

REFLECTIONS ON *REFLECTION* IN ACTION RESEARCH: NOTES FROM A FIELD STUDY

Gabriel J. Costello¹,

Galway Mayo-Institute of Technology

gabrielj.costello@gmit.ie

and

Centre for Innovation and Structural Change, National University of Ireland, Galway

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Abstract

There is wide agreement in the literature that “reflection” is a critical component in the methodology of action research (AR). This paper argues that there is little practical guidance for information systems researchers on how to carry out the process of reflection. The work is presented in the context of a case study of innovation in APC-MGE Ireland, a subsidiary of the critical power and cooling services division of the Schneider Electric Corporation. The paper describes the utilization of a novel form of action research recently proposed to the IS community by Mårtensson & Lee which they call dialogical AR. The study proposes to make a contribution by providing a questionnaire to assist the process on reflection in the course of AR cycles. The instrument was developed from engagement with the psychology literature and is suggested as a methodological plug-in to the Principles of Canonical Action Research.

¹ I am currently undertaking a PhD in MIS at the Centre for Innovation and Structural Change, National University of Ireland, Galway. My supervisor is Dr. Brian Donnellan brian.donnellan@nuigalway.ie

1 INTRODUCTION

There is wide agreement in the literature that *reflection* is critical to meeting the dual mandate of action research (AR): addressing a real-life problem through intervention together with the research objective of making a contribution to knowledge (Avison et al., 1999; Baskerville & Myers, 2004; Coghlan & Brannick, 2005; Davison *et al.*, 2004). One persistent bone of contention has been the “paucity of methodological guidance” for conducting and evaluating AR studies. This resulted in Davison *et al.* (2004) developing a number of principles and assessment criteria that includes “the Principle of Learning through Reflection” to address ongoing concerns with rigor. In this paper, I will argue that, despite the primacy given to this topic, there is still little practical guidance for IS researchers on how to carry out the rather nebulous process of *reflection*.

The work is presented in the context of a case study of innovation in APC-MGE Ireland, a subsidiary of the critical power and cooling services division of the Schneider Electric Corporation. Furthermore the paper will describe the utilization of a novel form of action research recently proposed to the IS community by Mårtensson & Lee (2004) which they call *dialogical AR*. The study will seek to make a contribution by proposing an addition to Davison *et al.*'s “Principle of Learning through Reflection” through modifying a set of questions which were based on engagement with the psychology literature (Dick, 2002).

The paper is structured as follows. Firstly a literature review of action research is presented that examines the role of *reflection* in the AR methodology together with an overview of Donald Schön's work on *reflection-in-action*. The next section argues that the phenomenology of Edmund Husserl provides a philosophical underpinning for AR and discusses the theme of reflection in the phenomenological literature. After this, the case study is outlined and the paper describes how *reflection* was carried out with the practitioner during the AR project phases. Finally the reflective questionnaire used in the final stage of the project is presented together with a discussion of its implications for IS research.

2 LITERATURE REVIEW

In this section I will provide a brief overview of action research, emphasise the importance of reflection in the methodology and present a summary of Donald Schön's work on reflection-in-action.

2.1 Action Research

Action Research (AR) originated from the work of Kurt Lewin during the 1940s and has been summarised as an approach that “combines theory and practice (and researchers and practitioners) through change and reflection in an immediate problematic situation within a mutually acceptable ethical framework” (Avison et al., 1999). The application of AR has not been without controversy particularly in debates with positivist science on the justification and generation of knowledge. These arguments were addressed by Susman & Evered (1978) in their influential description of AR as consisting of a cyclical process involving five phases: diagnosing, action planning, action taking, evaluating, and specifying learning. The focus of AR is to address real-life problems through intervention together with the research objective of making a contribution to knowledge. In the realm of information systems (IS) research, Avison *et al.* (1999) argued that it took until ICIS 1998 for the community to agree that qualitative approaches, such as action research (AR), were finally gaining acceptance and proposed that “to

make academic research relevant, researchers should try out their theories with practitioners in real situations and real organizations”. Around the same time, Butler (1998) concluded that the interpretivist approach was emerging as the most appropriate medium for research in the area of IS development. Coghlan and Brannick (2005 p 125) emphasise the importance of the social and academic context in which action research is carried out and as a result the contextual setting of the case study is presented in section 4. This theme is echoed in the work of Bob Dick (Dick, 1993) which will have significant influence on the argument of this paper. Dick, an academic working in the field of psychology, proposes that the AR methodology has the twofold aim of action and research:

- *action* designed to bring about change in some community, organization or program
- *research* to increase understanding on the part of the researcher or the client, or both – and in many cases some wider community

Reason and Bradbury aim to “draw together some of the main threads that form the diverse practices of action research” and propose an almost lofty vision of AR contributing to the world’s wellbeing and sustainability; in areas ranging from the economic and political to the psychological and spiritual. The following quotation with its emphasis on understanding and reflection is of particular relevance to this paper (Reason & Bradbury, 2001 p 2).

So action research is about working towards practical outcomes, and also about creating new forms of understanding, since action without reflection and understanding is blind, just as theory without action is meaningless.

2.2 Dialogical Action Research

Recently, Mårtensson & Lee (2004) have suggested and described a new form of action research called *dialogical* AR. Here is a brief description of their approach.

In dialogical action research, the scientific researcher does not "speak science" or otherwise attempt to teach scientific theory to the real-world practitioner, but instead attempts to speak the language of the practitioner and accepts him as the expert on his organization and its problems.

In their paper Mårtensson & Lee propose that “reflective one-to-one dialogues” between the practitioner and the researcher; that take place at regular intervals in a location removed from the organisation; can help the manager to “reflect on, learn from, and remedy managerial problems in the organization”. In their schema the role of the researcher consists in suggesting actions based on one or more theories taken from their discipline. The implementation of these suggestions is left to the judgment of the practitioner based on his experience, expertise and tacit knowledge together with his reading of the organisational situation that confronts him. Furthermore the ongoing dialogue is presented as an *interface* between the scientific world of the researcher, marked by *theoria* and everyday world of the practitioner which is marked by *praxis*. The overall aim of dialogical AR is to bring about some improvement to the real-world problem of the practitioner while at the same time contributing to the: development, confirmation or disconfirmation of theory by the researcher. Mårtensson & Lee draw heavily on Schön’s model of professional inquiry (2004 p 510) which I will discuss in more detail in section 2.4.

2.3 Importance of Reflection in AR

The process of reflection is integral to AR and is emphasised in the literature (Avison et al., 1999; Baskerville & Myers, 2004; Coghlan & Brannick, 2005; Davison et al., 2004). Braa and Vidgen (2000) make the salient point that in the course of research, in addition to learning from the research content, there should also be learning about the process of inquiry. The latter point is the main aim of this paper which is being presented as a reflection by the researcher on the *process of reflection* in an AR study. In relation to this, Coghlan and Brannick (2005 p 25), drawing from a number of antecedent publications by authors such as Argyris and Mezirow,

propose that this “reflection on reflection” results in “learning about learning”. They call this process *meta-learning* which consists of three types of critical reflection:

- **Content reflection:** this is where you think about the issues and what is happening
- **Process Reflection:** this is where you think about strategies, procedures and how things are being done
- **Premise reflection:** this is where you critique underlying assumptions and perspectives

Coghlan and Brannick then superimpose these three constructs on their version of the action research cycle to develop a Meta cycle of inquiry which is shown in the figure below.

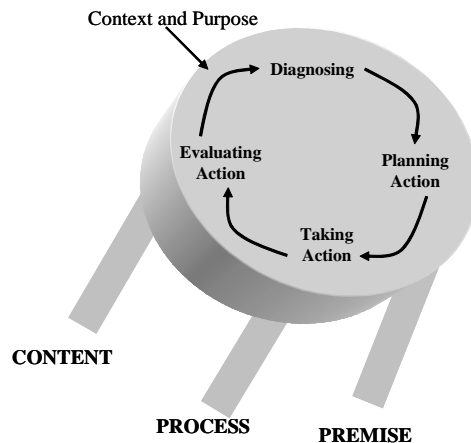


Fig.1: Meta Cycle of Inquiry – adapted from Coghlan and Brannick(2005)

In their conceptualisation (2005 p 24):

- **The Content of what** is diagnosed, planned, acted-on and evaluated is studied
- **The Process of how** diagnosis is undertaken, how action planning flows from that diagnosis and is conducted, how closely the implemented actions follow the stated plans and how evaluation is conducted are critical foci for inquiry
- **The Premise reflection** consists of an inquiry into the un-stated, and often non-conscious, underlying assumptions which govern attitudes and behaviour.

Now that I have presented my argument on the importance of reflection to action research, I will now present the work of an influential author on this topic.

2.4 Schön’s Reflection-in-Action

Donald Schön’s (1983) publication of *The Reflective Practitioner* is regarded as a seminal work in the debate on the benefits of *reflection* for practice and research. In the book he criticises the prevailing academic epistemology as having nothing to offer either practitioners “who wish to gain a better understanding of the practical uses and limits of research-based knowledge” or scholars “who wish to take a new view of professional action”. Schön begins with the assumption that “competent practitioners usually know more than they can say” and that they exhibit “a kind of knowing in practice, most of which is tacit”. Furthermore in disciplines such as medicine, management, and engineering, his experience was that “leading professionals speak of “a new awareness of a complexity which resists the skills and techniques of traditional expertise”. Schön presents the academic about-turn of Russell Ackoff, one of the founders of the discipline of operations research, as powerful evidence of this shift. Ackoff had recently described the dynamic and complex situations faced by managers as being akin to *messes* which did not lend themselves to the problem-solving techniques of mathematical models and algorithms. Schön argues that this dominant epistemology of practice is based on the model of

technical rationality where: “professional activity consists in instrumental problem-solving made rigorous by the application of scientific theory and techniques”. Its origins lie in the rise of the technological programme that came to dominate western society in the nineteenth century. This resulted in Auguste Comte formulating his philosophy of *Positivism* which contains three principal doctrines (Schön, 1983 p 32):

- empirical science is not just a form of knowledge but the only source of positive knowledge of the world
- men’s minds need to be cleansed of mysticism, superstition and other forms of pseudo-knowledge
- extending of scientific knowledge and technical control to human society in order to make technology “no longer exclusively geometrical, mechanical or chemical, but also primarily political and moral”.

Schön then laments that the seeds of Positivism were firmly planted in the curricula of American universities and professional schools; a factor which he argues has contributed significantly to the contemporary fissure between research and practice. Furthermore he concludes that the present difficulty in accommodating contemporary phenomena such as “complexity, uncertainty, instability, uniqueness, and value conflict” stems from the positivist origins of technical rationality. He proposes the primacy of *problem-setting* over *problem-solving* for practitioners. Problems-setting he defines as an interactive process in which “we *name* the things to which we will attend and *frame* the context in which we will attend to them”.

The perennial dilemma of *rigour and relevance* is presented using the analogy of a hilly landscape. He describes the “high hard ground” as the place where practitioners can effectively apply research-based theories and methods. However the important and challenging problems exist in the “swampy lowland” of messy situations that do not respond to neat technical solutions. Furthermore according to Schön the earlier models of *technical rationality* have in general “failed to yield effective results” when dealing with the complex and fuzzy problems of business management.

In order to fit practice into the models of technical rationality and deal with the tension of rigour versus relevance, practitioners become “selectively inattentive” to data that do not fit neatly into their pre-defined categories. For example, in a comment which is very relevant to our field, he states that “designers of management information systems” frequently fail to notice that in reality “their systems trigger games of control and evasion”. In addition, the following comment by Schön seems pertinent to the philosophical debate within IS: “among philosophers of science no one wants any longer to be called a Positivist”. Furthermore he observes that the growing rebirth of many areas recently consigned to the positivist graveyard such as craft, artistry and myth is further evidence of the failure of the positivist program. However he is at pains to point out that his problem is not with science *per se* but on the view of science portrayed by positivism.

As an antidote to *technical rationality*, Schön proposes *reflection-in-action* built on the idea of *knowing-in-action* which he explains as:

Our knowing is ordinarily tacit, implicit in our patterns of action and in our feel for the stuff with which we are dealing. It seems right to say that our knowing is *in* our action.

Furthermore, the “common sense” that reveals *knowing-in-action* to us also reveals that sometimes we “think about what we are doing”. Characteristics of this reflection-in-action include many colloquialisms such as:

- thinking on your feet
- keeping your wits about you
- learning by doing
- and what baseball pitchers would call *finding the groove*

The art of reflection-in-action results in a practitioner - when faced with a challenging situation - setting the problem in a new context or frame which he calls a *frame experiment*.

One conclusion of Schön's that I find contentious is his proposition that when a practitioner reflects-in-action he does not depend "on the categories of established theory and techniques, but constructs a new theory of the unique case". This would seem to contradict the legitimate viewpoint of many philosophers such as Quine, who contend that at the most basic level our language and sentences are based on numerous underlying theories. Schön believes that reflection-in-action is still not generally accepted in professional practice, even by those who actually carry it out, due to the professions still being viewed solely in terms of their technical expertise. He begins to describe an epistemology of reflection-in-action that "accounts for artistry in situations of uniqueness and uncertainty" to deal with conditions where the model of technical rationality "appears as radically incomplete". One concern I have with his initial work is that while he provides a convincing *deconstruction* of Positivism, he does not justify any philosophical alternative to underpin reflection-in-action. To be fair, in a subsequent publication on *Educating the Reflective Practitioner* (1990), Schön acknowledges his debt to John Dewey and to a number of others including Kurt Lewin, which is a relevant connection with the theme of action research. I will address this point further in the next section where I will argue that a return to the "origins of phenomenology" (Ciborra, 2002) can provide fresh insights to this matter. Furthermore, as I move to a discussion of a philosophical foundation for dialogical AR in the next section, it is interesting to note that Susman & Evered (1978 p.594) argue that Phenomenology provides an underpinning to legitimate action research.

3 PHILOSOPHICAL UNDERPINNING

In the literature review I acknowledged the influence of Kurt Lewin on the IS discipline as he is regarded as the originator of action research. Urie Bronfenbrenner, who regarded Lewin as an important mentor, firmly places him in the tradition of phenomenology (Bronfenbrenner, 1979 p 23). In an important contribution almost ten years ago Butler (1998 p 297) made the following salient point which I believe must be heeded by researchers:

However, proclaiming oneself as an interpretivist does not go far enough, because of the fact that interpretive approaches do not share the same ontological, epistemological or methodological perspectives. There is, therefore, a question mark over studies that identify themselves as interpretivist and who fail to provide a clear indication of the philosophical foundations on which their interpretive perspectives are based.

This section will seek to locate the philosophical underpinnings of this paper in the phenomenological movement initiated by Edmund Husserl. In addition, a connection is established with the philosophical approach of Mårtensson & Lee who based their work in the more recent phenomenology of Schutz (1962). Furthermore, I will pin my nascent philosophical colours to the mast of phenomenological realism. This is not a neologism but was adhered to by many of Husserl's renowned collaborators in Göttingen together with Alexander Pfander and the Munich school at the time of the publication of the *Logical Investigations* (Moran, 2000).

3.1 The Phenomenology of Edmund Husserl

Edmund Husserl, the founding father of Phenomenology, is regarded as having instigated one of the most important philosophical movements of the twentieth century (Grossmann, 2005). The system has had an immense influence in Europe in areas spanning psychology, law, values, aesthetics and religion (Inwood, 2005). Husserl's original studies were in the area of mathematics and his most influential teacher was the philosopher Franz Brentano. His philosophy underwent a transition from his earlier studies on the "phenomenology of mathematical and logical concepts" to the "transcendental idealism" developed in his later major work "Ideas: General Introduction to Pure Phenomenology" (Elveton, 1970). Lauer

(1965) argues that with the passage of time a precise definition of “phenomenology” became more difficult but proposed that the term could be traced back to a “distinction made by Kant between phenomenon or appearance of reality in consciousness, and the noumenon, or being of reality itself”. However, he points out that Husserl rejected what he perceived as the “dualism” of Kant. Lauer continues to explain the phenomenology of Husserl as both a method and a philosophy. Method in so far as it provides the steps that must be followed “to arrive at the pure phenomenon, wherein is revealed the very essence not only of appearances but also of that which appears”. In the realm of philosophy “it claims to give necessary, essential knowledge of that which is”. Thus phenomenology advocates a “return to things because a *thing* is the direct object of consciousness in its purified form”. This approach was in opposition to “illusions, verbalisms or mental constructions” implied by many contemporary movements. Moran (2000 p 15) argues that the major contribution of phenomenology to contemporary philosophy is its conception of “objectivity-for-subjectivity” and one of the aspects of the early work of Husserl was its grounding in Realism. A number of his pupils and collaborators in Göttingen, such as Max Scheler, Edith Stein and Roman Ingarden were somewhat disappointed by Husserl’s “turning” towards Idealism in his later work and continued to identify with the Realism of the early Husserl. This is a significant factor in my own philosophical approach which I will discuss further in section 6.

3.2 The place of Reflection in the Phenomenological Approach

Husserl considered that philosophy should be carried out as a rigorous science using the structured methodology of reason and his vision was that the phenomenological approach (of bracketing the natural world and a reduction to pure consciousness) could overcome and synthesise the radical disagreements of contemporary philosophy. Following Brentano, he held the conviction that the fundamental purpose philosophy is in *description* and not causal explanation. The first edition of Husserl’s book *Logical Investigations* published in 1900 catapulted him into the top echelon of German philosophy. Moran points out that while the first edition equated phenomenology with descriptive psychology, Husserl began to distance his evolving philosophy from any type of psychology. The objective of phenomenology was to focus exclusively on the meaning-constituting function of acts. Furthermore Moran (2000 p 77) describes the central importance of reflection as follows:

Phenomenology proceeds by a pure ‘intuiting’ (*anschauen*) and ‘reflection’ (*Reflexion*) which “precludes any compositing of objects alien to consciousness”.

In this early work Husserl proposed that the way to get at the “pure features of consciousness” is called reflection (*Reflexion*). However, in his later influential book *Ideas I*, while still retaining the idea of reflection, *he* formulated the more technical concept of reduction. A more detailed discussion of reflection in the work of the early phenomenologists is outside the scope of this paper. Nevertheless, I suggest that this section has located the central notion of this study, *reflection*, in a firm philosophical tradition that is closely linked with action research. Now I will proceed to describe the case study in which the work is being carried out.

4 CASE STUDY

The case study is based in APC Ireland, a subsidiary of the American Power Conversion (APC) Corporation. The Corporation entered a major period of transition in the first quarter of 2007 with completion of its acquisition by Schneider Electric and the formation of a new subsidiary called APC-MGE. As the initial part of this study was developed before the acquisition, this section will focus on providing a background to the APC context in which the work emerged. APC designs, manufactures and markets back-up products and services that protect hardware and data from power disturbances. The explosive growth of the Internet has resulted in the company broadening its product offerings from uninterruptible power supplies (UPS) to the

high-end InfraStruXure™ architecture in order to meet the critical availability requirements of internet service providers (ISP) and data-centres. This modular design integrates power, cooling, rack, management and services, which allows customers to select standardised modular components using a web-based configuration tool. The Corporation reported sales of \$2 billion in 2005, globally employs approximately seven thousand people and is a Fortune 1000 company. However, recent financial reports have stressed that the company needs to implement significant improvements in manufacturing and the supply chain (Results APCC 2006). According to these reports, the company must work to develop a “lean, customer-centric, ambidextrous organisation” in order to reach “optimal efficiencies in our processes”. APC has two locations in the West of Ireland that serve the European, Middle East and Africa (EMEA) region. The Manufacturing Operations site, based in Castlebar, employs approximately 100 people while a number of functions including sales, information technology, business support and research and development (R&D) are situated in Galway with a workforce of approximately 300. Responding to the supply chain challenge, a Lean Transformation project was set-up in the Castlebar campus in February 2006 with a cross-functional team of twelve members drawn from Management, Engineering, Manufacturing, Materials Planning, Quality, and Logistics functions. The primary management information system employed by APC is Lotus Notes, a collaborative software system that manages its knowledge flows. It provides a tightly controlled environment for asynchronous group work; where collaborators can have different or independent work patterns. The strength of the MIS function in APC was viewed as an important advantage by Schneider in their acquisition analysis and APC’s “intimacy with information technology” was identified as central to the creation of synergies with Schneider’s power solutions subsidiary MGE.

5 RESEARCH DESIGN

The conclusions by Benbasat & Zmud (1999) concerning the lack of relevance in IS research was, to put it mildly, a criticism of the discipline. Consequently the initial approach to the case study was closely related to the following recommendation in their paper:

IS researchers should look to practice to identify research topics and look to the IS literature only after a commitment has been made to a specific topic.

Furthermore, Mårtensson & Lee (2004) have proposed that dialogical action research (which I discussed above) can help “resolve the rigor-relevance dilemma” which has bedevilled research in IS and in the wider context business and social sciences. The research design followed the advice of Benbasat & Zmud that firstly there was a need to spend time in the organization, observing and listening, in order to get a feel for the situation. Data collection methods during this phase involved: maintaining a log book, reviewing documents and information systems, records, interviews, observations (direct and participant), artefacts and surveys in order to develop a database and body of evidence (Gillham 2000; Yin 1994). A total of 29 unstructured or open interviews were undertaken that involved approximately 60 hours of interview time and 24 days spent in the company sites. The interviews were conducted across a wide area of the organization that included: Senior Managers with global, EMEA, and site responsibilities, Middle-Managers, Team Leaders, Engineers and a number of people in general planning roles. The main contact point during the diagnosis phase was the Plant Manager of the Castlebar location which involved approximately eleven direct meetings with an estimated seventeen hours of interaction.

There was agreement in January 2007 to move forward using dialogical Action Research with meetings every two weeks in Castlebar. The meetings during this phase resulted in over 20 hours of recorded interactions translating into almost 60,000 words of transcripts. In particular, the discipline of having to take regular timeout in a “time-pressured” manufacturing environment was a major incentive for the Plant Manager to agree to this approach. However the realities of the situation have resulted in a further adaptation of Mårtensson & Lee’s methodology: the research “timeout” for reflective one-to-one dialogues consisted of finding a

quiet place in the building and away from the office. The Plant Manager also considered the framework advantageous since it allowed him to retain control and responsibility for all decisions, implementations and communications. However there are a number of practical risks to this type of longitudinal research in a dynamic changing corporate environment, such as the realities of reorganisations and relocations that are not pointed by Mårtensson & Lee. Furthermore, in order to address the subject of rigour I adopted the five principles proposed by Davison *et al.* (2004) to evaluate the research: the Principle of the Researcher–Client Agreement (RPA), the Principle of the Cyclical Process Model (CPM), the Principle of Theory and the Principle of Learning through Reflection. The last of these principles is the main focus of this study and considered by Davison *et al.*, following Lau (1997) as the “most critical activity in AR”. The criteria proposed by these authors for this principle are outlined in the table below.

Table 1: Criteria for the Principle of Learning through Reflection –adapted from Davison *et al.* (2004)

<p>Did the researcher provide progress reports to the client and organizational members?</p> <p>Did both the researcher and the client reflect upon the outcomes of the project?</p> <p>Were the research activities and outcomes reported clearly and completely?</p> <p>Were the results considered in terms of implications for further action in this situation?</p> <p>Were the results considered in terms of implications for action to be taken in related research domains?</p> <p>Were the results considered in terms of implications for the research community (general knowledge, informing/re-informing theory)?</p> <p>Were the results considered in terms of the general applicability of CAR?</p>
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6 ANALYSIS AND DISCUSSION

With reference to the meta-cycle of inquiry presented in figure 1, this paper focuses on the analysis of the “second leg” of the structure i.e. the *process* of reflection and in particular how the evaluation was conducted. To begin with I will describe how the action planning flowed from the diagnosis stage; how plans were put in place together with the actions carried out to implement these plans. Then I will explain how the *reflection* after each of the AR cycles progressed from initially using the unspecific criteria proposed by Davison *et al.* to using a questionnaire based on the work of Bob Dick from the psychology discipline (Dick, 2002).

6.1 The Contextual Setting of the AR project

The outcome of the research carried out during 2006 on the “Lean Transformation Project” resulted in an agreement with the Plant Manager that the scope of this initiative needed to be widened to encompass the area of innovation. Consequently, he instigated an “Innovation Management and Organisational Change” project to run through 2007 with two main objectives:

- Establish a culture/climate of innovation in APC-MGE Castlebar
- Capture, Manage and Diffuse the Innovations across the wider APC-MGE/Schneider Corporation

In February 2007, a kick-off meeting between the researcher and the practitioner was held in the APC Castlebar site to plan the year-long innovation project. A discussion document was provided to the practitioner during the previous week to prepare for the meeting. In addition, the practitioner had read Chapter 11 of the book *Managing Innovation* which had informed some preliminary diagnosis work during the previous year (Tidd *et al.*, 2005). This had been suggested by the researcher in order to provide a catalyst for discussions during meeting. The feedback from the practitioner was that he found the chapter very helpful and had highlighted

sections and sentences in the book that he considered very relevant to the context and which resonated with the project vision. In addition, the proposed project had been discussed with a Vice-President from the Schneider Corporation during a recent visit to the location. The visit was part of the merger program with APC and the launching of the new division APC-MGE. He had confirmed the wider value to the organization of initiating such as research project and developing collaboration with academia. This affirmation provided both the researcher and practitioner with further motivation to begin the cooperative journey. During the initial research meeting logistics and methodology were agreed that broadly followed Davison *et al.*'s "principle of researcher-client agreement". However one immediate modification was to replace the term *client* by *practitioner* as the term was regarded as a more accurate representation of the research relationship and also was more in-line with the dialogical AR terminology used by Mårtensson & Lee. Such contextual modifications were consistent with the advice by Avison, Fitzgerald and Powell (2004) that Davison *et al.*'s evaluation framework should be treated "more as a guide to good practice than as a firm checklist". During the discussion, the main steps formulated from the project objectives described above were:

- Define the framework and dimensions of the innovation culture /climate.
- Plan, analyse, design and implement a management information system (MIS) to manage and diffuse the innovations.
- Review, reflect and improve on the MIS - continuous improvement (CI) cycle.

A high level project plan was developed incorporating these proposed steps which followed the three cycle AR process recommended in the literature. This plan showing the initial timeframe for review and reflection after each cycle is shown in Appendix 1 at the end of the paper.

6.2 Reflection in the Course of the Field Study

The first cycle reflection was carried out in May and the second cycle reflection in September. The researcher had ensured, because of the importance given to this aspect of AR in the literature that a full meeting was given over to the topic and the transcribed minutes were made available after the reflective dialogues. However, when the researcher *reflected* on the *reflection*, he was concerned with the lack of rigour inherent in the paucity of guidance on the process. An examination of the criteria proposed by Davison *et al.* in table 1 reveals that only the second question directly refers to reflection *per se*: *did both the researcher and the client reflect upon the outcomes of the project?* However, despite the text of the paper reiterating that both researchers and clients must reflect on the outcomes of each intervention there was no specific guidance on how to carry out this reflection.

This led the researcher to seek some rigorous academic work to provide a structured approach to carrying out the reflection after the third and final AR cycle. The literature search resulted in discovering Bob Dick's work as part of the "aerol" (action research and evaluation on-line) program offered by Southern Cross University in Australia. One of the module resource papers in "aerol" consisted of: *questions for critical reflection* which had been developed by Dick and some of his collaborators (Dick, 2002) based on Argyris and Schön's "theory of action" which closely dovetails with the literature review in section 2.4. Dick had stated that in his experience of AR studies; the quality of reflection after the event is significantly helped by "careful observation during the event". Furthermore, *reflection* is not just an *ad hoc* process but the result of "good planning and in particular the surfacing of assumptions, before the event". Dick had made available a number of questions to facilitate planning before the action and for reviewing it afterwards. He describes his overall aim as follows:

The purpose is to become aware of the assumptions guiding the actions, and identifying if the outcomes support or disconfirm the assumptions.

As a result, I reorganised and reformatted the questions into what I considered were the main high level objectives of AR in relation to this particular context namely: the action, the outcomes (results), learning and opportunity for future work. The resulting questionnaire complete with the guidance presented to the practitioner is presented in appendix 2. The

feedback from the practitioner was significant. He had found this final reflection very helpful and informative but regretted that he had not the opportunity for more reflection in the course of the project. From the researcher viewpoint this comment spoke for itself as, despite the documentary evidence, the practitioner did not perceive or recollect that significant reflection had indeed been carried out previously.

6.3 Implications for Practice, Theory and Limitations of the Study

The above analysis provides empirical evidence of the benefits offered by a focused structured questionnaire to support the process of reflection during an AR study. Furthermore, the study describes a new form of action research recently proposed to the IS community by Mårtensson & Lee (2004). Dialogical AR is a novel and relatively untested method and this work seeks to investigate the approach. The use of the Principles of Canonical Action Research I believe, also enhances the methodology especially in the area of academic rigour. This paper proposes to make a contribution to the “Principle of Learning through Reflection” by providing guidance for *reflection* that can be used in conjunction with Davison *et al.*'s schema. Recently, Swanson's (2004) called for IS researchers to engage with the psychological literature due to the cognitive nature of the innovation process. The engagement with the work of Bob Dick is I contend, in-line with this general point.

The research is limited in that it is a work in progress on a single case and is subject to the customary critiques regarding the ability to generalize any findings. The recorded interviews with the practitioner have not yet been fully transcribed so the analysis is at this stage preliminary. Furthermore, the *reflection* instrument requires further testing.

7 CONCLUSIONS

The central objective of this paper was to address the paucity of guidance for IS researchers on how to carry out the process of *reflection*; which is integral to the methodology of action research. The approach involved testing a new variant, called dialogical AR, which has been recently proposed to the IS community by Mårtensson & Lee. The theoretical basis of the study was built on Donald Schön's reflection-in-action and its philosophical underpinning in the work on the early Husserl. The advantage of dialogical AR was that the reflective one-to-one dialogues inherent in the approach involved regular opportunities to engage with; and reflect on; the *process of reflection*. A key result from the scheduled evaluations at the end of each stage of three AR cycles was that when the reflection was carried out in an *ad hoc* manner it had little impact on the practitioner. However, when a structured questionnaire was used that was designed to stimulate the reflective process; the practitioner described it as being very beneficial to his process of learning. Consequently the paper argues that this questionnaire can provide a suitable plug-in to the *Principles of canonical action research* in order to address the current lack of specific direction on *doing* reflection. The study also provided evidence that the novel approach of dialogical AR can help to address the perennial call for more relevant and rigorous collaboration between academics and practitioners. Future work is required to test and refine the questionnaire instrument.

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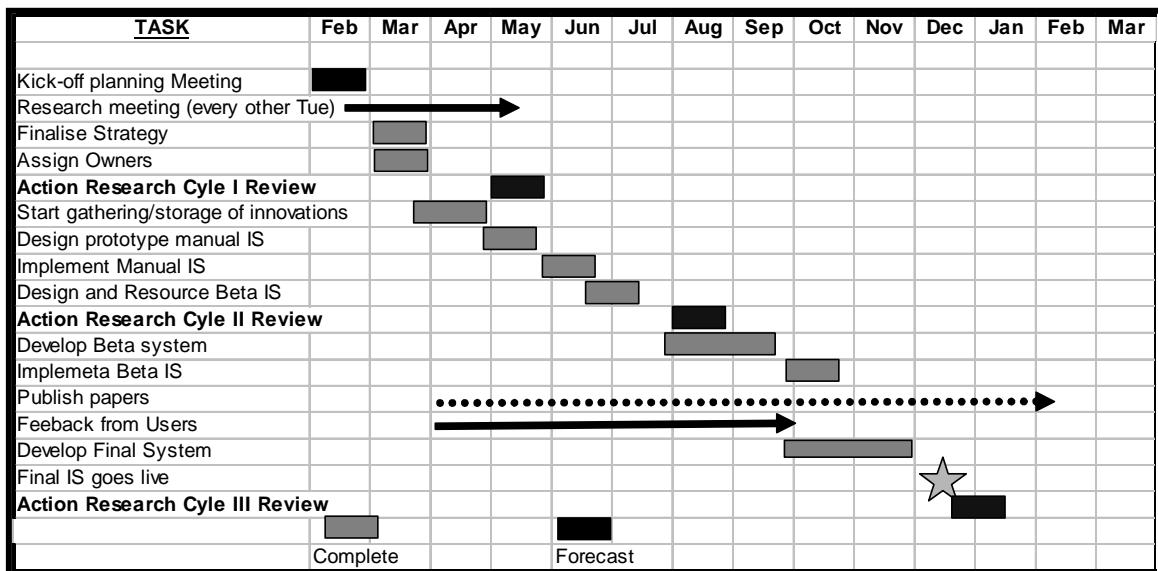
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Appendix 1: High Level Project Plan



Appendix 2: Questionnaire to assist reflection

Practitioner Evaluation of Project Actions and Learning Outcomes

Purpose of this review is to answer the questions:

What was the Action? What were the outcomes (results)? What was learned?

Stage : After the Action – end of the project (Feb 2008)

Project: APC- MGE (Castlebar) MIS Innovation Project

Type of AR: Dialogical Action Research

Questions adapted from (Dick, 2002) and (Davison et al., 2004).

SUMMARY:

Main Research Question: How can information systems support innovation in a multinational subsidiary of APC-MGE located in the West of Ireland?

The questions below are intended to assist reflection on the following areas:

Actions and Outcomes: What were the actions and outcomes (intended and unintended) from the project from a practical point of view?

Learning: What have you learned from the project?

Where do you see opportunities to use the outcomes and learning to benefit the organisation in the future?

Research: What feedback (positive and negative) do you have for the research process?

Notes:

- Davison et al. (2004) suggest that the practitioner should “write up an organizationally focused report that provides both an executive summary and a more detailed set of practical implications and suggestions for change in an organization”.
- The questions are for guidance only: omit, change or add as appropriate.
- Answers can also be sub-divided into the two main focal areas: INNOVATION and INFORMATION SYSTEMS

Section A. The Action (s)

A1	What was the main Action (s) taken during the project?	INTENDED
		UNINTENDED:
Any other reflections that you think appropriate to include here?		

Section B. The Outcomes (results)		
B1	Did I get the outcomes I wanted? (or more realistically, what were the outcomes I got and how well do these accord with those I sought?)	INTENDED
		UNINTENDED:
B2	To the extent that I got them, do I still want them (i.e. are they any use)? Why or why not?	
B3	To the extent that I didn't get them, why not?	
B4	Did I succeed in carrying out the planned actions? If not, what prevented our discouraged me?	
Any other reflections that you think appropriate to include here?		

Section C. Learning		
C1	When faced with a similar situation in future: Would I try to pursue different outcomes based on what I have learned in this project?	
C2	Would I try different actions to pursue similar outcomes?	
C3	What have I learned about myself, my skills, my attitudes etc.?	
C4	What are the changes to my perceptions and knowledge about the topic of INNOVATION?	
C4	What are the changes to my perceptions and knowledge about the topic of INFORMATION SYSTEMS?	
Any other reflections that you think appropriate to include here?		

Section D. Future Work		
D1	<p>What are the implications for further actions in this situation?</p> <p>e.g. Do I have any practical suggestions for further changes or follow-on projects in the organization?</p> <p>Do I have any suggestions for changes or for new structures or systems?</p>	
D2	<p>What is my feedback (positive and negative) for the research process?</p>	
D3	<p>Do I see value in future similar research collaboration and have I any suggestions?</p>	
<p>Any other reflections that you think appropriate to include here?</p>		