field—particularly actor-network theory (ANT)—unpacks science and technology, and looks at their constitution and how it could have developed differently. The idea is to move away from social or technological determinism, and investigate the ways in which both the social and the technical are simultaneously co-constructing and co-shaping each other (Diaz Andrade and Urquhart, 2010).

The STS and the IS field were chosen because they both contain studies of IT implementations that draw upon action research, and because action research engagements, roles and interventions have recently been discussed in both fields (Zuiderent-Jerak and Jensen, 2007; Baskerville and Myers, 2004). Furthermore, these two fields practice and conceptualize action research engagement so differently that they can, to a certain extent, be put on opposite sides of a continuum. I will use these differences to discuss and fine-tune conceptualizations of the research engagement, as well as the action researcher's roles and interventions and will point to problematic aspects with the existing conceptualizations in both fields. Considering these problematic aspects, I ask: how can we conceptualize the complex nature of action research engagements, including the researcher's roles and interventions. To answer this question, I draw upon a four-year long action research project about the implementation of Electronic Medical Records (EMRs), conducted in close collaboration with a community partner in Canada.

I draw upon insights from ANT, which originates from STS and which has been used widely in IS research to analyse different types of IT systems. With its principle of generalized symmetry—where a priori distinctions are removed and the same conceptual framework is applied to both humans/social and non-humans/technical aspects—ANT has proved to be a powerful theoretical lens for studying complex socio-technical systems (Diaz Andrade and Urquhart, 2010). In this paper, however, instead of using ANT to analyse IT systems, I will investigate how ANT can help us to interpret the researcher's multiple roles and interventions found within action research engagements. I use ANT's notion of *actor-network* as an analytic lens to examine the nature of research engagement, the researcher's roles and interventions. This notion refers to the connection and relations between an act that is carried out and its wide range of surrounding and influencing factors, which again are linked together and produce a network. To illustrate this, consider for instance the act of driving a car; this act is influenced by various factors such as: previous driving experience, traffic regulations and the

manoeuvrability of the car. Thus, the act of driving a car can be seen as a network effect—it is enacted and supported by the actor- network which consists of both technical and non-technical elements. With its generalized symmetry, ANT allows an equal explanatory status to all actors in the heterogeneous network. An actor is defined by the effects of actions that are distributed across the network. The important point here is that being an actor does not refer to what actors do, but rather to what *provides* them with their actions. Thus, the actor's agency is distributed across assemblages of resources.

Using ANT's notion of *actor-network* as an analytic lens leads me to conceptualize action research as a network where different connections are established and reconfigured. The network is marked not only by the actors, but also by the connections and relations between the actors that produce actions and transformations (Latour, 2005). This framework allows us to focus on the collective *production*— the *conditions*—through which actors, roles and interventions come to exist. Thus, the researcher's roles and interventions can be seen as effects produced and supported by the network.

I will begin by presenting briefly the existing conceptualizations of the roles and interventions of the action researcher within the IS and STS literature. Then I present the empirical case and the reflexive methodology I used for my action research project. This is followed by a five-part discussion and a conclusion.

2   Conceptualizations of action research roles and interventions

The term 'action research' was coined by Kurt Lewin who conducted social experiments in the 1940s that showed how the behaviour of an individual is influenced not only by personality, but also by its surrounding environment (Lewin, 1947). Lewin strongly believed that action research could be used as a tool for learning and change (Baskerville and Wood-Harper, 1998). Thus, many action researchers argue that it is *important not only to understand the world, but also to change it* (Reason and Bradbury, 2006). Today action research is increasingly practiced across various fields, including IS and STS. While the move toward action research projects is relatively recent within STS, the field of IS has had a relatively well-established action research tradition that dates back to the 1970s (Baskerville and Wood-Harper, 1998).

IS Action Research: There are many forms of IS action research, but they all share certain characteristics. IS action research focuses on real-life practical problem, and is based on interventions aiming at improving organizations (McKay and Marshall, 2001). The different forms of IS action research reflect a variety of perspectives on research approaches and practices. The researcher's interventions can vary, from conducting concrete activities (Checkland and Holwell, 1998) to more indirect and subtle activities (Avison, Baskerville, and Myers, 2001). The IS action researcher adopts a stance similar to that of a 'change catalyst,' a 'consultant,' or even an 'IT expert' (Chiasson and Dexter, 2001; Mumford, 2001). Change in IS action research often comes in the form of sociotechnical improvements, for example, conducting normative evaluations, developing generalized best practice guidelines, and identifying factors for successful technology implementations.

Within the IS field, there are various dichotomous frameworks that explicitly distinguish between different types of research engagements. An example is the distinction between research *with* and *on* practitioners (Heron and Reason, 2001). This distinction has recently been developed further by Van de Ven (2007) who discusses forms of what he labels *engaged* scholarship, meaning research that is *engaged with practice* and that has both *theoretical* and *practical contributions*. He outlines four forms: informed basic research, collaborative basic research, design and evaluation research, and action research. These are distinguished by research purpose (i.e., *with* or *on* practitioners) and researcher's mode of engagement (i.e., *attached* insider or *detached* outsider) (Van de Ven, 2007, p. 27). Such frameworks can be useful in labelling types of research engagement, but can also be somewhat difficult to apply, as the dichotomous, simplistic and static categories are not always fine-tuned (Mathiassen and Nielsen, 2008) and tend to fall short of capturing the complexities and the rich modes of engagement of action research. Thus, such a framework presents the researcher with choices

between mutually exclusive categories where the researcher is either an *attached* insider or a *detached* outsider, and the research is either done *for* or *with* practitioners. But in practice, as Van de Ven (2007) himself admits, the four forms of engagement overlap and one form may transition into another.

STS Action Research: While the rewards of IS action research are real material changes, this is not necessarily the case for all STS action research endeavours as these are not explicitly aimed at improving practices (Strand, 2006). Rather than necessarily *making* change, STS action researchers follow a change process to see how it unfolds in practice and how it could have been differently, for example, by showing how design and use of technology could have followed a different path (Strand, 2006). Unlike IS action research, the role of the STS action researcher is often not easily and clearly defined, as she is operating in contexts that are defined by others (Guggenheim, 2004). Zuiderent (2002), for instance, explains that his role as a change-agent meant that it was not narrowly defined at the outset of the project, but rather left open for emergent opportunities. A number of STS action researchers describe how they were invited to occupy multiple roles, some of which were outside of their academic domain. These roles range from doing various types of consultancy work (Guggenheim, 2004; Jensen, 2007) to solving organizational conflicts (Mesman, 2007). To convey the continual transformation of the researcher's role, Zuiderent and Jensen (2007) said that "the identity of the researcher often appears shifting and multiple or even fragmented and schizophrenic" (p. 229). While the roles of the STS researcher are viewed as fluid and ambiguous, the interventions are portrayed as something that cannot be fully planned or controlled (Zuiderent, 2002). These are viewed as part of an event where the researcher has limited control and good intentions (Jensen, 2007). An attempt to intervene may be successful, but it may also not lead to a desired change, or it may lead to unfortunate results.

The nature of such collaborations is described as a continuous process of fine-tuning and alignment of the researcher's roles and responsibilities with the research participants. In this process the researcher moves in and out of different settings and contexts, creates and sorts through different connections and disconnections with various people, actions, roles, and responsibilities (Jensen, 2007a; Mesman, 2007). Much of the STS action research literature focuses on this complex and shifting landscape, where the researcher is involved in multiple roles and modes of engagement, interacting with various groups and translating different objectives. Several STS researchers argue that the action researcher can no longer be simply characterized either as an (active) interventionist change agent or as a (passive) descriptive analyst, and some suggest instead viewing descriptions themselves as interventions (Zuiderent, 2002). Accordingly, all activities are viewed as performative and every type of research practice unavoidably intervenes to some degree in the field of study (Jensen, 2007a; Mesman, 2007). Several scholars discuss possible new conceptualizations of the researcher's role and intervention (Vikkelsø, 2007). Examples of these are the researcher as a trickster or as a designer. The trickster makes situated choices, shifting positions and standpoints depending on the particularities of a situation (Zuiderent, 2002), while the designer is involved in the configuration of roles and creates different modes of engagements with various practices (Boland and Lyytinen, 2004). Common to these alternative conceptualizations is a shift from solving problems and making decisions toward prompting negotiations and improving practices in a more modest and ongoing way.

In sum, as can be see from Table 1, the researcher's roles and interventions in IS are often viewed as something that should be clearly defined at the outset of the research projects, and complex research engagements are often portrayed through dichotomous frameworks. Within STS, the action researcher's roles are viewed as situated, political, and continuously shifting, and the interventions are subtle, emergent, and contingent upon the circumstances present in a particular context and point in time.

Action research	IS	STS
Tradition	Began applying the method in the 70s	Relatively recent tradition
Problem	Clearly pre-defined at the outset of the	Flexible, fluid, emergent

definition	project	
Type of research engagement	Different dichotomous frameworks (e.g. descriptive vs. interventionist)	Move beyond dichotomous frameworks
Researcher's role	Clear and pre-defined at the outset of the research (e.g., change catalyst, consultant, IT-expert) Solving problems and making decisions	Not clearly, easily or narrowly defined; left open for emergent opportunities Fluid, dynamic, ambiguous and situated Prompting negotiations about practices
Researcher's interventions	Aimed at sociotechnical improvements (e.g., normative evaluations, best practice guidelines, identifying factors for successful technology implementations)	Cannot be fully planned or controlled. Not explicitly aimed at improving practices Can result in pointing to alternative design paths

Table 1.   Different conceptualizations of action research in IS and STS.

3   Case Description and Reflexive Methodology

In what follows, I draw upon a four-year research project (2004—2008) that focuses on the implementation of an EMR system (Boulus, 2010). This research was part of a larger project called ACTION for Health, aimed at investigating the introduction of new technologies into the health care sector. The project emphasized that researchers would work closely with health practitioners and other stakeholders to ensure that academic findings address real-world issues. Furthermore, the project had the explicit aim to inform the design of policy decisions and systems. The focus on real and actual concerns of practitioners and on ultimately influencing policy decisions are in line with the underlying ideology of action research which is originally based upon Lewin's idea of *using research* as a *tool for change* (Reason and Bradbury, 2006).

In this project, I held a research assistant (RA) position, where I mainly worked under the supervision of one of the principal investigators (PI). The research was conducted through a close collaboration with the community partner, a non-profit community health centre in Canada. The clinic has 5000 patients, and consisted of ten medical staff members, six administrative staff members, as well as the executive director and the technical support person both of whom were our primary contacts. The PI had already established a partnership with the community partner and negotiated access to the field prior to my participation in the project. When I joined the project, the clinic was about to introduce a new EMR system to replace their paper charts. It was, therefore, agreed that I would be given the possibility of investigating the implementation of the EMR system, and would in turn assist the clinic with challenges related to the technology or work practices arising during the adaptation process.

Before I started working on this project the primary contacts expressed an interest in obtaining information about the experiences of other clinics in the province that implemented the same EMR system. I interviewed five staff members from other clinics, the IT vendor and a decision maker, and attended several seminars organized by the health authority. Based on this data, I created a technical report summarizing the experiences and recommendations for the community partner. This was a five-month sub-project (October 2004-March 2005). Thereafter, the community partner wanted to introduce the EMR to their patients and inform them about the changes about to take place. In addition, the clinic was interested in obtaining information about their patients' views of EMRs. For this project I designed information posters, interviewed 22 patients, and collected additional suggestions from patients about EMRs. Based on the data collected, I created a brief technical report that summarized the patients' views, expectations and concerns. I also created educational material for patients addressing their expressed concerns. This sub-project lasted one-and-a-half month (November-December, 2004).

While the above sub-projects were conducted *for* and together *with* the community partner on other research subjects (i.e. practitioners from other clinics and patients), I now wanted to focus on *the community partner* and *their* adaptation of the EMR system, since this, after all, was the initial reason for my engagement in the project. This sub-project signalled to some extent a transition in my research

engagement, moving from conducting research *with* to conducting research *on* practitioners. I wanted to investigate how the technology transforms the medical practice, and how the health care practitioners configure the technology to the existing work practices. I conducted extensive fieldwork at the clinic, including interviews with 11 medical staff members, 10 observation sessions, participation in 37 formal and informal meetings with the medical staff and the vendor, I attended four seminars organized by the health authority and the vendor, participated in three EMR training sessions, and collected and analysed documents (internal documents, policy documents and media coverage). I also functioned as a super-user providing technical support to the clinic, and became an active member of the EMR committee that was responsible for adapting the existing work practices.

To investigate the nature of my action research engagement, I draw upon analytic autoethnography (Anderson, 2006). This approach expects the researcher to take a reflexive and self-conscious stance toward their engagement. Therefore, the researcher investigates carefully her personal experiences and interpretations from the fieldwork, in order to acquire a better understanding of herself (the researcher) and others (the subjects). Autoethnography is reflexive in the sense that the researcher is expected to be both situated and self-critical, reflecting explicitly upon the perspectives and assumptions used to create knowledge (Alvesson and Skoldberg, 2000). Drawing upon this approach shifts the focus from pre-defined principles about how action research projects ought to be carried out (Davison, et al., 2004; Mumford, 2001), to focusing on how they are conducted *in practice*. This approach replaces a dichotomous and normative framework with a performative framework that explicitly and reflexively encourages researchers to investigate how their methods are enacted and practiced in the field. I have illustrated elsewhere how such an approach can be fruitful in giving critical scrutiny to fieldwork complexities as these can be turned into knowledge providers, adding to the understanding of the research method (Bjørn and Boulus, 2011). In order to draw upon my experiences of enacting action research for four years, I kept extensive memos encapsulating reflections on the method I used, tracing the trajectory of the research collaboration, the various roles I enacted, and the impact these had on my interventions.

4 Action Research as a Network

4.1 Understanding multiple roles and interventions

Viewing action research as a network directs our attention to the ways in which roles and interventions are collectively produced. The network in my empirical case comprised the rather vague partnership in which decisions regarding the research focus were made continually as the research progressed. It also consisted of an evolving focus that continually drifted away from the actual implementation of the EMR at the clinic toward the experiences of other clinics, patients' views, and the policy decisions of the health authority. The network also consisted of the different and often conflicting interests of the executive director, the various practitioners, and my own interest as a PhD Candidate (at that time) who had to assemble a coherent dissertation about the implementation of the EMR at the clinic. Each of the roles I enacted in the different contexts greatly impacted my point of departure, the way I was perceived by the informants, and the type of information they shared with me. Contrary to a classic ethnographer (an 'outsider'), my position and autonomy in this project changed depending on the different roles I acquired and the responsibilities attached to these. For example, when interviewing decision makers, I was perceived as an academic researcher, leading interviewees to change the topics discussed, and in one case, even share with me academic articles. In a discussion with the EMR-vendor, I was viewed as someone with a computer science background familiar with technical issues of the system and with experience in providing support. Occupying these various roles and carrying the different roles *outside* the clinic did not seem particularly problematic to me as it impacted neither my research collaboration with the community partner nor the data I collected. I later shifted my mode of engagement as I wanted to investigate the adaptation process of the EMR *within* the clinic.

Applying the network model implies a move away from focusing on the individual actors toward focusing on the collective conditions and means through which actors in networks emerge (Gomart

and Hennion, 1999). In my case, this sheds light on the various changes that took place simultaneously over several months and which included the retirement and replacement of the executive director who was my primary contact and with whom the PI negotiated access to the field site. This happened a year into my fieldwork and was followed by a period of overlap between the outgoing and the incoming executive directors. As will be explained later, this change in management introduced great challenges to my fieldwork. These changes were gradually followed by high staff turn-over, in particular with regards to support personnel (e.g., a medical office assistant who was a key figure throughout my research collaboration and the technical support person who was one of my primary contacts). This was in addition to technical and organizational changes (e.g., implementation of a new strategy and new software), as well as internal political issues and organizational conflicts which also impacted the nature of the collaboration I had with the clinic. All these elements contributed to continually reshaping my roles and my space for interventions (e.g., for conducting interviews with different stakeholders and prompting discussions regarding existing work practices).

4.2   Distributed agency: roles and interventions

ANT's notion of actor-networks distributes the researcher's agency, which in this case is defined as the capacity "to act in the world, to initiate and cause things to happen" (Moser, 2006, p. 375). "Agency is always mediated. People are not actors, they are enabled to act in and by the practices and relations in which they are located, and they become actors because agency is distributed and attributed" (Moser, 2006, p. 381). In other words, the notion actor-networks transforms researchers' agency—the capacity to act in a particular role— from being the powerful creator to being distributed across the network (Latour, 2002). Thus, the action researcher's agency is located neither within the researcher nor within the research project, but in the particular attachments that simultaneously produce the researcher, the community partner and the research project. Any of these entities and their characters can be understood as relational effects. Thus, actors are defined by virtue of their position in the network, which implies that we investigate what something is by looking at how it emerged (Moser, 2006).

Let us look at how I became an action researcher. This role and the ability to act as an action researcher came about through particular attachments. This includes: the RA position I received within the project that funded my research; my affiliation and PhD position in a university department; the partnership with the clinic and the access to the field that enabled me to both study and participate in the implementation of the EMR system; my previous research experience and knowledge of EMR implementations that allowed me to relatively easily step into the role of the action researcher; the primary contacts from the clinic who ensured access to the field, to people and information. It is the assembly of all these attachments that enabled me to perform the role of an action researcher. In other words, these provided me with agency that enabled me to act as a competent action researcher and to initiate action. Half a year into my research journey, my relationship with my primary contacts had improved and the attachments were strengthened as the research progressed. I was provided with considerable access to the field site, to continuously updated and internal information from the health authority or the vendor, and access to key actors from within and outside the clinic. These attachments together enabled me to act as an action researcher and respond to various issues that were of concern to the community partner, conduct interviews and observations, create reports for the clinic, and so on.

From being an action researcher, I was gradually perceived as an EMR consultant, as someone who is an expert of the system. Particular networks fabricate a person with particular abilities and competencies. (Gomart and Hennion, 1999). I was initially introduced by the PI to the community partner as an EMR researcher; as someone who did her Master's about EMRs, who participated in the implementation of such a system in Norway, and who was familiar with the literature and discourse surrounding EMRs. I was also introduced as a computer scientist, as someone who had technical competencies and skills. Later on, I interviewed other clinics about their EMR experiences and introduced the EMR to patients at the community partner clinic. All these attachments configured a particular subject, someone who could potentially be easily perceived as an EMR consultant.

In contexts outside the community partner clinic, I was often perceived as the clinic's researcher. When attending the second seminar organized by the health authority, my nametag changed from 'clinic researcher' (a representative of the clinic) to 'EMR consultant' (an expert of the system). This nametag was chosen presumably by my primary contacts who registered me for the seminar. In addition to the factors described above concerning the ways in which I was introduced to the clinic, the role of becoming 'an EMR-expert' was produced by the network and my previous interventions, where I interacted regularly with the practitioners during the countless EMR meetings and clinical meetings, training sessions, observations, informal conversations and lunches. It was my earlier interventions that earned me the position of an EMR-expert. I previously functioned as a super-user providing technical support, and this significantly impacted the way I was perceived by the health practitioners. These, in addition to other interventions, such as generating discussions about the configuration of the EMR system and suggesting potential adaptations of existing work practices, constructed an identity of someone knowledgeable about the local situated work practices and sociotechnical challenges that occurred. However, I will illustrate later how this identity was continuously reconfigured during the course of the research collaboration.

4.3   Different attachments produce particular roles

Thus far, I have illustrated how interventions and roles enacted by the action researcher can be seen as effects produced and supported by the network. However, the network is not static and the attachments are not configured once and for all; they continuously change and influence the roles and interventions produced by the network. In other words, the network enables and supports particular roles, and shapes the space within which the researcher is given the agency to act. Thus, the roles and interventions the researcher might take depend upon the attachments existing in the network at different points in time. For instance, nearly eight month into my fieldwork, the technical support person asked me to become a member of the EMR committee that was established to discuss challenges and provide support to the practitioners. I was very happy to accept this role and later became the chair and minute taker in the EMR meetings. My choice of accepting the role depended upon the attachments and resources I had in the clinic at that particular period. At that time, I had limited access to the field and circumspect space for interventions. I experienced uncertainties about my role, as I was unable to act the way I wanted and interview or observe the health practitioners. The combination of the absence of the actions (that I desired) and the risk of losing access to the field, encouraged me to accept the role of a chair and minute taker. I saw this role as giving me the opportunity to gain indirect access to the clinic and to issues related to the use of the EMR while actively participating in the adaptation process of work practices and configurations of the EMR.

Roles and interventions with IS action research are often viewed as something that should be explicitly and clearly defined at the outset of the project (Rapoport, 1970). However, I have illustrated how, although was defined at the beginning of the research project, my role continuously changed as I was operating in a context defined by the community partner (Guggenheim, 2004). Action research roles are not static and predefined 'fixed-packages' the researcher picks to fit a particular purpose. For instance, being labelled a consultant (Guggenheim, 2004) or a change agent (Pedretti, 1996) might imply completely different interventions depending on the particular context and the arrangements within the network. Applying the network framework sheds light on how roles are produced and supported by the network. I illustrated earlier how I occupied multiple *different roles* in the *same context*. Other times, however, I occupied the *same role* across *different contexts*, such as, for example, the role of the community partner's researcher or that of an EMR consultant which were enacted across various contexts, including different seminars and meetings.

4.4   Network of past and present roles and attachments

Previous research within STS found that roles in action research cannot be understood simply through the dichotomy of insider and outsider, suggesting instead to transform the dichotomy into multiple

types of insiders and outsiders (Mesman, 2007) or into a dialectic relationship between the researcher and the field site (Pedretti, 1996). Accordingly, action research collaborations within STS are often portrayed as emergent, fluid, and dynamic, where the researcher may alternate between different types of engagements (e.g., 'for,' 'with,' 'about,' 'by' or 'against'). However, applying the model of a network on action research helps us move a step further from conceptualizing roles simply as fluid and flexible, into viewing them as something that is relational—something that is produced and enacted by the attachments in the network.

Particular attachments create specific kinds of roles and expectations to which the researcher may, or may not, be able to conform. Over time, strong attachments were established between the practitioners and myself. My primary contacts kept me informed and forwarded me news and updates about the EMR, invited me to participate in various meetings and seminars, and I was even provided with an office at the clinic. These attachments provided me with greater access to different kinds of empirical data, but they also made it difficult for me to maneuver the field site and complicated the creation of other types of attachments. This was the case when I attended the first seminar organized by the health authority: I was introduced by the executive director as the clinic's researcher and was portrayed as an '*inspector*' who was called to *evaluate* the vendor and the health authority. This incident created a perception of my role quite different from what I desired. My role as an 'inspector' was shaped by the attachments I had with the community partner during the first six months where I, among other things, communicated issues they had to the vendor and the decision makers. Initially, I did not perceive this as problematic regarding my position and role within the research project. However, when moving to conducting research *on* practitioners *within* the clinic, the role I was given in the past as an 'inspector' seemed to inescapably follow me to the point where the incoming executive director asked me to 'inspect' the efficiency of existing work practices. Being viewed as an inspector in previous settings imposed challenges on my role as an academic researcher and complicated the creation of a different type of attachment by triggering tension between the health practitioners and myself. At this stage, I was no longer operating in a fluid and flexible network and alternating between different roles and responsibilities, but rather found myself entangled in a web of past and present attachments. Thus, past connections from previous settings were taken into the present and shaping the creation and configuration of different types of connections and disconnections which enabled certain roles.

4.5   Missing attachments: implications on network

I have, thus far, described how roles and interventions can be viewed as network effects as they are produced and enacted through a network. I have also explained the particular arrangements that were established between myself and the field site, and that provided me with agency—the capacity to act in the role of an action researcher and do things that otherwise would have been difficult or simply impossible. However, what happens when the networks of relations are not in place or when they are not aligned and stable? I will now illustrate how my agency and capability to act in a particular role is undermined when the network of relations is missing.

I described earlier how the role of a chair and minute taker came into being. My ability to act in this role was made possible and produced by specific socio-material arrangements. I was provided with an office in the clinic and the EMR committee accepted me as 'one of them,' as a relative insider who had the competence to understand the sociotechnical issues that were brought about by the EMR, and I was in a position to act upon these issues (e.g., through documentation and/or delegating and assigning tasks to other committee members). However, agency is not a position one occupies once and for all; it is always mediated and depends upon practices and relations through which it is located (Moser, 2006). Thus, in situations where the atmosphere was highly tense and there were conflicts within the EMR committee (e.g., personal accusations over whether technical issues were solved or not), writing minutes became immensely challenging because decisions about different tasks were not always clearly made. In such situations I was not so easily able to act/perform in the role of a chair and minute taker, and I was struggling with delegating tasks as my decisions and/or meeting minutes were disregarded or simply ignored. In these cases, I was transformed into a relative outsider, into someone

who was incapable of following the discussion or understanding the problems encountered. In situations where the atmosphere in the EMR meetings was tense, my agency was reconfigured into a position of someone who did not have the competency to follow the complex discussions and decisions that were taking place.

As long as the network relations were in place and running smoothly—as in the case where I had the capability to act as a chair and minute taker—I could be seen as in command/control of the situation, and the network connections tended to move into the background and become invisible. However, when there were instances of partial disconnections or disruptions in the network (e.g., when there were internal conflicts among the committee members), my reliance on the network became more present and visible. I described earlier how I was unable to act in the role of a chair and minute taker and lost the agency that enabled me to participate in decision-making and delegate tasks to other committee members. Furthermore, when the network of relations was not in place, I struggled with limited access to the field site, to information and to people. I lost some of my capacity to act as a researcher and was unable to conduct interviews and observations of the health care practitioners.

Such situations of disruptions or complications in research projects are often viewed within the IS action research literature as a failure of the researcher or the research project. For instance, Avison et al., (2001) provide a long list of recommendations for controlling action research, and claim that the failure of IS action research projects has been directly linked to the inability to negotiate and manage the research agenda. Rapoport (1970) links the inability to deal with problems in the field to the view of the researcher as 'unskilled' (p. 509), thus referring implicitly to factors such as, for example, seniority or previous experiences. However, it is problematic to attribute the inability to negotiate the research agenda or deal with problems in the field to the researcher's skills or to the so-called 'failure' of the research project, as this view undermines the complexities involved in negotiating and managing relationships and modes of engagements in action research projects. I have described earlier how the ability of the action researcher to act is dependent upon complex socio-material arrangements. If the ability of the researcher to act is distributed across the network, the same can be said about the researcher's inability to act. Accordingly, 'failure' of action research is not simply located within the research project or the researcher, but is rather manifested in the other interactions and attachments within or related to the community partner which do not directly involve the researcher.

5   Conclusion

This paper set out to investigate existing conceptualizations of action research within two different IT related fields, IS and STS. In IS, action research engagements are often portrayed through various dichotomous frameworks, and the researcher's roles and interventions are often viewed as something that should be explicitly and clearly defined. On the other hand, STS researchers argue that we should move beyond the dichotomous views of the action researcher's roles and interventions, and acknowledge that these are fluid, emergent and situated. The problematic aspect with these existing conceptualizations is the tendency to fall short of capturing the complexities and the rich modes of engagements enacted in practice. Drawing upon an action research project I illustrated how roles in action research are not static and pre-defined. I also demonstrated how I sometimes came to occupy different roles in the same context, and other times came to occupy the same role across different contexts.

Reason (2006) argued that action research is known for bringing about many choices, and that awareness about and transparency of these choices is important for the quality of research inquiries. This requires, however, a framework that can help us identify the different choices made during our action research journey; a framework that avoids simplifying, but rather captures and helps us understand the complexities we encounter in relation to roles and interventions. Therefore, this paper investigates how ANT can help us interpret the researcher's multiple roles and interventions found within action research engagements. I use ANT's notion of *actor-network* as an analytic device to examine the nature of action research engagements.

Conceptualizing action research as a network implies that interventions and roles can be seen as network effects—they are enacted and supported by the network. I illustrated how the different attachments existing in the network at different points in time produced and enabled the configuration of particular subjects with capacities to enact different roles and interventions in a diversity of contexts. Thus, when applying a network model, roles and interventions are no longer simply static and pre-defined, nor are they fluid and flexible. Rather, the network view moves the focus away from the individual researcher to the collective assemblages of resources and surrounding factors that enable the researcher to act in a particular role and conduct a particular intervention. I illustrated how the creation and reconfiguration of existing roles are shaped by past roles and interventions from previous settings. I, therefore, argue that roles and interventions are no longer simply fluid and flexible as often portrayed in STS; rather, these are assemblages of past and present connections. Finally, I demonstrated what happens when these attachments are missing and how this influences the researcher's agency.

Action research is increasingly being practiced across different fields, and there is a need for renewed conceptualizations of action research. My aim was to contribute to the fields of IS and STS, specifically to debates about action research engagements, roles and interventions. ANT has been widely applied by several IS scholars to different kinds of technology. This paper is an attempt to apply ANT to analyse a research methodology, and it calls for additional work in this area. To develop further the idea of action research as a network model, the paper encourages researchers to apply this model to a variety of research inquiries and projects. This network model has been fruitful in, among other things, distributing the researcher's agency and making us aware of the assemblages of resources that must be in place and that enable us to act in particular roles across different contexts. It can also help us draw connections and understand how particular roles come about and how they change during a research project.

References

Alvesson, M. and K. Skoldberg (2000). Reflexive Methodology: New Vistas for Qualitative Research. 1st Edition. Sage Publications Ltd.

Annderson L. (2006). Analytic autoethnography. Journal of Contemporary Ethnography, 35 (4), 373-395.

Avison, D., Baskerville, R. and Myers, M. (2001). Controlling action research projects. Information Technology & People, 14 (1), 28-45.

Baskerville, R. and Myers, D.M. (2004). Special Issue on Action Research in Information Systems: Making IS Research Relevant to Practice- Foreword. MIS Quarterly, 28 (3), 329-335.

Baskerville, R. and Wood-Harper, A.T. (1998). Diversity in information systems action research methods. European Journal of Information Systems, 7 (2), 90-107.

Boulus N. (2010). *A Journey into the Hidden Lives of Electronic Medical Records (EMRs): Action Research in the Making.* PhD Dissertation. School of Communication, Simon Fraser University, Vancouver, BC, Canada.

Bjørn, P. and Boulus, N. (2011). Dissenting in Reflective Conversations: Critical Component of doing Action Research. Action Research Journal, 9 (3), pp. 282-302.

Boland, R. and Lyytinen, K. (2004). Information Systems Research as Design: Identity, Process, and Narrative. Information Systems Research, 143, 53-68.

Checkland, P. and Holwell, S. (1998). Action Research: Its Nature and Validity. Systemic Practice and Action Research, 11 (1), 9-21.

Chiasson, M.W. and Dexter, A.S. (2001). Systems development conflict during the use of an information systems prototyping method of action research. Information Technology & People, 14 (1), 91-108.

Davison, R. M., Martinsons, M. G., and Kock, N. (2004). Principles of canonical action research. Information Systems Journal, 14, 65-86.

Diaz Andrade, A. and Urquhart, C., (2010). The Affordances of Actor-Network Theory in ICT for Development Research. Information Technology & People, 23 (4), 352- 374.

Gomart, E. and A. Hennion (1999). A sociology of attachment: music amateurs, drug users. In Actor Network Theory and After, L. John and H. John (Eds.). Blackwell and the Sociological Review: Oxford.

Guggenheim, M. (2004). From Anxiety to Method in STS, for only 99.95 (Including a Consulting- Mandate and a Fistful of Epistemology). Paper prepared for the workshop: "Does STS mean business? - Some issues and questions", Said Business School, University of Oxford.

Heron, J. and P. Reason (2001). The Practice of Co-operative Inquiry: Research 'with' rather than 'on' People. In Handbook of Action Research: Participative Inquiry and Practice, P. Reason and H. Bradbury (Eds.). Sage Publications: London.

Jensen, C. B. (2007). Sorting Attachments: Usefulness of STS in Healthcare Practice and Policy. Science as Culture, 16 (3), 237-251.

Latour, B. (2005). Reassembling the social: An introduction to Actor-Network-Theory. Oxford University Press Inc.: New York.

Lewin K. (1947). Frontiers in group dynamics: II. Channels of group life; Social planning and action research. Human Relations, 1 (2), 143-153.

Mathiassen, L. (2002). Collaborative practice research. Information Technology & People, 14 (4), 321-345.

Mathiassen L., and Nielsen P. A. (2008) Engaged scholarship in is research-the Scandinavian case. Scandinavian Journal of Information Systems, 20 (2), 3-20.

McKay, J. and Marshall, P. (2001). The dual imperatives of action research. Information Technology & People, 14 (1), 46-59.

Mesman, J. (2007). Disturbing Observations as a Basis for Collaborative Research. Science as Culture, 16 (3), 281-295.

Moser, I. (2006). Disability and the promises of technology: Technology, subjectivity and embodiment within an order of the normal. Information, Communication and Society, 9 (3), 373-395.

Mumford, E. (2001). Advice for an Action Researcher. Information Technology & People, 14 (1), 12- 27.

Pedretti, E. (1996). Facilitating Action Research in Science, Technology and Society (STS) Education: an experience in reflective practice. Educational Action Research, 4 (3), 307-327.

Rapoport, R.N. (1970). Dilemmas in Action Research. Human Relations, 23 (6), 499-513.

Reason, P. (2006). Choice and quality in action research practice. Journal of Management Inquiry, 15 (2), 187-203.

Reason, P. and Bradbury, H. (2006). Introduction: Inquiry and Participation in Search of a World Worthy of Human Aspiration. In Handbook of Action Research: Participative Inquiry and Practice, P. Reason and H. Bradbury (Eds.). SAGE Publications: Thousand Oaks.

Van de Ven, A. (2007). Engaged Scholarship: A guide for Organizational and Social Research. Oxford University Press: New York.

Vikkelsø, S. (2007). Description as Intervention: Engagement and Resistance in Actor-Network Analyses. Science as Culture, 16 (3), 297-309.

Zuiderent, T. (2002). Blurring the Centre: On the Politics of Ethnography. Scandinavian Journal of Information Systems, 14 (2), 59-78.

Zuiderent-Jerak, T. and Jensen, C.B. (2007). Editorial Introduction: Unpacking 'Intervention' in Science and Technology Studies. Science as Culture, 16 (3), 227-235.