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action research**



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On various characteristics of action research

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Abstract

Action research is normally started from practitioners' initiative. When it supports both science and practice, hence rigor and relevance, we can highly recommend it. Iivari already in 1991 saw action research one of the ideographic research methods. Later both Cole et al. (2005) and Järvinen (2007) paid attention to the similarities between action research and design research. In his paper (2007a) Iivari presented new claims on differences between action research and design research. He continued with Venable (2009) his debate with paper: "Action research and design science research – seemingly similar but decisively dissimilar". We in this paper try to understand and partially solve that contradiction. In addition to that we also provide new information about the following two important issues: Should an action research project be a user-guided or researcher-guided? Which kind of outcomes can action research provide?

Introduction

Rapoport (1970) defined *action research* (AR) as the method which "aims to contribute both to the practical concerns of people in an immediate problematic situation and to goals of social science by joint collaboration within mutually acceptable ethical framework" (p. 499). Hult and Lennung (1980) performed a wide literature survey and then formulated a new definition of actions research: *Action research* simultaneously assists in practical problem-solving and expands scientific knowledge ... as well as enhances the competence of the respective actors ... being performed collaboratively ... in an immediate situation ... using data feedback in a cyclical process ... aiming at an increased understanding of the totality of a given social situation ... primarily applicable for the understanding of change processes in social systems ... undertaken within a mutually acceptable ethical framework". Hence, action research seems to satisfy the requirements of both relevance and rigor much discussed, e.g., in the special issues of MIS Quarterly (March 1999) and Communications of AIS (March 2001), in Information Systems.

Susman and Evered (1978) described the cyclical process of action research called canonical action research (CAR) (Figure 1).

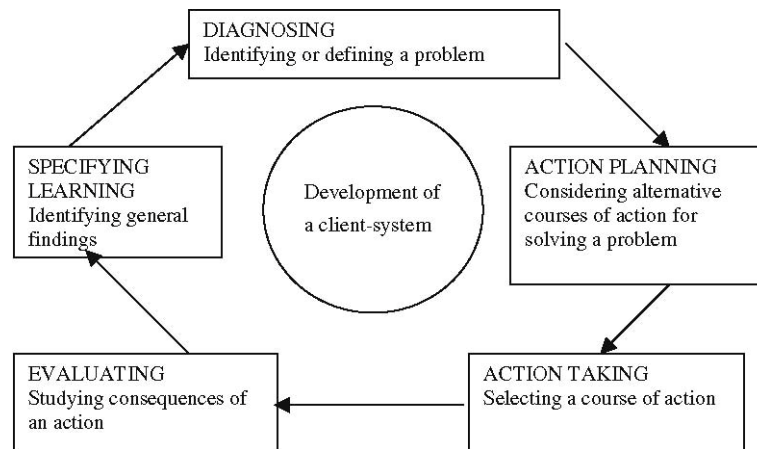


Figure 1. The cyclical process of action research (Susman and Evered, 1978).

The cyclical process with the five steps (1. diagnosing, 2. action planning, 3. action taking, 4. evaluating and 5. specifying learning) resembles a general problem solving process and some information systems design methodologies. It is therefore interesting to consider how similar action research and design research are.

An acceptance of action research in information systems was originally problematic. Ives et al. (1980) developed a comprehensive framework for research in Management Information Systems (MIS). The new framework is validated by mapping 331 MIS doctoral dissertations into its research categories. The dissertations are also classified by research methodology employed. “As part of the analysis of dissertations, the authors also classified the research strategies employed using Van Horn’s (1973) taxonomy of MIS research methods – case studies, field studies, field tests, and laboratory studies. Another method, action research, has been suggested as an MIS research approach by Keen (1974) and Gibson (1975). Action research includes the researcher as an active participant rather than a passive observer. ... Only one dissertation employed action research as part of a case study strategy.” (p. 927)

In the next ten years the situation was not much improved, because Orlikowski and Baroudi (1991) examined 155 information systems research articles published from 1983 to 1988 and found one action research study only in their sample. Iivari (1991) recognized action research as a research methodology and classified it into idiographic research methods. Chen and Hirschheim (2004) examined 1893 articles published in eight major IS publication outlets between 1991 and 2001. They found that the five most common research designs were: survey (41 %), case study (36 %), laboratory experiment (18 %), action research (3 %) and field experiment (2 %), and they classified survey, laboratory and field experiments as positivist research methods.

Chen and Hirschheim provided a historical analysis of positivist and interpretivist research paradigms and methodologies but they consciously excluded critical studies. Richardson and Robinson (2007) investigated critical IS research over the period of 1991-2001. They found 31 papers classified as critical research. All types of the IS studies were not, however, identified, because design research (DR) or design science was not recognized as a separate

paradigm as it could be (Järvinen 2004, 2008) nor a research method (Iivari 1991, Iivari, Hirschheim and Klein 1998). Because two latter references belonged to the Chen and Hirschheim's sample and were especially known to Hirschheim, we can conclude that constructive research methods needed in design research were not most popular in the sample.

According to Iivari (1991, 2007a) action research is an ideographic research method and according to Chen and Hirschheim (2004) an interpretivist one. But Cole et al. (2005) and Järvinen (2007) saw action research similar to design research. We clearly have two conflicting views. We must therefore ask: Could we solve this conflict and how?

Already Rapoport (1970) wrote that "in service-oriented action research conception places the initiative with the client who states, conventionally, that he has a problem that needs solution and approaches the social scientist who then responds by undertaking such studies as seem required to help to solve the problem" (p. 508). Rapoport continues: "This contrasts with the whole ethos of the academy, where protections have been erected and maintained to take the immediate ebb and flow of practical pressures off the scholar so that he may conduct the disinterested pursuit of knowledge with minimal interference. Initiatives in the latter case ideally emerge purely from the internal logics of a discipline. If they are referred to the 'real world' outside, it is to test hypotheses or verify analyses." (p. 508) Rapoport (1970) outlined some advice by saying that "emphasis is placed on the collaborative nature of the enterprise, the client providing the problem and the wherewithal to solve it and the social scientist the concepts and methods to effect the solution. ... The presenting problem might not be the most important one with which work had to be done. The client would have to shift his perception somewhere along the way from the initial formulation to another one as the social scientist conducted his diagnostic work and feasibility studies." (p.509) Thinking above raises at least two important questions: 1) Should an action research project be a user-guided or researcher-guided? 2) Which kind of outcomes can action research provide? After Rapoport (1970) we have found some new material from separate sources. Hence, it is important to gather and present that information.

Action research seems to create many questions that are different kinds. To summarize, we are interested in consideration whether action research and design research are similar and why and why not, or when and when not? Should an action research project be a user-guided or researcher-guided? Which kind of outcomes can action research provide? In the next sections we shall follow that order.

Are action research and design research similar, why and why not, when and when not?

About similarities

In order to first consider the similarity question we found that Baskerville and Wood-Harper (1998) might be the first ones who implicitly paid attention the similarities between action research and design research. They find "the ten action research forms: canonical action research (Susman and Evered 1978), information systems prototyping, Soft Systems Methodology (Checkland 1981), action science (Argyris et al. 1985), participant observation, action learning, Multiview, ETHICS (Mumford 1986), clinical field work and process consultation". To our mind, information systems prototyping, Soft Systems Methodology, Multiview (Avison and Wood-Harper 1991) and ETHICS (Mumford 1986) belong to design research, too.

The explicit similarity claim is based on our study (Järvinen 2007) where we compared some features of action research (AR) and design research (DR) (Table 1).

Table 1 Similarities of the fundamental characteristics of action research and design science

Action research	Design science
AR-1: Action research emphasizes the utility aspect of the future system from the people's point of view.	DS-4: Design science's products are assessed against criteria of value or utility.
AR-2: Action research produces knowledge to guide practice in modification.	DS-2: Design science produces design knowledge (concepts, constructs, models and methods).
AR-3: Action research means both action taking and evaluating.	DS-3: Building and evaluation are the two main activities of design science.
AR-4: Action research is carried out in collaboration between action researcher and the client system.	DS-5: Design science research is initiated by the researcher(s) interested in developing technological rules for a certain type of issue. Each individual case is primarily oriented at solving the local problem in close collaboration with the local people.
AR-5: Action research modifies a given reality or develops a new system.	DS-1: Design science solves construction problems (producing new innovations) and improvement problems (improving the performance of existing entities).
AR-6: The researcher intervenes in the problem setting.	DS-5: Design science research is initiated by the researcher(s) interested in developing technological rules for a certain type of issue. Each individual case is primarily oriented at solving the local problem in close collaboration with the local people.
AR-7: Knowledge is generated, used, tested and modified in the course of the action research project.	DS-6: Knowledge is generated, used and evaluated through the building action.

The first version of our paper was presented in the EURAM conference early May 2005. Simultaneously Cole et al. (2005) prepared their paper with the supporting results: "To examine the similarity between AR and DR, we applied the AR criteria developed by Davison et al. (2004) to an exemplar DR paper, applied the DR criteria by Hevner et al. (2004) to an exemplar AR paper. The exemplars selected for this cross-application were cited by other researchers as high-quality instances of their respective research approach. For the DR exemplar, we chose Markus et al. (2002). This study was reviewed by Hevner et al. and found to strongly adhere to the guidelines of DR as defined by them. For the AR exemplar, we chose Iversen et al. (2004), which, according to the editors of the September 2004 special issue of *MIS Quarterly* demonstrates adherence to action research standards and serves as a model for future action research projects (Baskerville and Myers 2004)." (p. 328)

Cole et al., however, were not very lucky. Firstly, it is true that Markus et al. (2002) is one of the first papers trying to apply Walls et al.'s (1992) ideas of design science to their research. But what Markus et al. found was no real kernel theory but merely the six characteristics of human being (Järvinen 2005, p. 19). Secondly, we have in our doctoral seminar every month read and evaluated three new articles. When we read Iversen et al. (2004) I wrote in my evaluation: "To my mind, this study is *not the typical action research* (Järvinen 2004, Section 5.3) *but more close to the field test* (Järvinen 2004, Section 3.2) of the frameworks (Table 1, Figure 4, Table 5) and methodologies (Table 2, Figure 6) the researchers developed based on their literature survey. I know that I over-generalize when I claim that *those results* the authors reported in the article *could be achieved by performing literature surveys* only, and thus without the empirical part." Thirdly, in my evaluation (Järvinen 2005, pp. 200-202) of Davison et al.'s (2004) article I questioned it as a good measurement instrument for action research. Although I support the Cole et al.'s final outcome, their evidence is not without dispute.

In addition to action research and field test the Iversen et al.'s (2004) article has the third interpretation too. Gregor and Jones (2007) used Iversen et al.'s paper as an example of design research in their article. Hence, Gregor and Jones slightly support that action research and design research are similar.

Iivari and Venable (2009) analyzed the overlapping activities between AR and DR and they identified three different cases: No overlap will take place when interests of design science research are either 'solving a purely technical problem by developing and evaluating a new solution technology' or 'solving a socio-technical problem in a non-action research context by developing a new solution technology, but evaluating it by means other than action research'. A slight overlap will take place when interest of design science research is 'evaluation of a solution technology developed separately'. A significant overlap will take place when interest of design science research is 'solving a socio-technical problem by developing a new solution technology and evaluating it in an organizational context'.

We can conclude that in the literature there are some other researchers that see similarities between AR and DR. It is important that also Iivari and Venable (2009) accept that in the socio-technical case there are similarities or overlaps between action research and design science research, and we must also remember that Iivari and Venable restrict their design science research to building and evaluating a technical artifact or subsystem.

Some comments on ontological and epistemological assumptions

In this sub section we first present Iivari's (2007a) views and then we describe how some other researchers see those aspects. Iivari (2007a) presented in his paradigmatic analysis that "many authors associate design science with action research (Burstein and Gregor, 1999; Järvinen, 2004; Cole et al., 2005). This is understandable, since both attempt to change the world. Yet I [Iivari] wish to emphasize that they are historically, practically, ontologically, epistemologically and methodologically quite different and that in my view they should be kept conceptually clearly separate. As is well-known, action research has its roots in Kurt Lewin and the socio-technical design movement (Baskerville and Myers, 2004), whereas design science research has its roots in engineering. In terms of van Aken (2004), action research has addressed more improvement problems than construction problems. It has been much more focused on 'treating social illnesses' in organizations and other institutions. Technology change may be part of that 'treatment', but the focus has been more on adopting

technology than building it. Design science research, especially in engineering and medicine, has focused on the construction of artifacts, most of them having material embodiment.¹ Even though it may be informed by practical problems, design science research, both the construction of new artifacts and their initial evaluation (testing), is usually done in laboratories that are clearly separated from potential clients.” (p. 53)

I agree with Iivari that “action research has addressed more improvement problems than construction problems”, because action research problems mostly are initiated by clients. But this does not prevent the possibility that during the action research project, some construction will be initiated and implemented.

Iivari (2007a) continued that “most design science research in engineering and medicine, for example, adopts a realistic or materialistic ontology, whereas action research at least accepts a more nominalistic, idealistic and constructivist ontology (Burrell and Morgan, 1979; Iivari et al., 1998; Niiniluoto, 1999). As Niiniluoto (1999) points out, materialism attaches primacy to World 1 in Popper’s classification and idealism to World 2. Action research, however, is interested in institutions of World 3, which is socially constructed. As a consequence, design science research, especially in engineering and medicine, has reflected a positivistic epistemology (Burrell and Morgan, 1979) both in terms of knowledge applied from reference disciplines (such as physics, chemistry and biology) and knowledge produced (design product knowledge, technology norms and technology rules), whereas action research is very strongly based on an anti-positivistic epistemology. Actually, one can claim that the very idea of action research is anti-positivistic in its epistemology. Each client organization is unique, with its own problems, and therefore one cannot treat all organizations using the same medication.” (p. 53) When Iivari (2007a) claimed that “artifacts developed in design science should first be tested in laboratory and experimental situations as far as possible” he at the same moment selected the positivist epistemology and did not consider developers and practitioners equal.

Braa and Vidgen (1999, p. 27) give another explanation by differentiating positivism, interpretivism and the third view as follows: “Typically, positivism is concerned with reducing the area of investigation in order to be able to make reliable predictions and explanations, while interpretivism is concerned with making a reading of a situation in order to gain understanding. We argue that in both positivist and interpretivist approaches the researcher is making an intervention, despite aspirations to being an objective outsider (or indeed a subjective insider), and that there will therefore be unexpected outcomes. In some forms of research, such as action research, the aim is to gain learning and knowledge through making deliberate interventions in order to achieve some desirable change in the organizational setting.”

By referring to Braa and Vidgen above it seems to me that the Iivari’s view above is based “a realistic or materialistic ontology” concerning human being, and “action research at least accepts a more nominalistic, idealistic and constructivist ontology” concerning human being. To my mind, the latter view on human being is more truthful than the Iivari’s one. The same difference might also explain the different views on epistemology. I can therefore better understand Cole et al. (2005) than Iivari who writes: “As a consequence, my conclusion is

¹ In the case of medicine design science research refers to the development of new drugs and treatments. (Iivari 2007a)

just the opposite to that of Cole et al. (2005), who maintain that design science and action research share important assumptions regarding ontology and epistemology.” (p. 53)

To summarize, we have demonstrated that if the constructivist ontology and the non-positivist epistemology are accepted for people, Iivari does not then succeed to deny that action research is similar to design research. It is another question whether a new artefact will be only composed of technology and data or does it also contain people as is usual in information systems.

Nomothetic or ideographic or constructive (design research) research methods?

In this subsection I like to analyze why I cannot support Iivari’s (1991) decision to consider action research as an ideographic method. In my analysis I will use both the research question and the nature of action research project to demonstrate my views.

Iivari (1991) claimed that “Burrell and Morgan (1979) distinguish two extremes in the case of methodology: nomothetic methods and idiographic ones. Taking into account the special character of IS and computer science as applied sciences, we can identify one more category of constructive methods:

I. Constructive research methods

- conceptual development
- technical development

II. Nomothetic research methods

- formal-mathematical analysis
- experiments (laboratory and field experiments)
- field studies and surveys

III. Idiographic research methods

- case studies
- action research” (Iivari 1991, p. 257)

Iivari (1991, p. 257) explained nomothetic and ideographic methods by citing Burrell and Morgan: “Nomothetic methods are ‘epitomized in the approach and methods employed in the natural sciences, which focus upon the process of testing hypotheses in accordance with the canons of scientific rigor’ while ideographic methods place ‘considerable stress upon getting close to one’s subject and exploring its detailed background and life history’ (Burrell and Morgan 1979, p. 6)”. Burrell and Morgan (1979, p. 6) also wrote that “the ideographic method stresses the importance of letting one’s subject unfold its nature and characteristics during process of investigation”.

Iivari did not question the methodological similarities of action research and design research. He agreed with Niehaves (2007) “that design science is not primarily an epistemological position. To me [Iivari] it is more a methodological category.” (Iivari 2007b, p. 114).

When Iivari (1991) positioned action research as an ideographic method he at the same moment emphasized that in those action research efforts the truth (not utility) was endeavored. When Hevner (2007) supporting Iivari (2007a) proposed that “the output from the design science research must be returned into the environment for study and evaluation in the application domain” he (and Iivari) could think the similar evaluation as Carlsson (2009) proposed. The latter namely presented that in the evaluation study “the aim [is] to produce

ever more detailed answers to the question of why an IS initiative - IS, types of IS, or IS implementation - works for whom and in what circumstances” (Carlsson 2009, p. 12). He calls this kind of evaluation “truth-driven”. The real design research Carlsson calls “solution driven”.

When Iivari (1991, 2007a) considers action research as an ideographic research method he then also has a certain type of research question in his mind. To concentrate on evaluation studies and to explicate the conclusion above we can say that, in general, the ideographic research methods are intended to reply to such a question as: Is a certain claim true or not and why? In the ideographic evaluation studies the formulation of a question could be: Why does a certain new information system work? On the contrary, the design research methods, in general, are intended to reply such a question as: Can we build a certain artifact? In the design research evaluation studies the formulation of a question could be: How good (in the utility sense) is a novel information system? Hence, concerning evaluation studies the differences in research questions seem to explain the conflicting views on action research.

Concerning the use of action research for evaluation of the IS initiative in the truth-driven sense the Iivari’s classification of action research is understandable but not in the solution-driven sense. In the latter Cole et al.’s (2005) and Järvinen’s (2008) interpretations of action research seem understandable.

Concerning the nature of the action research project we repeat that Rapoport (1970) outlined some advice by saying that “emphasis is placed on the collaborative nature of the enterprise, the client providing the problem and the wherewithal to solve it and the social scientist the concepts and methods to effect the solution”. I agree with Rapoport and argue that a researcher can bring her or his knowledge to help in solving the client’s problem. Knowledge a researcher provides concern some causal laws concerning relationships between two or more changeable variables. Those relationships must be taken from either type III or IV theories (Gregor 2006), i.e. it is possible either to predict or to predict and explain some relationships. The prediction is needed when something is planned to be changed in action planning phase. In a certain action research a researcher will then test the selected theory or theories.

There are two possibilities that we shortly analyze. First, if the action research case supports the selected theory/theories then the scientific contribution is not new but replication, and “replications of previously published work ... rarely offer enough of a contribution to warrant publication” (Colquitt and Zapata-Phelan 2007, p. 1303). Second, if the action research case falsifies the selected theory/theories, then we can utilize Lee’s (1989) advice for the theory-testing case study. If all the strong requirements stated by Lee (1989) are satisfied, the selected theory/theories can be falsified and this result is a very important scientific contribution. Normally Lee’s requirements are not met, and the researcher might then modify the selected theory/theories. We can conclude that if the selected theory/theories do help, the scientific contribution is minimal if they do not help the falsification case is worth to publish. Our characterization the nature of the action research project refers to the approach that resembles nomothetic research methods, not ideographic ones as Iivari asserted.

In the case of falsification, the client’s problem will not be solved, and hence the next cycle of action research is needed or the project will be finished. If the new cycle will be initiated, the client and the researcher must diagnose the reasons of the failure and find out new knowledge to be tried to solve the problem. The researcher can suggest the second best theory

to be used, or the client can provide some “theory” based his/her experiences in practice. Schneberger et al. (2009) call the latter a “little t” theory. The former case, the use of the second best theory suggested by the researcher, can again be success or failure, and the methodology and results can be evaluated as in the previous paragraph.

In the latter case, the use of the client’s theory, the researcher’s role will be changed. The researcher will be an observer and partly an outsider in the real context and can report about a new ‘little t’ theory and its use in a real case where a part of reality was tried to change. In the successful case the approach the researcher then applies to the object under study can be called both ideographic one (the new client’s theory can be published) and nomothetic one (the new theory receives support). I guess that Iivari hardly meant that action research is this kind of ideographic method.

We can conclude that the different formulations of the research question and the nature of action research project can explain differing views on research methods in action research. Iivari’s view can often lead to nomothetic research method and my view to design research. Also the consideration of the client’s and researcher’s roles might support the conclusion that in the action research project the researcher often applies a nomothetic and rarely an ideographic approach to.

Evaluation

Iivari (2007a) ended his criticism against action research as design research as follows: “Despite the differences between design science and action research, I [Iivari] do not claim that they are mutually exclusive. Action research may well be used to evaluate artifacts developed in design science, and it may also provide information on how to improve those artifacts. We have ample examples of the application of such action research in the context of the developing of IS development methods (ETHICS and ISAC, for example).² My [Iivari’s] claim is, however, that artifacts developed in design science should first be tested in laboratory and experimental situations as far as possible. One should not start with testing in the real situations, except perhaps in very exceptional, special situations.”

Iivari is not alone with his view. In his comment paper on Iivari’s (2007a) article, Hevner (2007) presented the three cycle model of design science research (relevance, design and rigor cycles) and described that “the output from the design science research must be returned into the environment for study and evaluation in the application domain. The field study of artifact can be executed by means of appropriate technology transfer methods such as action research (Cole et al. 2005; Järvinen 2007).” (p. 89).

I have some comments on the citation above. Evaluation is the fourth step in canonical action research, but the cycle of action research also covers the three steps: diagnosing, action planning and action taking. Iivari did not tell who will initiate the action research project in the evaluation case, developers/researchers or clients. We shall return to this question in the

² Recognizing the nature of systems development methods and approaches as “ways of thinking”, “ways of control”, “ways of modeling”, “ways of working” and “ways of support” (ter Hofstede and van der Weide, 1992), one can claim that a research approach that combines design science research and action research is particularly appropriate when developing systems development methods. Even in this case I am not sure that the systems development method should primarily be constructed in an action research context. Action research may be used in the evaluation (testing) and refinement of the method. (Iivari 2007a)

next section. Hevner's proposal that evaluation of the artifact should be executed as the field study might be impossible, if the utility of the artifact is evaluated, not an truth value concerning the artifact.

User-guided vs. researcher-guided action research

In this section my aim is to explore different consequences of who is an initiator of a certain action research project, client/user or researcher. We repeat Iivari's (2007a) claim that "artifacts developed in design science should first be tested in laboratory and experimental situations as far as possible". If design research is similar to action research, I then interpret Iivari's view in such a way that researchers perform both design and evaluation, and users are either totally excluded or kept as laboratory (test) animals. To my mind, this is an extreme end (researcher-guided) in the continuum between user-guided vs. researcher-guided studies.

Baskerville and Pries-Heje (1999) described that "the [research] program consisted of a survey and an action research study. ... The client was approached with the results from the interview survey and expressed an interest in experimenting with a prototype of the 'missing' problem structuring tool." (Baskerville and Pries-Heje 1999, p. 9) Their study is an example of the researcher-guided action research where the initiative for the study comes from researchers.

Another example is Lindgren et al. (2004), where the researchers presented that "even though the literature on competence in organizations recognizes the need to align organization level core competence with individual level job competence, it does not consider the role of information technology in managing competence across the macro and micro levels. To address this shortcoming, we embarked on an action research study that develops and tests design principles for competence management systems." (p. 435) Clark (1976) recommends that the client's problem is primary and the researcher's problem is secondary. From the Lindgren et al.'s paper I received such a view that the researchers were active and went into organizations with their ideas. To this end, I came to such a conclusion that the researchers' research intent was primary, although the six organizations during the first cycle and two ones during the second cycle participated in the action research projects, and with partially financing the projects. During the second cycle the researchers themselves built two prototypes and brought them into the two organizations for demonstrations and tests.

During our phone call between I and Iivari (2009) he explained that in action research there are two problems: "a client's problem that rarely produces scientific knowledge, and a researcher's problem that does it". To my mind, this differentiation might explain our conflicting views. When I has been describing similarities between action research and design research in Järvinen (2001, 2004, 2007, 2008), I have based my assertion to a client's problem of action research. When Iivari has emphasized dissimilarities, he might base his assertion to a researcher's problem in action research.

To my mind, the client's problem in action research is primary and it concerns some desire to solve a certain improvement problem. In few cases a construction of a certain artifact or innovation is also possible (cf. van Aken 2004). The goodness of the potential solution can be measured by using some goal function (Järvinen 2008). Hence, action research and design research are similar. Based on Clark (1976) I see the researcher's [research] problem as a secondary, and the researcher cannot always even study his/her research problem in

connection with the action research project. If she/he can do that it will happen in the circumstances of the action research project.

According to my understanding, Iivari emphasizes either the truth by using the ideographic approach during the action research project or the goodness of the artifact in evaluation. As I showed above seeking the truth might lead scientifically rather modest results and mainly with nomothetic approaches. The idea to first develop the technical artifact in a laboratory and then to evaluate it as the action research project means that the developers/researchers initiate the project. - According to personal experience, those action research projects where we as researchers presented an initiative failed, but those action research projects where clients presented an initiative to us succeeded.

To summarize, both differentiations (user-guided vs. researcher-guided action research, and primary vs. secondary problem) seem to at least partially explain my and Iivari's conflicting views on action research. We do not speak about the same problem; Iivari is speaking about the researcher's problem and I about the client's problem. Clark (1976) keeps the latter as a primary one and the former as a secondary one.

There is a certain case where the whole problematic situation, user- vs. researcher-guided or primary vs. secondary, will vanish. That happens when a user and a researcher is one and the same person, as in cases Coghlan (2001) and Lallé (2003). Coghlan described the special characteristics of action research when he was both researcher and manager. "Insider action research has its own dynamics, which distinguish it from an external action researcher approach. The manager-researchers are already immersed in the organization and have a pre-understanding from being an actor in the processes being studied. Challenges facing such manager-researchers are that they need to combine their action research role with their regular organizational roles and this role duality can create the potential for role ambiguity and conflict. They need to manage the political dynamics, which involves balancing the organization's formal justification of what it wants in the project with their own tactical personal justification for the project. Manager-researchers' pre-understanding, organizational role and ability to manage organizational politics play an important role in the political process of framing and selecting their action research project. In order that the action research project contribute to the organization's learning, the manager-action researcher engages in inter-level processes engaging individuals, teams, the inter-departmental group and the organization in processes of learning and change. Consideration of these challenges enables manager-action researchers to grasp the opportunities such research projects afford for personal learning, organizational learning and contribution to knowledge." (p. 49) Lallé (2003, p. 1097) complemented the Coghlan's view by describing "some of the epistemological and methodological implications involved in positioning the 'actor-researcher', permitting him or her, on the one hand, to play a directly useful role in an organization, and on the other hand, to generate new scientific knowledge".

Finally, I am willing to pay attention to a particular borderline. When Eikeland (2006a) studied ethics and action research he found that "the normal social research ethics of 'informed consent' is both nice and necessary, but it is still based on a fundamental distinction between the researchers and the researched. It is a condescending ethics. Informed consent regulates 'our' relations to 'them' and vice versa, but neither does it regulate *their* internal relations, nor *our* internal relations as research colleagues. The researched are still treated as objects subjected to observation, manipulation, or use."

When Eikeland (2006b) studied different types of knowledge he found that it depends on dialogue between the researchers and the researched and he recommended by saying normatively: “First of all, I [Eikeland] am not suggesting that we as researchers simply organize dialogues for the others. I am suggesting that we enter into a dialogue with them as practitioner colleagues in learning and research. I have suggested more about how in a recent article on validity in action research. Secondly, we need to say more about what dialogue is not. It is not negotiations, it is not rhetoric, etc. Thirdly, although I am all in favour of democracy, like most people in the Nordic countries, this does not take us very far. We need *learning* communities based on dialogue, not *necessarily* democratic structures where rhetoric is hard to prevent. We need to pursue insights, learning, and competence development, individually and collectively, not *necessarily* all-encompassing discussions about decisions of different kinds. We also need to be clear about what kind of knowledge we are seeking for what purposes.” Compared to Davison et al.’s (2004, p. 65) “first principle that relates to the development of an agreement that facilitates collaboration between the action researcher and the client” Eikeland’s recommendations are more balanced and sympathetic.

Potential outcomes of action research

We earlier referred to Braa and Vidgen (1999, p. 27) who emphasized that “in some forms of research, such as action research, the aim is to gain learning and knowledge through making deliberate interventions in order to achieve some desirable change in the organizational setting.”

Concerning knowledge produced Eikeland (2006b) “presented some thoughts on knowledge forms or ways of knowing extracted and borrowed from Aristotle. ... Aristotle did not start out with abstract knowledge as such, however. And he did not think about knowledge from the standpoint of specialized academic institutions. His thinking about knowledge is fundamentally relational. This is important. In his way of thinking there is always a knower and something or somebody known who relate to each other in specific and different ways.”

“The knowledge forms in Table 2 are, however, not all of them found as explicitly in the writings of Aristotle.”

Table 2. Different knowledge forms based on Aristotle

Basis	Way of knowing	Associated rationality	English equivalent
<u>Aísthesis</u> (perception)	<u>Theoresis</u> = episteme2	Deduction	Spectator speculation
	Páthos	??	Being affected passively from the outside
<u>Empeiría</u> (practically acquired experience)	<u>Khresis</u>	<u>Tékhne</u> (calculation)	Using
	<u>Poíesis</u>		Making, manipulating
	<u>Praxis2</u>	<u>Phrónesis</u> (deliberation)	Doing: virtuous performance
	<u>Praxis1</u>	Dialectics / dialogue. The way from <i>novice to expert</i> , from <i>tacit to articulate</i>	Practice, training for competence development and insight (<u>theoría</u>)
	<u>Theoría</u> = episteme1	Dialogue, deduction, deliberation	Insight

Eikeland (2006b) starts “by saying something about the concept of episteme, often but rather confusingly, he think, translated as ‘science’. As you can see from Table 2, there are two concepts of theory and episteme, one on the top and one at the bottom. ... But the two forms of theory are still fundamentally different and need to be kept apart.”

“The first one, called theoresis, episteme2, or ‘spectator speculation’ in Table 2, is based on observation at a distance. Theoresis relates to external objects. The relation, or the ethics implied between the knower and the known, is difference, distance, separation, non-interaction, and non-interference. In its deductive form, astronomy has served as a paradigm, and for social and historical reasons, this astronomical model conquered the whole field of science from the 17th Century on. ... Still, the people studied, the people known, are the *others*, not the knowers themselves. ... It is important not to intervene, and to neutralize any unintended effects of observation or of the research activities at all.”

Eikeland (2006b) used “grammar as the paradigm example for this other kind of episteme1 or *theoría* in the table. I have translated *theoría* with ‘insight’. In grammar the relation between the knower and the known is quite different from the corresponding relation in astronomy. Grammar is about ourselves as native speakers of a language. It expresses and organizes certain aspects of our linguistic practice, the more or less stable patterns that repeat themselves in certain ways in our performance. Grammar is descriptive and analytical, but it is also normative, since it delivers standards for correct speech and writing. ... There is no distance between the knower and the known as in astronomy.”

Eikeland (2006b) continued that “grammar also exemplifies what is called praxis knowledge in the table, where the relationship between the starting point, the means, and the end or objective for our actions is one of formal equality. Praxis knowledge is the primary base for *theoría*, the episteme-form at the bottom of the table. ... For Aristotle, praxis knowledge represents a relationship between colleagues sharing common standards for how to go about their professional activities. ... Praxis knowledge regulates the relationships between equals. It constitutes a ‘we’ literally as a community with common standards (as in grammar), and it regulates relations among ‘us’, not between ‘us’ and ‘them’.

Eikeland (2006b) described that “by searching patterns, sorting similarities and differences in our accumulated practical experience, and in how we use language, dialog helps to articulate what we carry with us as tacit knowledge, and it helps us on our way from novices to experts and to virtuoso performers. This is what is called praxis1 on the second lowest row in the table.”

According to Eikeland (2006b) “with grammar the practical enactment is often immediate and spontaneous in proficient speakers. ... But in other fields where the practice is not equally standardized and ‘automated’, ... we need deliberation or phrónesis trying to find out how to act in the most just or fair way towards someone we must act in relation to right here and now. This is what is called praxis2 on the third lowest row in the table.”

Eikeland (2006b) only wrote that “páthos is knowledge created from being passively affected by external sources. ... Khresis is competence in using external or reified things for purposes of the user. It is independent competence, as for example in driving a car. ... Khresis is possible and even prevalent in human relations too, of course. Some are even very good at it. But the ethics of using other people as instruments for achieving your own interests is hard to

defend *generally* ... as an ethics between un-equals. ... In addition, work life seems to be full of these kinds of relationships in apparently legitimate and institutionalized forms.

With poiesis the case is similar. It is competence in manipulating external objects according to the manipulator's own plans and intentions, making something out of them as materials. Poiesis *intervenens* artificially in its material. I think the conventional *experiment* is a variant of poiesis. ... The art of manipulating others is hard to defend ethically on a general basis."

"This presentation of different ways of knowing now makes it easier to return to the subjects I discussed in the article on condescending ethics in Eikeland (2006a), and to work life challenges. It makes it easier to understand why many forms of action research do not communicate very well or easily with institutional review boards controlling the ethical quality of research projects. As I hope has become clear, some forms of condescending ethics are inherent to all the knowledge forms in the table, except to praxis and theoria. Things, animals, or other human beings observed, manipulated, or used are not one of 'us' the observers, manipulators, or users. But as practitioner researchers or co-researchers in action research projects, they are among us the researchers. For review boards this creates confusion. We can discuss exactly *how much* of modern social research that produces knowledge in the form of either theoresis, khresis, or poiesis. It may not be all of it, but I think we have to say that most of it does. ... At least Table 2 of Aristotelian knowledge forms suggested that 'othering' ways of doing social research are not necessary, natural, or the only possible ways."

Eikeland clearly recommend that we should only report such action research knowledge that both researchers and practitioners together accept and support. In addition to scientific new knowledge, action research can also produce new instantiations or new artifacts, if we accept that action research is similar to design research.

Discussion

We found that action research and design research are especially similar in improvement studies. The constructivist ontology and the non-positivist epistemology seem better than other alternatives to be applicable to people. These ontological and epistemological views can partly explain why Iivari does not see action research similar to design research. The methodological difference seems to disappear when the use of action research is taken in the truth-driven sense and for evaluation of the IT artefact.

Based on Carlsson (2009) we identified two types of evaluation studies, both truth-driven and solution-driven. This result might a bit change our classification (Järvinen 2004, 2008) of research methods. This also arouses a question: It is possible to find two different formulations for another main activity of design research, namely for building?

The differentiation between the client's problem as a primary and the researcher's problem as a secondary seems to mainly explain differing views that Iivari and I have on action research. According to personal experience, those action research projects where we as researchers presented an initiative failed, but those action research projects where clients presented an initiative to us succeeded.

For characteristics of research outcomes, we found Eikeland's views most suitable. To our mind, Eikeland's ethically sound finding is he does not separate "we" as researchers and

“they” as practitioners, but prefers to consider all the participants, both “us” and “them” as researchers, and hence at the equal level. This democratic view is very typical for our Scandinavian community, and we should always remember to support it in all our research efforts.

It was in concordance of Eikeland’s ideology that he recommends that we should only report such action research knowledge that both researchers and practitioners together accept and support. We supplemented his idea that in addition to scientific new knowledge, action research can also produce new instantiations or new artifacts, if we accept that action research is similar to design research.

References:

- Argyris C., R. Putnam and D. Smith (1985), *Action science*, Jossey-Bass, San Francisco.
- Avison and Wood-Harper (1991), *Information systems development research: An exploration of ideas in practice*, *The Computer Journal* 34, No 2, 98-112.
- Baskerville R. and M.D. Myers (2004), *Special issue on Action Research in Information Systems: Making IS research relevant to practice – Foreword*, *MIS Quarterly* 28, No 3, 329-335.
- Baskerville R. and J. Pries-Heje (1999), *Grounded action research: A method for understanding IT in practice*, *Accounting, Management and Information Technology* 9, No 1, 1-23.
- Baskerville R. and A.T. Wood-Harper (1998), *Diversity in information systems action research methods*, *European Journal of Information Systems*, 7, 90-107.
- Braa K. and R.T. Vidgen (1999), *Interpretation, intervention and reduction in the organizational laboratory: A framework for in-context information systems research*, *Information and Organization* 9, No 1, 25-47.
- Burrell G. and Morgan G. (1979), *Sociological paradigms and organisational analysis*, Heinemann, London.
- Burstein, F. and s. Gregor (1999), *The systems development or engineering approach to research in information systems: An action research perspective*, in Hope, B. and Yoong, P. (eds.), *Proceedings of the 10th Australasian Conference on Information Systems*, Victoria University of Wellington, New Zealand, 122-134.
- Checkland P. (1981), *Systems thinking, systems practice*, Wiley, Chichester.
- Chen W.S. and R. Hirschheim (2004), *A paradigmatic and methodological examination of information systems research from 1991 to 2001*, *Information Systems Journal* 14, No 3, 197-235.
- Clark A.W. (1976), *Experimenting with organizational life, action research approach*, Plenum, New York.
- Coghlan D. (2001), *Insider action research projects - Implications for practising managers*, *Management Learning* 32, No 1, 49-60.
- Cole R., S. Purao, M. Rossi and M.K. Sein (2005), *Being proactive: Where action research meets design research*, In *Proceedings of 26th International Conference on Information systems (ICIS)*, AIS, , 325-336.
- Colquitt J.A. and C. P. Zapata-Phelan (2007), *Trends in theory building and theory testing: A five-decade study of the Academy of Management Journal*, *Academy of Management Journal* 50, No 6, 1281-1303.
- Eikeland O. (2006a), *Condescending ethics and action research*, *Action Research* 4, No 1, 37-47.

- Eikeland O. (2006b), Ethics and action research, key note speech at Finnish work research days, Oct 6-7, 2006 at Tampere, 17p.
- Gibson C.F. (1975), A methodology for implementation research, in Schultz and Slevin (Eds.), *Implementing operations research/management science*, American Elsevier, New York.
- Gregor S. (2006), The nature of theory in information systems, *MIS Quarterly* 30, No 3, 611-642.
- Gregor S. and D. Jones (2007), The anatomy of a design theory, *Journal of the Association for Information Systems* 8, No 2, 312-335.
- Hult M. and S.-Å. Lennung (1980), Towards a definition of action research: A note and bibliography, *Journal of Management Studies* 17, 241-250.
- Iivari J. (1991), A paradigmatic analysis of contemporary schools of IS development, *Eur. J. Inf. Sysys* 1, No 4, 249-272.
- Iivari J. (2007a), A paradigmatic analysis of Information Systems as a design science, *Scandinavian Journal of Information Systems* 19, No 2, 39-64.
- Iivari J. (2007b), Nothing is as clear as unclear – Iivari’s response, *Scandinavian Journal of Information Systems* 19, No 2, 111-117.
- Iivari (2009), A phone call, May 14, 2009.
- Iivari J., R. Hirschheim and H.K. Klein (1998), A paradigmatic analysis contrasting information systems development approaches and methodologies, *Information Systems Research* 9, No 2, 164-193.
- Iivari J. and J. Venable (2009), Action research and design science research – seemingly similar but decisively dissimilar, a paper accepted to ECIS 2009, June 8 - 10, 2009 in Verona, Italy.
- Ives B., Hamilton S. and G.B. Davis (1980), A framework for research in computer-based management information systems, *Management Science* 26, No. 9, 910-934.
- Järvinen P. (2001, 2004), On research methods, *Opinpajan kirja*, Tampere.
- Järvinen P. (2005), *IS Reviews 2005* (as an editor)
<http://www.cs.uta.fi/reports/dsarja/D-2005-7.pdf>
- Järvinen P. (2007), Action research is similar to design science, *Quality & Quantity* Vol. 41, No 1, 37-54.
- Järvinen P. (2008), Mapping Research Questions to Research Methods, in IFIP International Federation for Information Processing, Volume 274; *Advances in Information Systems Research, Education and Practice*; David Avison, George M. Kasper, Barbara Pernici, Isabel Ramos, Dewald Roode; (Boston: Springer), pp. 29-41. http://dx.doi.org/10.1007/978-0-387-09682-7-9_3
- Keen P.G.W. (1974), Towards a behavioral methodology for the study of OR/MS implementation, Unpublished paper, MIT.
- Lallé B. (2003), The management science researcher between theory and practice, *Organization Studies* 24, No 7, 1097-1114.
- Lee, A.S. (1989), A scientific Methodology for MIS case studies, *MIS Quarterly* 13, No. 1, 33-50.
- Lindgren R., Henfridsson O. and U. Schultze (2004), Design Principles for Competence Management Systems: A Synthesis of an Action Research Study, *MIS Quarterly* 28, No 3, 435-472.
- Mumford E. (1986), *Using computers for business success: The ETHICS method*, Manchester Business School, Manchester.
- Niehaves B. (2007), On epistemological pluralism in design science, *Scandinavian Journal of Information Systems* 19, No 2, 93-104.
- Niiniluoto, I., 1999, *Critical Scientific Realism*, Oxford University Press, Oxford.

- Orlikowski W.J. and J.J. Baroudi (1991), Studying information technology in organizations: Research approaches and assumptions, *Information Systems Research* 2, No 1, 1-28.
- Rapoport R.N. (1970), Three dilemmas in action research, *Human Relations* 23, No 6, 499-513.
- Richardson H. and B. Robinson (2007), The mysterious case of the missing paradigm: A review of critical information systems research 1991-2001, *Information Systems Journal* 17, No 3, 251-270.
- Schneberger S., C. Pollard and H Watson (2009), Theories: For academics and practitioners, *Information Systems Management* 26, No 1, 52-60.
- Susman G.I. and R.D. Evered (1978), An assessment of the scientific merits of action research, *Administrative Science Quarterly* 23, No 4. 582-603.
- ter Hofstede A.H.M. and T.P. van der Weide (1992), Formalization of techniques: Chopping down the methodology jungle, *Information and Software Technology* 34, No 1, 57-65.
- van Aken J.E. (2004), Management research based on the paradigm of the design sciences: The quest for field-tested and grounded technological rules, *Journal of Management Studies* 41, No 2, 219-246.
- Van Horn R.L. (1973), Empirical studies of management information systems, *Database* 5, No. 2 & 3, 172-180.