THE PRINCIPLE OF RESEARCHER-CLIENT AGREEMENT IN CANONICAL ACTION RESEARCH

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Abstract

Canonical Action Research (CAR) is a methodology for developing, testing and learning about information systems strategies through the use of real-world experiments. The methodology is based on five principles to ensure rigor and relevance. The first principle relates to the development of a researcher-client agreement (RCA) that facilitates collaboration between the researcher and the client. The RCA principle has been argued to be of foundational importance for succeeding with action research, but CAR has little to say about how to deal with the complexities and political challenges in RCA development. A strategy that has proved useful for dealing with the politics of action research management is the Networks of Action (NoA) approach used in information infrastructure studies. The purpose of this study is to investigate the consequences of applying a NoA strategy for developing a RCA between a scholarly community and a public sector organisation. By analysing aspects of process success and failure, ideas on how to adjust existing models and strategies for aligning NoA and CAR through the RCA development process are developed. The contribution to theory and practice of CAR consists of outlining how the process of RCA development can be managed through the NoA approach.

Keywords: Research-client agreement, canonical action research, networks of action, information infrastructure, game theory

1 INTRODUCTION

Canonical Action Research (CAR) is an action research methodology for studying information systems (IS) (Davison et al, 2004). CAR is derived from the socio-technical systems tradition of doing action research (Susman & Evered, 1978) but extended with ideas from other traditions and is framed with a set of five principles and associated criteria for reducing the risk of the research process breaking down or the outcome of research not meeting scientific standards. The first principle relates to the development of a researcher-client agreement (RCA) that facilitates collaboration between the action researcher and the client. The other principles relate to Cyclical Process Model of action research, Theory, Change through Action and Learning through Reflection.

According to Davison et al (2004, p. 69), the RCA can be seen as a guiding foundation for an action research project. However, they continue, in order for the RCA to be effective, it is necessary that the client understands how CAR works and what its benefits and drawbacks are for the organisation. Achieving this understanding may require a process of knowledge transfer (from researcher to client). The agreement should contain mutual guarantees for behaviour in the context of the project. A well-constructed RCA should provide a solid basis for building trust among the various stakeholders and contributes to the internal validity of the research. The agreement helps to promote a spirit of shared inquiry, by having clients contribute as the researcher determines goals, plans actions, implements changes and assesses the outcomes of those changes. As also explained by Davison et al (2004, p. 70), adherence to the Principle of the RCA may be assessed using the criteria listed in table 1. Ideally these criteria will be met before a project is formally initiated, i.e. during pre-project discussions between researcher and client. However, in reality they may well be emergent, with variations in procedures developing as the project progresses.
a) Did both the researcher and the client agree that CAR was the appropriate approach for the organizational situation?

b) Was the focus of the research project specified clearly and explicitly?

c) Did the client make an explicit commitment to the project?

d) Were the roles and responsibilities of the researcher and client organization members specified explicitly?

e) Were project objectives and evaluation measures specified explicitly?

f) Were the data collection and analysis methods specified explicitly?

Table 1. Criteria for the RCA (Davison et al, 2004, p. 70)

In the context of explaining each of the RCA criteria, Davison et al (2004, pp. 70-71) refer to a wide range of action research literature, including Kurt Lewin’s research on aiding minorities in the 1940s, the Tavistock mining studies in the 1950s, and Australian action research for social justice in the 1980s. Although the use of action research in support of emancipation and workplace democratisation effectively illustrates why RCA is important, it is not clear whether the CAR is supposed to be understood in the context of critical theory. In fact, Davison et al (2004, p. 68) refer to Klein and Myers (1999) in saying that the underlying epistemological assumptions for action research may be positivist, interpretivist or critical in nature, and use “interpretivism” as a keyword on the first page of their paper.

Of course, even though an action research study should be designed using interpretivist (or positivist) epistemology, the principle of RCA should be no less important. In fact, having management commitment and cultural support are often mentioned as some of the critical success factors in IS implementation (Lucas, 1981; Lucas et al, 1990; Beckford, 2002). Nevertheless, the way action research has been used in Scandinavian IS research has often been based on a critical perspective (Bjerknes et al, 1987; Nygaard, 1996; Braa & Sahay, 2012). When using critical theory as a basis for CAR, it is important to understand how the RCA can be reached and sustained in politically complex environments.

As the CAR literature has little to say on how to establish the RCA, it might be useful to see whether the Scandinavian IS action research literature may have something to contribute. In fact, there is an action research approach known as Networks of Action (NoA) that views the world as a political network of actors and uses this perspective for doing action research by developing and managing a portfolio of loosely coupled action research projects (Braa et al, 2004). Furthermore, the NoA refers to itself as a way of investigating an algorithmically formulated strategy for developing information infrastructures (Braa et al, 2004, p. 360). This strategy is known as the Bootstrap Algorithm (BA) strategy (Hanseth & Aanestad, 2003) and the algorithmic nature of the strategy makes it fit with the requirements of how a CAR hypothesis is supposed be formulated (Davison et al, 2004, p. 74). In other words, not only does the NoA seem like an interesting approach for bootstrapping the RCA needed for doing CAR but it also refers to the BA as a hypothesis of how the RCA should be implemented.

The aim of the study is to investigate this BA hypothesis by attempting to establish a RCA for doing CAR in a real-world empirical context and reflect on the outcome. The experiment will involve a Norwegian scholarly community and a Norwegian public sector organisation.

The paper is structured is six sections. This first section motivated and explained the aim of the research in terms of testing the BA as a strategy for developing a RCA infrastructure. The next section presents a game model to represent the context where the BA hypothesis is being used. This is followed by a method section outlining how to test the hypothesis and a section used for analysing the results. The next section discusses the experimental outcome in the context of theoretical predictions. The concluding section is used for summarising contributions to theory and practice and for suggesting directions for future research.
According to the Davison et al. (2004, p. 74), CAR theory commonly takes the following form: in situation S that has salient features F, G and H, the outcomes X, Y and Z are expected from actions A, B and C. Theories formulated in this manner are sometimes referred to as design theories, with game theory and control theory being prime examples (Simon, 1996, p. 166). The benefit of using mathematical theories like control theory and game theory for formulating the problem is that strategy solutions can sometimes be mathematically deduced and empirically tested, thus making the CAR process into real-world experiments similar to laboratory experiments conducted by behavioural game theorists (e.g. Cramerer, 2003). Although not all problems being of interest to the CAR researcher can be given mathematical descriptions with equal ease, all decision problems can be conceptualised mathematically as maze problems (Simon, 1996, p. 54).

The Networks of Action (NoA) approach can also be understood as dealing with decision problems and maze models. However, as explained by Monteiro (2006), the difference between action research methods like CAR used for researching how to develop information systems (IS) and NoA used for researching how to develop information infrastructure (II) can be compared to the difference between building a house and building a city. Using a geographical map for commenting on the ideas described in the NoA paper (Braa et al., 2004), Monteiro continued by explaining how the process of city development can be thought of as a process of “conquering the world” in the sense of the II game being concerned with monopolising global information technology standards in the same way as city development depends on having monopolised standards for the roads, bridges, water supply, sewers, electrical grids and so forth. Building on these comments, Øgland (2013) argues that understanding and knowing how to play the II game is similar to understanding and knowing how to play the Monopoly board game (figure 1).

Figure 1. Using the Monopoly game for analysing information infrastructure development (http://www.freewebs.com/brettmeyer/formonopoly.htm)

According to Orbanes (2006), the Monopoly game was originally designed as a serious game for understanding the need for tax reforms in North America at the beginning of the 20th century (“The Landlord’s Game”), but was slightly modified and became a popular under the name of “Monopoly” during the great depression in the 1930s, and has remained one of the most popular board games in the world ever since. In the context of how Monteiro talked about II development as city development, the
Monopoly game can be thought of as a game about city development in the sense that the positions on the game board represent parts of the city infrastructure like water works, electricity, railroads and streets that can be used for real-estate development.

It is also interesting to notice how the Monopoly board game was originally designed as a teaching tool embodying a left-wing ideology in terms of showing how the winning strategies of people like John D. Rockefeller, Andrew Carnegie and J.P. Morgan made everybody else loose while the way the game has been played since 1935 is more easily understood as supporting a right-wing ideology where the social hierarchy is seen as inevitable or desirable. According to Wuffle (1978), the Monopoly game is a capitalist instrument for economic indoctrination. On the other hand, when Monteiro was explaining the NoA paper, the morals embedded in the Monopoly game of II development was based on the economic philosophy of Sen (1999) and made operational through Scandinavian IS researchers aiding the development of health care information infrastructure in third world countries. From a mathematical point of view, however, the Monopoly board game is a dynamic systems model and can be used for representing all sorts of ideologies and political interactions that exhibit Monopoly-like dynamics (Luenberger, 1979, pp. 232-234).

As explained by Elster (1982), the benefit of using a game model like Monopoly rather than verbal descriptions of II challenges and solutions is that the mathematical language of game theory makes it possible to develop a falsifiable empirical science for understanding social interaction in similar ways to how the scientific method is used in engineering and natural science. The Monopoly model can be used for representing problems in the social world that involves one or more decision makers, model conclusions can be found through pen-and-paper calculations or computer simulations, and the model conclusions can be tested in the real world and thus provide feedback on whether the Monopoly conceptualisation was adequate or not. As illustrated by Orbanes (2013), the Monopoly game can be used as an effective model for understanding and teaching personal finance. It can also be used as a model for understanding business and real-estate development (Axelrod, 2002), but the more removed the game becomes from the phenomenon it tries to explain, the more abstract and general the insights from using the model tend to be (Øgland, 2013, p. 17).

![Figure 2](http://www.hall8.com/sr/rec/monopoly-deal/)

According to Broadbent and Weill (1998), managing the corporate information infrastructure is similar to financial portfolio management. The parts of the IS portfolio that produces a good return on investment should be taken good care of while less important investments should be given less attention. Monteiro and Hanseth (1996) disagree with this metaphor as it ignores the complexity of the infrastructure in terms of how different systems depend on each other and thus making simple portfolio management strategies irrelevant. The IS portfolio management method has to be thought of like a cultivation method, they argue, similar to how Monteiro talked about city development. Just like the Monopoly portfolio (property
sets) management in figure 2, a player cannot manage this without understanding how the properties relate to each other and how the states and dynamics of Monopoly game-play change over time.

Although the IS portfolio management strategy has to deal with more complex environment, this does not necessarily mean that the strategy itself has to be more complex, but it has to be designed for dealing with unpredictable complexity. The Bootstrap Algorithm (BA) strategy for developing information infrastructure is described in table 1. The statements in the BA refer to the development of II through IS solutions, users and practice, and how one can bootstrap the II by cultivating the installed base. By thinking about the BA in terms of city development through real-estate speculations it can also be thought of as a Monopoly strategy (Øgland, 2013).

<table>
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<tr>
<th>Start with</th>
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<tr>
<td>• simple, cheap, flexible solution</td>
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<tr>
<td>• small network of users that may benefit significantly from improved</td>
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<tr>
<td>communication with each other only</td>
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<td>• simple practices</td>
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<td>• non-critical practices</td>
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<td>• motivated users</td>
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<td>• knowledgeable users</td>
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<tr>
<td>1. Repeat as long as possible: Enroll more users</td>
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<td>2. Find and implement more innovative use; go to 1</td>
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<td>3. Use solution in more critical cases; go to 1</td>
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<tr>
<td>4. Use solution in more complex cases; go to 1</td>
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<tr>
<td>5. Improve the solution so new tasks can be supported; go to 1</td>
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</table>

Table 2. Bootstrap Algorithm for information infrastructure design (Hanseth & Aanestad, 2003)

When interpreting the BA in the context of developing a RCA needed for doing CAR, the “users” are researchers and clients, the “practice” refers to what the clients are doing (trying to improve organisational performance) and what the researchers are doing (researching), and the “solutions” refer to contracts, agreements, strategies, documents and systems used by the researchers and clients in support of their practices. The logic of the algorithm can thus be seen as starting with relevant communities of performance improvement at the client site and the organisational research at the research site and then trying to network the two communities together in the bottom-up fashion described by the five steps of the BA control loop.

Hypothesis: The BA is an optimal strategy for establishing the RCA needed for doing CAR

According to Simon (1996, p. 118), hypotheses in design research should be formulated by claiming the strategy to be optimal. What is meant by optimal in the hypothesis above is that the BA strategy used by the researcher and the counterstrategy used by the client are expected to be a Nash equilibrium in the sense that neither want to change strategy when the pair of strategies are being played (Binmore, 2007).

3 RESEARCH METHOD

It might be useful to think about action research methods designed for dealing with specific levels of understanding such as (i) individual users, solutions and practices, (ii) systems of users, solutions and practice, and (iii) infrastructures in terms of networks of systems. CAR has been designed for developing theory about how to design and improve information systems. NoA has been designed for wider context of managing a network of action research projects. For the purpose of investigating particular components of CAR, as is the aim of this study, the focus should be on the individual researching strategies aimed at developing him from a CAR practitioner into a CAR professional (Schön, 1983).

Self-improvement action research (McNiff & Whitehead, 2006) is a research approach designed for such purposes. It was developed by teachers and university lectures for aiding people within the educational
community to reflect and improve upon their own practices, but it has developed and become applicable for practitioners in all fields who want to become more professional through the process of improving personal practices, tools and processes. In this study the self-improvement action research approach is used for investigating the BA hypothesis in real-world situations.

3.1 Population and sampling procedure

The population consists of canonical action researchers trying to establish a RCA between academia and some organisation while facing political challenges that makes this into a non-trivial problem. Although age, gender, culture and geography are not specifically mentioned when characterising the population, the kind of political challenges that are supposed to define the population are the kind of challenges one would expect to find when developing information infrastructure in public organisations like health care, education, social care and government.

The population sample consists of an action researcher working within a Norwegian public sector financial institution. After having completed a PhD in information systems research at the University of Oslo, he is working as a research scientist within an IT staff position of the financial institution, meaning that CAR is being implemented in the context of “improving your own organisation” (Coghlan & Brannick, 2000). Nevertheless, as the standard interpretation of the RCA in CAR is an agreement between academia (researcher) and industry (client), the terms will be used in this CAR-manner.

3.2 Data collection

Data is needed both for checking the RCA criteria in table 1 and monitoring the performance of the BA process in table 2. As the process of bootstrapping a RCA consists of discussions, observations, interviews and document reviews, the data is dominantly of a qualitative nature. In order to research the process, however, it has also been necessary to use instruments like a stop watch and word counter for measuring issues like the cost of writing research proposals and papers.

Data collection started in November 2013 with the initial correspondence and discussions about a RCA for initiating a CAR process and was completed in June 2014 when the process ran out of financial funding. Seven months of data collection and research, covering 32 weeks at the cost of 37.5 hours of work per week, amounts to a total cost of 1200 man-hours.

3.3 Data analysis

The causal relationships in the hypothesis are represented in figure 3 by first suggesting that the control and stability of the BA strategy has an impact on the success in meeting the RCA criteria and then suggesting that the environmental counterstrategies may moderate the impact.

![Figure 3. Model of causal relationships in the self-improvement process](image-url)

Different kinds of data analysis will be used for different parts of the model. In the case of analysing the control and stability of the BA strategy, the execution of the strategy will be narrated in terms of describing Monopoly game play. As indicated by the arrow on the top of the model (figure 3), winning the game of Monopoly in this context is the same as being able to establish a RCA that meets with the
RCA criteria in table 1. The top arrow from left to right symbolises the part of the hypothesis stating that
the BA strategy is capable of establishing a RCA for CAR.

Success in meeting the RCA criteria depends partly on being able to interpret the criteria in a reasonable
manner. Some of the criteria can be met by identifying relevant documents. Other criteria have to be
evaluated using more subjective means.

The lower part of the model (figure 3) represents the actions of the other players taking part in the
Monopoly game. Analysing environmental counterstrategies is a hermeneutical exercise. If the
hypothesis is correct in the sense of the BA strategy being optimal, there should be no change in
environmental strategies over time, or at least the variation in environmental strategies should gradually
disappear and become fixed as the researcher and the environment reach a mutual understanding of what
kind of strategies are being played.

4 ANALYSIS OF RESULTS

As explained in the method section, the analysis of results will be narrated as though the action researcher
was participating in a game of Monopoly.

4.1 Preparations

When preparing for Monopoly game play, the game board is taken out of the box, the players choose
tokens and each player is given an initial sum of 1500 dollars and placed at the bottom right corner
position in figure 1 named “Go”.

In the RCA research game the preparation started with the researcher having been awarded a PhD ($1500)
for defending a CAR-based thesis on how to use the BA for implementing total quality management
(TQM) in public sector organisations and had placed himself on the “Go” position for starting the
Monopoly game of how to establish a RCA for starting a new cycle of CAR. Another key player in the
Monopoly game was the IT director in the financial institution that had financed the PhD research. Other
players were a handful of professors at the IS department of the university that had been managing the
PhD process.

4.2 The game begins

Monopoly starts by having the players using the dice for deciding the sequence of playing. The first
player then throws the pair of dice, moves his token and lands on a chance card, a community card or a
property. If he lands on a property he decides whether to buy. If he decides not to buy the bank will put
the property up for auction. The next player throws the dice, moves the token and makes decisions in
similar fashion, but in case he lands on a property owned by somebody else he has to pay rent.

In the case of the RCA research game, the action researcher was the last to go. However, he was lucky
and threw a three and a five and landed on Vermont Avenue in the light blue series. The professor who
had supervised him through the PhD research owned the two other properties in the series and was using
these as part of a strategy of monopolising IS research about organisational and individual
learning. Discussing with the professor, the action researcher bought Vermont Avenue for $100 hoping that he
could assist the professor in achieving a light blue monopoly and that this could be used as part of a basis
for a RCA.

The next time it was the action researcher’s time to throw he got double twos and moved to the unsold
Electric Company ($150) which together with the Water Works makes up the infrastructure set in
Monopoly. In the RCA version of the game the Electric Company represented the research group at the
financial institution. They were interviewing members of the institution who were enrolled in or had
completed a PhD programme. The institution was interested in collaborating with scholarly institutions.
Due to the double twos, the action researcher was allowed to throw again. This time he threw a two and a four and landed on Tennessee Avenue (orange) owned by the IT director and paid $14. Although the IT director had financed the PhD research, he was ambivalent in terms of how the financial institution should profit from having a PhD research scientist. Before being assigned to the PhD programme, the action researcher had been using critical theory for implementing TQM in the financial institution in the capacity of being quality director. As the critical perspective resulted in clashes with the managerial perspective, the management decision was to handle the quality manager by enrolling him in a PhD programme.

From the viewpoint of the BA in table 2 the initial steps of the algorithm had now been completed. The installed base described as small, cheap and simple network of solutions, users and practices have been identified in terms of the professor developing the light blue series, the research management group at the financial institution represented by the infrastructure property group and the IT director developing the orange series. Although it was still unclear how stable the installed base was, it would be worth trying whether a RCA could be developed by cultivating the installed base.

4.3 Trading and negotiating properties

Monopoly is a game of luck, but it is also a game of skill and strategy. Skills in Monopoly trading and negotiating have to be developed through experience by playing Monopoly, consulting Monopoly literature, and making use of experience in how to trade and negotiate from other domains.

When the action researcher landed on Tennessee Avenue he was in a trading position in the sense that he wanted to develop as a CAR practitioner by helping the financial institution to improve TQM performance while he also knew that the IT director had responsibilities towards the director-general in terms of making sure that the quality and security aspects of the IT department were under control. Although the IT director may have had mixed reasons for enrolling the quality director into the PhD programme, he was getting an action researcher with a PhD in TQM in return at a time when the organisation was struggling with TQM challenges.

The trade the IT director was willing to make was to allow the action researcher maintain his job description as a research scientist within the financial institution if he was able to find external financial support for doing the research. Considering the alternative of burning all bridges with the scholarly community by having the IT director redesign his job description from research scientist to office clerk, the action researcher threw a double and landed on Kentucky Avenue ($220) which was part of the red series collected by a professor who was an authority on information infrastructure. The professor was supportive of the RCA idea.

Having thrown a double, the action researcher threw again, getting another double, and landed on Ventnor Avenue ($260) which was a part of the yellow series collected by two professors who were both involved in a collaborative Master of Science (MSc) programme between the university and industry. Both professors were supportive of the RCA idea and suggested that the CAR at the financial institution could perhaps be financed by having people from the institution enrolled in the MSc programme and having the action researcher supervising some of the MSc students.

However, when throwing for the third time in a row, the action researcher hit the “go to jail” position as the university had no current budgets for financing the RCA.

From the viewpoint of the BA in table 1, the continued movements around the Monopoly board represent actions in the control loop like enrolling more people and trying to find and implement more innovative use of the CAR design. Between the time of meeting with the IT director and when being sent to jail because the university had no budgets, the action researcher had been writing a research proposal that tried to define a unified research programme that would make sense from the viewpoint of organisational learning (blue series), IT governance (orange series and yellow series), information infrastructure (red series) and the action researcher’s personal expertise and interest in TQM research.
4.4 Developing properties

When a player is being sent to jail in Monopoly, he gets no salary when passing “go” and has to sit in jail until he throws a double, uses a “get out of jail” card, or pays a $50 fee.

While sitting in jail the action researcher was visited by the IS learning professor who suggested a way of seeking external funding from a regional research fund. The action researcher informed the IT director and spent the remaining time in jail writing and submitting an application for a research grant.

After paying $50 to get out of jail, the action researcher threw a one and a three which moved him into the unsold Virginia Avenue ($160). He bought the property, and traded properties with the other scholars for getting a monopoly that would allow him to do property development. In Monopoly the property development consists of building houses and hotels. In the RCA game the development consisted of writing and submitting journal and conference papers based on the research proposal. Due to the trading with the other scholars, the papers were mixing TQM theory with organisational learning, information infrastructure and IT governance.

When it was his turn again, the action researcher had developed a series of four different papers that were submitted or almost ready to submit to academic outlets, but throwing a three and a five sent him to the chance card position just before Indiana Avenue. The chance card read that he should go to jail as his application for research funding had not been granted.

From the viewpoint of the BA, the property development can be seen as a continuation of the cycling through the control loop in table 2 by using the solution in more critical cases and more complex cases while continually trying to improve on the solution in order to support other tasks.

4.5 Game over

In the game of Monopoly there is only one winner. Due to the dynamics of positive returns, the gaps in wealth and income between players increase as the game goes on. At a certain stage the game usually reaches a tipping point where one player increases his wealth and income in an exponential fashion while the others go bankrupt one by one.

This is Monopoly seen from the winner’s perspective. However, not all players are able to survive until this final phase. The first person to go bankrupt can do this quite early in the game while the others keep on playing for a long time. In the RCA story it is not clear whether the failure to get scientific funding was a termination signal for the control criterion in the BA in table 2 or whether it was a temporary setback. Nevertheless, when looking at the outcome of the process in comparison to the RCA criteria, the overview in table 3 defines the outcome a failure in terms of only meeting with 70% of the RCA criteria.

As seen from the comments in the third column of the RCA evaluation table, most of the “successes” are only successful in terms of having formal agreements to constitute a RCA without being certain that this will result in practical agreements that allow CAR to be carried out. The “failures” are caused by how a third party is evaluating the research project. It was the client who insisted on external funding as part of the RCA, but the operational reason for BA failure was on the researcher-side of the RCA.

As the research model in figure 3 fails at the upper level of the model, in the sense that the narrative does not given clear support to the claim that the BA works as a strategy for establishing RCA in CAR, the question of optimality is irrelevant. Nevertheless, the lower part of the model is still interesting in the sense of whether the failure could be explained by the environmental counterstrategy. For instance, if the Monopoly narrative illustrated some kind of breakdown in the environmental counterstrategy that would render the BA strategy obsolete, this would alter the interpretation of the experimental outcome. However, as the Monopoly narrative gives no indication of this, the operational version of the BA hypothesis must be seen to have empirically failed.
11te konferanse for nettverk for organisasjonsforskning i Norge – NEON 2014

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<tr>
<th>#</th>
<th>Criterion</th>
<th>Observations and comments</th>
<th>Score</th>
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<tbody>
<tr>
<td>1a</td>
<td>Did both the researcher and the client agree that CAR was the appropriate approach for the organizational situation?</td>
<td>The client agreed on submitting the research project grant application that explains CAR, but it is unclear whether the client fully understands and agrees with the nature of CAR.</td>
<td>1</td>
</tr>
<tr>
<td>1b</td>
<td>Was the focus of the research project specified clearly and explicitly?</td>
<td>The research proposal makes the CAR project explicit, but the overall evaluation score from the research council was 3 out of 7 indicates that it was not specified explicitly enough.</td>
<td>0</td>
</tr>
<tr>
<td>1c</td>
<td>Did the client make an explicit commitment to the project?</td>
<td>It is unclear how deeply the client read the proposal, but they recommended the research grant application to be sent.</td>
<td>1</td>
</tr>
<tr>
<td>1d</td>
<td>Were the roles and responsibilities of the researcher and client organization members specified explicitly?</td>
<td>It is explained how the researcher will try to research his own practice of auditing the quality management system, but it is still not clear to which extent the client would be willing to allow the researcher to design and evaluate interventions.</td>
<td>1</td>
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<tr>
<td>1e</td>
<td>Were project objectives and evaluation measures specified explicitly?</td>
<td>The overall feedback score of 3 out of 7 from the research council indicated that project objectives and evaluation measures could be more clearly defined.</td>
<td>0</td>
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<tr>
<td>1f</td>
<td>Were the data collection and analysis methods specified explicitly?</td>
<td>A section in the research proposal called “analysis of data” gives an overview of methods to be used.</td>
<td>1</td>
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<td></td>
<td>Average score</td>
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<td>0,7</td>
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Table 3. Evaluation of the RCA criteria at the end of the study (score: 1 = success, 0 = failure)

5 DISCUSSION

The purpose of the discussion is to reflect on why the BA strategy did not manage to establish a RCA needed for doing CAR. As the operational version of the BA strategy described through the Monopoly narrative in the analysis of results section was designed as a treatment corresponding to the diagnosis implied by the operational Monopoly model, there are four categories of explanations depending on whether the diagnosis was right or wrong and whether the treatment was right or wrong.

5.1 Wrong diagnosis, wrong treatment?

One possible explanation for why the RCA was not established could be that the action researcher was incompetent in the sense of not only misinterpreting the situation but also applying a strategy that would be inconsistent with that interpretation. This seems unlikely, however, as the researcher had successfully defended a PhD thesis where the Monopoly diagnosis had been applied in three different organisational setting with operational versions of the BA strategy being developed and used as treatment.

5.2 Wrong diagnosis, right treatment?

Given the researchers documented competence in the methods used in this study, a more likely explanation would be that the design and evaluation of the BA treatment was competently done although in the context of having misunderstood the situation. The action researcher was spending seven months using the BA strategy for the purpose of developing a RCA needed for doing CAR under the impression that this would be a feasible task. As a consequence of this, the Monopoly board representation of the situation looked more or less like a normal Monopoly board. However, if the was some kind of
conspiracy either in the client environment or the research environment that would make a RCA impossible, the Markov representation of the Monopoly model could have been something like “black monopoly” (figure 4) where all state variables lead to the same negative outcome (Luenberger, 1979, p. 234). No matter how skilled a person is at playing Monopoly, some Monopoly configurations are theoretically or practically impossible to win.

![Figure 4](http://www.ebaumsworld.com/pictures/view/1022016/)

*Figure 4. Would this be a better model for the RCA game of initiating canonical action research? (http://www.ebaumsworld.com/pictures/view/1022016/)*

There are some parts of the story that makes this kind of interpretation possible. In the part of the story where the action researcher lands on the property owned by the IT director it is explained that the action researcher had previously held the position as quality director but was forced out of the organisation in a gentle manner by enrolling him into a PhD programme. Although getting a PhD action researcher in return, it is not unlikely that the IT director would be worried about allowing him to design, implement and evaluate organisational interventions.

On the other hand, the IT director had nothing to do with the application for research grant being rejected. By saying that external funding was needed for letting his own people do action research in his own organisation he was perhaps making it more difficult to start a CAR process, but there may also be legitimate reasons for doing so as having a financial collaboration for doing the CAR would make the process easier to defend in case of questions from the director-general, the national auditor general and other stakeholders.

### 5.3 Right diagnosis, wrong treatment?

A diametrically different explanation would be to suggest that the diagnosis was right in the sense that the situation would make a RCA possible, but this did not happen because the BA strategy was implemented and executed in a manner that was inconsistent with the diagnosis. Mintzberg (1994) is fond of this kind of explanation. The way he sees it, it is not uncommon that there is a wide gap between intended strategies and the emergent strategies that are being used in practice. The more complex a situation is, the more likely this is to happen.

Even if the action researcher had a fair understanding of the situation and knew more or less how to use the BA strategy for interacting with the various representatives from the client side and the research side,
it may not always be easy to distinguish the important few issue from the trivially many. For instance, the researcher spent much time reading and writing and little time chatting with scholarly colleagues or fraternising with the IT director and his immediate group of associates. Considering that the BA is essentially a political strategy, a possible reason for failure could have been the lack of “street-smartness”.

5.4 Right diagnosis, right treatment?

A final explanation would be that the approach was essentially correct but the reason for failure was partly due to chance and partly due to inexperience. Although there is no doubt that an expert Monopoly player would be expected to outplay a novice in tournament play, Monopoly is a game that also incorporates a large element of randomness through the use of dice and chance cards. Orbanes (2013, pp. 134-158) illustrates this in his account of the 2009 US championships where Tim Vandenberg, a Californian teacher who uses the Monopoly board in classroom for teaching his children probability theory and a broad range of mathematical topics, made intelligent investments, managed to build the highest net worth in round sixteen but was then rivalled by New York attorney Richard Marinaccio who used increasing returns to develop a lock-in and become the winner by bankrupting Vandenberg in round twenty-two.

Although this explanation by referring to bad luck may be the most satisfying from the viewpoint of the researcher, it is also the kind of explanation that is least likely to result in learning as such explanations tend to save the hypothesis no matter what the outcome of the experiment should be. Nevertheless, both Monopoly and II development are games of strategy, skill and luck with luck being an important component. In laboratory settings random effects can be controlled by increasing the sample size, but action research studies are typically designed as single-sample research which means that the only way of understanding variation is by repeating the experiment through more action research cycles.

6 CONCLUSION

6.1 Contributions to theory and practice

As was pointed out in the introduction, the RCA principle in CAR is important and CAR practitioners need to make sure that all the six RCA criteria are being met when they are conducting CAR. What is not mentioned with equal emphasis in CAR literature is that it may sometimes be difficult to meet the criteria. In this study, however, it has been argued that the ideas associated with the Networks of Action (NoA) portfolio management method might prove a useful way of establishing the RCA needed for doing CAR.

Although the outcome of the experiment used for testing NoA for establishing RCA was not a success, by analysing the reasons for failure the NoA approach still looks promising. What the study illustrated was that the NoA approach, theorised through the use of the Monopoly game and the bootstrap algorithm (BA), needs to be made operational through elaborate care. When reflecting upon why the experiment failed, two important opportunities for improvement were identified. The first opportunity was to make sure that the Monopoly model resulting from diagnosis does not remain uncontested. The second opportunity was to monitor the balance between reading and writing on the one hand and practical socio-political interactions on the other.

The contribution to CAR theory in the context of these two opportunities to improvement is to suggest that the existing CAR methodology should be revised in terms of making the establishment of a RCA into an explicit purpose defining the first cycle of CAR. Unlike the other four principles of CAR, used for dealing with the cyclical process model, theory, change through action and specification of learning, the RCA principle depends not primarily on theoretical and methodological positioning within the philosophy of science but on understanding of the empirical context for the situation where the CAR project is supposed to be implemented.
The contribution to CAR practice in the context of the two opportunities for improvement is to suggest that the NoA approach used in this study could be a viable way of establishing RCA in complex environments by applying the BA strategy that depends on a mixture of strategy, skill and luck. Although the RCA experiment in the study failed due to lack of skill and luck, there was nothing in the study that indicated anything wrong with the strategy itself.

6.2 Limitations and directions for future research

The study has limitations that may suggest further possibilities for empirical research. Although single-subject action research should be a relevant design for investigating the practical challenges in implementing CAR, the outcome of such a design should be expected to depend on the person conducting the research. In consideration of how frameworks like NoA implemented through means of a BA depend on strategy, skill and luck, there is need for more single-subject action research studies with other situations, other clients and other researchers to get a more complete understanding of how the NoA approach can be used for the developing a RCA for doing CAR.

Another limitation has to do with theory. Although the research hypothesis could be seen to be fitting with the CAR template “in situation S that has salient features F, G and H, the outcomes X, Y and Z are expected from actions A, B and C”, as the research methodology did not include methods for ensuring that the BA representation of the theoretical actions A, B and C were translated into falsifiable empirical actions A’, B’ and C’, the outcome of the research had to be discussed in the context of whether the diagnosis was right but the treatment wrong. Based on how the Monopoly game and game theory in general was used in this study, a relevant direction for future research would be to investigate the effect of looking at mathematical games (diagnoses) where the solutions (treatments) are known. This would suggest that differences between the theoretical prediction (treatment) and the empirical observations (treatment) are consequences of having made an incorrect diagnosis.

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References


