Implementing an Innovation Project in an Irish Multinational Subsidiary: A Dialogical Action Research Study

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Abstract

This paper presents an action research (AR) study based in APC by Schneider Electric, formerly APC Ireland, an Irish subsidiary of the Schneider Electric Corporation. The two-year study was carried out during a time of significant change in the Irish economy and in the multinational corporation. The research presents the reflections and findings of a dialogical action research study in the manufacturing operations group of the subsidiary. The work tells the story of how the project began, how the AR developed and how it was carried out. The study contributes to the debate for increasing academic–practitioner engagement within a rigorous framework and provides suggestions for further development of this recently proposed variant of action research. Consequently, we conclude that dialogical AR is a promising approach that provides a collaborative and supportive environment to facilitate organisational change and a practitioner's professional development.

Key Words: Action research; dialogical action research; multinational; organisational change

H1: Introduction

In the closing decades of the twentieth century, Ireland leapfrogged from a traditional agrarian economy to a deliberately created information economy (Trauth, 2000). The initial impetus was fuelled by foreign direct investment (FDI) from North American multinational corporations (MNCs) setting up manufacturing facilities to avail of low tax incentives, a young, educated workforce and proximity to their growing number of European customers. However, this initially successful model is increasingly being threatened by the low-cost economies of Eastern Europe, India and China. As a result, Irish enterprises rapidly need to build new sources of competitive advantage to sustain employment and standards of living. Furthermore, the growing importance of services in the knowledge economy and the resulting value chain re-alignment from selling products to providing integrated customer solutions is being recognised (Grimes, 2003). Ireland is now entering a new era

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which, according to Michael Porter, requires a transition to an innovation economy (Porter, 2003). This two-year research project was based in a subsidiary of APC, a division of Schneider Electric located in the west of Ireland. It was carried out during a period of significant change within the MNC. The research proposes to make a contribution by presenting the reflections and findings of a dialogical action research study in the manufacturing operations group of the subsidiary. These reflections are presented in the context of leadership in a time of change (Isaksen and Tidd, 2006, Leavy, 2005, Nadler and Tushman, 2004), together with the topics of innovation and change management (Tidd et al., 2005, Tushman and O'Reilly, 2004). The paper is structured as follows. First, the work is placed in the context of the importance of multinational corporations to the Irish economy. Then the challenges facing a manufacturing subsidiary of APC by Schneider Electric are outlined together with the reasons why the changing environment made the location suitable for an action research (AR) project. An overview is provided of the rationale behind dialogical AR as it is a relatively new variant of AR, while the research approach tells the story of how the project began, how the AR developed and how it was carried out. Finally, a reflection on the action research story in terms of the actors involved and of relevant literature is presented, and the learning outcomes for the practitioners and the contribution to theory are discussed.

H1: **Background and Context**

Ireland is one of the world's most MNC-dependent economies (Monaghan, 2012), with almost 1,000 multinational corporations having chosen Ireland as their strategic European base. The country is significant internationally, attracting approximately €2 billion in 2008 (IDA Ireland, 2009 The focus of IDA Ireland (the Industrial Development Authority, which is responsible for FDI in Ireland) is on three strategic pillars: global services; high technology manufacturing; and research, development and innovation (RD&I), as shown in Figure 1.

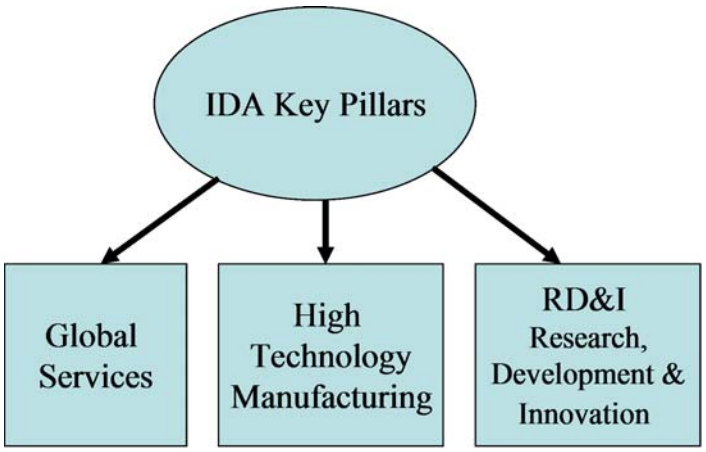

Figure 1: The Key Pillars of Ireland's FDI Strategy

Manufacturing is the bedrock on which Ireland's FDI was built and over the years 2005–2008 more than €5 billion of manufacturing projects were approved by IDA Ireland. The present focus is on jobs that are 'capital and skills intensive' and where 'labour cost is not a significant competence in demand fulfilment management' (IDA Ireland, 2008). Furthermore, these manufacturing investments increasingly include product or process development activities. The continued importance of manufacturing was a key motivation for undertaking this study. The earlier advantage of intrinsically low costs 'have been increasingly substituted by a depth of creative managerial talent, leadership in productivity, innovative business practice and in Research and Development expenditure resulting in superior "value-added" activities' (IDA Ireland, 2007)

Currently, IDA Ireland (2013a) quotes studies that place Ireland eleventh out of 82 countries in a world ranking for most attractive business and FDI location. Additionally, it emphasises that Ireland is in the top 10 in the world for ease of doing business (IDA Ireland, 2013b). The report to the government by the innovation taskforce (ITF, 2010) stated that Ireland must 'develop an innovation ecosystem in which each element, and each interaction, supports innovation across the economy and society'. Furthermore, the entrepreneur (whether working in a self-owned business or an MNC) must be at the centre of the ecosystem. Now we will describe the challenges facing the multinational subsidiary against this background.

H1: **Challenges Facing the Multinational Subsidiary**

The study began 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 (by Schneider Electric). As the initial part of this study was undertaken before the acquisition, this research report will focus on providing a background to the APC context in which the AR study 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 and rack management and services, allowing customers to select standardised modular components using a web-based configuration tool. The APC Corporation reported sales of $2 billion in 2005, globally employed approximately 7,000 people and was a Fortune 1000 company. However, financial reports stressed that the company needed to implement significant improvements in manufacturing and the supply chain. According to these reports, the company needed to develop an organisation that was both lean and ambidextrous in order to realise optimum process efficiency. APC had two locations in the west of Ireland that served Europe, the Middle East and Africa (EMEA). The manufacturing operations site employed approximately 100 people while a number of functions on the second site, including sales, information

technology, business support, and research and development, had a workforce of approximately 300. Responding to the supply chain challenge, a Lean Transformation project was set up in the manufacturing location with a cross-functional team of twelve members drawn from management, engineering, manufacturing, materials planning, quality and logistics functions (Womack and Jones, 2003, Womack and Jones, 2005). The Lean Transformation team set an objective to quickly deliver the message that APC Ireland is responding to, and leading, the corporate initiative while also providing a platform for the Irish subsidiary to obtain a reputation as an innovative location. The primary management information system (MIS) 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 wherein 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 its acquisition analysis and APC's expertise in information technology was identified as central to the creation of synergies with Schneider's power solutions subsidiary MGE. In summary, there was an imperative for change in the manufacturing operations subsidiary that provided the impetus for an AR project. Now we will provide an overview of action research with an emphasis on the variant employed in this study, namely, dialogical AR.

H1: **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 and 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, while Coghlan and Brannick (2005) emphasise the importance of the social and academic context in which action research is carried out.

Dick (1993), 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, organisation or programme
- *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 (2001: 2) 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 well-being 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 study:

> 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. (2001)

H2: Dialogical Action Research

Mårtensson and Lee (2004: 507) have suggested and described a novel form of action research called *dialogical* AR wherein, '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 organisation and its problems'. In their paper Mårtensson and Lee (2004: 531) propose that 'reflective one-to-one dialogues' between the practitioner and the researcher, which 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 organisation'. 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 judgement of the practitioner based on their experience, expertise and tacit knowledge together with their reading of the organisational situation that confronts them. Furthermore, the ongoing dialogue is presented as an *interface* between the scientific world of the researcher, marked by *theoria*, and the 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 and Lee (2004) draw heavily on Schön's (1990) model of professional inquiry consisting of a pattern of five features: situation requiring attention, a surprising response, reflection-in-action, critical examination and restructuring, and an 'on-the-spot experiment' (Mårtensson and Lee, 2004: 510). They make a fundamental distinction between traditional forms of consulting and dialogical AR in that the latter always involves reflection and learning. Furthermore, unlike consulting, AR involves someone who has academic expertise rooted in some scientific discipline, where teamwork takes place between researcher and practitioner, and where 'negative feedback' is seriously taken on board.

In line with the suggestion by Coghlan and Brannick (2005) quoted above, according to Mårtensson and Lee (2004: 514) it is incumbent on the researcher to 'explicitly and intentionally acquire an understanding of the social and historical context of the organisation and its problems'. This approach

was followed in the first year of the study undertaken in this work. In their vision of dialogical AR, the scientist makes suggestions to the practitioner but the practitioner remains the 'agent of action' using their explicit and tacit knowledge (Mårtensson and Lee, 2004: 515). Furthermore, Mårtensson and Lee (2004) see the role of the researcher as having the following attributes in the one-on-one dialogues: first, to listen in order to identify the problem that requires some action; second, to gather the facts to form the basis of deciding what suitable theory can be applied to the problem area; and, third, to suggest and monitor appropriate actions to the practitioner. Interestingly, for this study Mårtensson and Lee (2004) use the analogy of an anthropologist spending a year-long ethnographical study to understand the world of the natives, i.e. the practitioner. Now we will describe the development of the research approach carried out during the implementation of an innovation project in an MNC subsidiary via the application of dialogical AR.

H1:**Research Approach**

The study is presented from the perspective of a researcher undertaking a longitudinal study of innovation management in the Irish subsidiary with the support of colleagues in the research area. Slappendel (1996) recommends using a research team approach to overcome limitations when examining innovation in organisations from the interactive process perspective. First contacts were made with two APC engineers at an innovation seminar titled 'From Idea to Launch' in Dublin that was organised by Engineers Ireland. From discussions had at the seminar and owing to the fact that management had funded two APC engineers to go to this event, it was evident that some members of the organisation were of the opinion that APC's manufacturing operations site needed to become recognised as an innovative location. The initial project launch was as a result of the author's presentation on innovation to managers and engineers in APC's west of Ireland location. The innovation project consisted of two main phases outlined below: a yearlong ethnographic study followed by a further year of action research, following the dialogical format.

H2:Phase One of the Project

This first phase of the project lasted one year. Data collection methods during this phase involved maintaining a log book, reviewing documents and information systems, compiling records, conducting interviews, recording observations (direct and participant), studying artifacts and carrying out surveys in order to develop a database and body of evidence (Yin, 1994, Gillham, 2000). A total of 29 unstructured or 'open' interviews were undertaken that involved approximately 60 hours of interview time and 24 days spent observing the company sites. The interviews were conducted across a wide area of the organisation, including with senior managers with global, EMEA (Europe, Middle East and Africa) and Irish site responsibilities; middle managers; team leaders; engineers; and a number of people in general planning roles. A main focus of this phase was the 'Lean' project described above.

Furthermore, the researcher had the status of a temporary employee with his own email address and intranet access.

H2: ***Phase Two of the Project***

The decision to move to an action research cycle emerged from the phase one interaction and was based on the ambition of the manufacturing subsidiary to become an innovative location. It was realised that such a project would involve significant change within the organisation and its processes. Resulting from discussion with the plant manager, there was an agreement to move forward using a dialogical AR approach with researcher–plant manager meetings every two weeks. In their paper, Mårtensson and Lee (2004: 531) propose that 'reflective dialogues outside the organisation can help the manager to reflect on, learn from, and remedy managerial problems in the organisation'. 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. The plant manager also considered the framework advantageous since it allowed him to retain control and responsibility for all decisions, implementations and communications within the AR programme. However, there are a number of practical risks with this type of longitudinal research in a dynamically changing corporate environment – such as the realities of reorganisations and relocations – that are not pointed out by Mårtensson and Lee (2004). In addition to the above there were eleven meetings with the plant manager, which totalled seventeen hours in duration. These meetings became the basis for the dialogical AR approach during the second phase of the project. Data collection during this period involved recording of the meetings which were subsequently transcribed verbatim by the researcher. Given the rich nature of the data, this was considered the optimum way of capturing the reflective meaning and ensuring consistent interpretation. Analysis was done manually through the examination of each meeting transcript and through providing a summary of the topics discussed in the transcripts. This then was sent to the plant manager for his evaluation and confirmation that it was an accurate portrayal of the meeting, as advocated by Kelly and Murnane (2005). In total these transcripts ran to over 60,000 words.

Table 1: Data Collection Summary

Number of formal interviews	22
Estimated hours	34.5
Meetings with main point of contact (additional	11
to above)	17
Estimated hours	
Dialogical action research meetings	16
Estimated hours	22.5
Total interview hours	*74*
Total days on site	*42*

A profile of the interviews is set out in Table 1. The data gathered from the interviews were by their nature subjective and hence open to interview bias. However, the broad range of interviewees was an attempt to get various perspectives across the organisation. As pointed out by Howcroft (1998: 123) in a similar situation, this was not a positivistic study that wished to claim scientific objectivity, rather, 'any values that are invoked are those that inform the theoretical perspective'.

H1: Reflection on the Dialogical AR Project

This section will provide a reflection on the dialogical AR project guided by literature contributions in the areas of innovation (Tidd et al., 2005), organisational change (Tushman and O'Reilly, 2004) and leadership (Nadler and Tushman, 2004) . On the first examination of the study the evidence suggests that the organisation was undergoing a process of adaptation since the initial 'Lean' project was undertaken reactively in response to APC corporate communications that there was a need for improvement in process innovation (delivery of products and services) and paradigm innovation (organisational models). Subsequent to the acquisition by Schneider Electric, the manufacturing operations subsidiary quickly embraced the principles of the Schneider Production System (SPS), which is closely related to the Lean approach of the Toyota Production System (TPS). This involved visiting a flagship plant in France that uses SPS and networking with some of the main corporate leaders and implementers of the program. An example of this was the running of a major Kaizen event guided by Schneider's experts in the area, which was a first for any of the APC subsidiaries. Kaizen, a Japanese word for improvement that has become associated with Lean practices, is a process improvement approach that is integral to Lean Thinking and it is interesting for this study that Tidd et al. (2005) propose the practice of Kaizen as a method of continuous incremental innovation over a long period. A major process innovation was introduced to the plant based on the engagement with SPS, namely Short Interval Management (SIM). The method was implemented in the APC operations site both as a communications instrument and as a tool to help with the running of a production line. SIM is used to communicate issues from the line up through the organisational support structure so

that they can be prioritised and addressed. It has been found to be particularly useful for communication of potential health and safety issues, customer feedback issues and quality issues to everybody associated with a particular production cell. It is also used to track and communicate progress against the build plan. Key to the success of SIM is the short interval, where progress is tracked regularly. Large tasks get broken down into smaller steps against which progress is reported during twice-daily SIM meetings of the production teams, which are restricted to ten minutes each. These meetings are run by the cell supervisor (or designate). At these meetings, the SIM boards, which graphically display all the current health and safety, customer feedback, quality and build plan information, are reviewed. Finally, any potential barriers to achieving the build plan are brought up, which can be escalated to the support staff where ideally these issues should also have a suggested fix for the issue. The supervisor is responsible for taking a photograph of any health and safety issues highlighted at the SIM meeting or during the day and posting on the health and safety section of the SIM board using the associated template. The support team for a cell also hold a daily SIM meeting which should take no longer than 30 minutes. This meeting is run by the production manager and members of this team include the cell supervisor, manufacturing engineer, quality engineer and material specialist. The SIM process has become the major enabler of incremental innovation, associated with adaptation in the subsidiary.

The plant manager had this reflection on the SIM implementation:

> *The best way to get good ideas is to get lots of ideas. In terms of our organisational change, the SIM process has put a mechanism in place that allows people to get their ideas implemented. While the majority might be small and incremental – bigger ideas can emerge. For example, the SIM process threw up a potential problem with our health and safety process – it was too dependent on one person. The result was that we implemented an organisational change – and the external auditors were so impressed by the SIM process contribution to H&S [health and safety] that we won a national award. People are inherently intelligent but you need a mechanism to allow people to use their intelligence. The SIM process now facilitates people using their natural creativity and make suggestions that will be implemented. We didn't have this before and also we are keeping a database of the suggestions.*

While from a day-to-day perspective the incremental and reactive nature of the process of organisational change is most obvious, the dialogical AR project consisted of both strategic and anticipatory aspects. The vision of the plant manager was that Manufacturing Operations be transformed from being 'a manufacturing subsidiary' that produces a certain product line to an 'innovative subsidiary' that can adapt to changing business process requirements and hence to being a

sustainable location that can accommodate the exigencies of a continually evolving corporate product portfolio and environment. When asked what motivated him to undertake the organisational change process to implement an innovation culture he had this reflection:

> QU:*I saw it as a means to engage people and get them excited about something; start using their minds at work and overall making the site a better place to work in.*

This re-orientation includes a long-term perspective that encompasses strategic change, the building of networks (both within the corporate organisation and externally with academic and other sectors) and, most importantly, the creation of an environment that allows and encourages every person to be innovative and effective:

> *For me, if I reflect back on the last twelve months, I would say that before we started this [project] an innovative culture was something that you could almost not define: it was just an airy-fairy type of concept. After having gone through the process over the last while, being able to define a structure that helps support an innovative culture has been a key point.*

However, re-orientations are risky and the future of the subsidiary within a re-aligning corporation and the increasing movement to lower-cost locations remains to be seen. One motivating factor from the engagement with other Schneider locations in France has been the realisation that sustainable manufacturing is still a reality when regular productivity improvements driven by such processes as SIM are demonstrated. For example, the 'Lean Transformation' project, when tracked, showed a dramatic productivity improvement in efficiency, increasing from 50 per cent to 80 per cent. A technician had this to say about the Lean initiative, which was seen as an enjoyable learning experience:

> *Lean provides a different perspective and a more structured way of doing work. Value stream mapping is a major benefit and the structured way of drawing a value stream on a flip-chart is very beneficial.*

The incumbent leadership approach consisted of three dominant behaviours: structuring, controlling and rewarding. In the case of structuring, there has been a concerted effort to building and empowering teams as evidenced by the 'Lean Transformation Team', which received corporate

recognition. In relation to this the concept of 'empathy' emerged in the discussion in the following way:

> *The reality of working in a fast-changing supply chain environment demands that people have the human quality and attitude of being able to cope with imperfect or messy processes and deliver for the team.*

The manufacturing environment and the emphasis on measurement and key performance indicators (KPIs) in the SPS and the SIM process, in particular, naturally support the controlling attribute. Furthermore, within the limited budget constraints there has been an attempt to provide some rewards to employees and teams with the SIM process providing a quick feedback loop to ensure corrective actions do happen and responsibilities and commitments are adhered to. That said, the changing environment and the concerns about the future are real issues. The plant manager commented:

> *That creates a problem for what we are doing here because in order for people to be creative and innovative your morale needs to be high. If the morale is going to be low, people are not going to come in and be creative. They will be more concerned about their jobs so you need a secure environment [for innovation].*

Having completed our reflection on the project we will now discuss learning outcomes from the project for both the firm and researchers.

H1: Learning from the Dialogical AR Innovation Project

A significant and new process innovation, short interval management (SIM) was introduced during the AR study and this became the focus of the practitioner and researcher attention during phase two of the project. Using the broad definition of an information system proposed by authors such as Verrijin - Stuart (1989), Whitten et al. (1986) and Fitzgerald et al. (2002), it is argued that SIM is a *de facto* information system which acts as the human interface to the enterprise resource planning (ERP) system. Furthermore, this transformation was likened to a digital-to-analogue conversion process by the plant manager. Figure 2 is an attempt to capture this conceptualisation. 'Digital' information is extracted from the ERP and other systems and placed on the SIM board in an 'analogue' format by the relevant people in the organisation. The human activity results in the ERP information are then prioritised and acted on. In this case, the ERP forecasts were transformed into daily build plans and

takt (the maximum time allowed in order to ensure that the product meet the demand) times. After the work is completed the updated information is then placed into the ERP systems for further processing. In this conceptualisation presented in the figure below, the SIM becomes an interface and a transformation location, between the digital world where the information resides and an analogue world where the information is acted on and implemented.

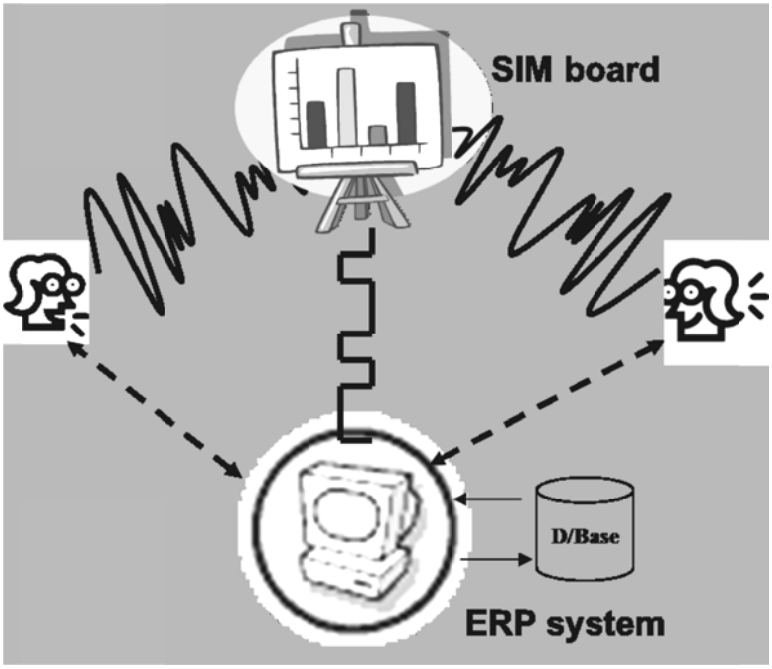

Figure 2: SIM as a Real-Time Information System

While there have been regular calls for more effective academic and practitioner collaboration, evidence suggests that this is still largely unfulfilled (Ågerfalk, 2010, Benbasat and Zmud, 1999, Hevner and Chatterjee, 2010, Schön, 1990). The plant manager commented at lunch that when this project had started he thought of it as just a nice thing to do:

> *However, after the visit of the Schneider VP, I saw the value of what we were doing. If we hadn't been able to talk about the research we would have only been another manufacturing plant. I then realised the benefit of the research and of publications.*

The structure of this research had a very significant practitioner commitment that even involved joint presentations of the work to academics. We believe that such a dual focus can assist other practitioners and academics, both from the context and 'commonalities' emerging from the study and from the voice of a practitioner on how research can contribute to a dynamic real-world situation. The approach is also consistent with Susman and Evered's (1978) argument that action research – and in this case

dialogical AR – assists members of the organisation develop their capability to resolve their own problems. Here is the plant manager on this topic of empowerment:

> *[In] the present manufacturing environment, people come to the plant to work and then go home. I want people to come in everyday to work and think – and then to go home. I want to tap the resources of the people and create a habit of learning.*

There is wide agreement in the literature that *reflection* is critical when it comes to meeting the dual mandate of AR: addressing a real-life problem through intervention together with the research objective of making a contribution to knowledge (Avison et al., 1999, Baskerville and Myers, 2004, Coghlan and Brannick, 2005, Davison et al., 2004). One persistent bone of contention has been the scarcity of methodological assistance for conducting and evaluating AR studies. This study proposes an addition to Davison et al.'s 'Principle of Learning through Reflection' (2004) through modifying a set of questions that were based on engagement with the psychology literature (Dick, 2002). The advantage of dialogical AR is that the reflective one-to-one dialogues inherent in the approach involve regular opportunities to engage with, and reflect on, the *process of reflection*. The plant manager states:

> *There is real benefit by bringing the literature to me. … People from the academic world read lots – that's what they do. However, being able to filter it down to the likes of me who might want to read but does not have all that time is important.*

An example of the evolution in the practitioner's reflective experience was the development of his understanding of the meaning of the term 'innovation culture':

> *A significant output for me was just the whole learning process of putting a structure around an innovative culture – it is not just a fuzzy thing – I have a clear image in my mind of what that means. (plant manager)*

And another example from the plant manager of the maturing of his thinking on the subject of innovation is described as follows:

> *If another manager came to me and said, 'I want to be more innovative – what does that mean?', I could advise them and share a lot of this [project] with them which would be significant – a framework to go forward that I would intend to apply to my day-to-day work.*

A key result from the scheduled evaluations at the end of each stage of the 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:

> *I see a great value in this research by forcing me to take time out for reflection.*

Mårtensson and Lee (2004: 519) propose three criteria to evaluate a dialogical action research undertaking. These are presented in Table 2 as applied for this study.

Table 2: Criteria to Evaluate Dialogical Action Research

Criterion	Time t = 1	Time t = 2
Real world problem solved or remedied	The problem addressed was how to enable sustainable innovation in a manufacturing location	The problem was not solved but the introduction of the SIM process was both an innovation in itself and provided a vehicle for capturing innovations. As a result the research could claim to have remedied the problem and SIM could be regarded as a manual information system *per se*
Improved researcher's expertise	This was the first time the researcher used dialogical AR, which is relatively new to the literature	Using the principles of Canonical Action Research (Davison et al., 2004) and the development of a structured questionnaire on reflection were important learning experiences for the researcher
Improved practitioner's expertise	The practitioner moved from a senior engineering manager role at the start of the project to the role of plant manager. At that stage he described his knowledge of innovation as very basic. He did not know 'what he needed to know' about innovation	The process of going through the dialogues, developing a conceptual model, introducing SIM and reflecting on the process resulted in the practitioner having an enhanced appreciation of innovation by the end of the project. Furthermore, this coincided with him becoming plant manager and having responsibility for innovation on the site

This section has outlined a number of learning outcomes resulting from the study – the introduction of a process which could assist multinational subsidiaries in a similar situation and the professional development of the site leader through regular interaction with academia – while also suggesting enhancements to the dialogical AR approach. Further contributions from the work have also been published elsewhere (Costello and Donnellan, 2012, Costello et al., 2011), some of which can be summarised as shown in Table 3.

Table 3: Summary of Findings

Subject	Description
Complexity	Innovation is a complex subject that is increasingly seen to be crucial to an organisation's success and even survival
Novel Approach	Dialogical action research provides a new approach to the study of innovation. It is especially suitable when the practitioner seeks to retain control of the implementation of the project
Test of Methodology	Dialogical AR is relatively untested and this study is intended to contribute to debate on the approach
Interpretive Space	The dialogical AR provided an *interpretive space* for the practitioner. The importance of this factor for innovation has been emphasised by Lester and Piore (2004)
Irish-Based Study	There have been few longitudinal case studies carried out that have been embedded in a single MNC subsidiary located in Ireland. This study addresses this gap and provides groundwork for further explorations in the area
Canonical AR	This study found that the five principles of canonical action research (CAR) developed by Davison et al. (2004) provide a suitable structure for analysis and evaluation of dialogical AR
Reflection	The literature identifies the area of reflection as the most crucial aspect of an action research study. However there is a paucity of guidance on how the reflection is carried out. This study attempts to address this gap

Now we will summarise the conclusions of the study.

H1: Conclusions

This paper has presented an analysis of the findings from a dialogical action research study of innovation and change in the APC by Schneider Electric subsidiary located in the west of Ireland. The aim of the study was to accomplish the dual mandate of dialogical action research: action by addressing a real-life problem through intervention together with the research objective of making a contribution to knowledge. This study makes a distinctive contribution by presenting a two-year longitudinal study of a researcher embedded in an MNC subsidiary located in Ireland. As a result, it provides groundwork for further explorations in the area. The work also aims to contribute to the debate for increasing academic–practitioner engagement within a rigorous framework and makes suggestions for further development of the dialogical AR approach. We have supplied evidence that this meeting of *theoria* and *praxis* provided a milieu in which the researcher could propose models of innovation and change management to the site leader. A more detailed example is available in a separate publication (Costello et al., 2009). These suggestions were then reflected upon by the practitioner (Schön, 1983) and implemented based on his judgement and the needs of the organisation.

Consequently, we conclude that dialogical AR is a promising approach for use in Irish MNC subsidiaries and beyond as it provides a collaborative and supportive environment to facilitate organisational change and practitioner professional development.

H1:Acknowledgements

The authors wish to acknowledge the dedication and cooperation of employees in APC (by Schneider Electric) Ireland for generously providing the case on which this research is based. The authors are very grateful to the reviewers for their interest and suggestions concerning this paper.

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