

MYTHS IN ORGANISATIONAL ACTION RESEARCH: REFLECTIONS ON A STUDY OF COMPUTER-SUPPORTED PROCESS REDESIGN GROUPS

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INTRODUCTION

Greek mythology has produced perhaps the widest range of myths ever seen. These myths were used in ancient Greece to explain a number of natural and social phenomena, such as storms, lunar and solar eclipses, wars, and political upheavals. Some of these myths gave rise to elaborate rituals where human beings tried to satisfy the needs of creatures that were supposed to lead some form of existence, hidden in bushes or elsewhere. Although sometimes romantic, such myths could sometimes be very irrational. One example is the myth called centaur, which the Oxford dictionary defines as "One of a tribe of creatures with a man's head, arms, and upper body on a horse's body and legs". Although the centaur was faster and stronger than ordinary human beings, there are at least two unanswered questions that illustrate the irrationality of this myth. First, how can small organs, such as the human stomach (the centaurs were often described as enjoying banquets, eating meat and drinking alcoholic beverages), sustain the huge body of a centaur? Second, if there was a human

stomach, why would the centaur have the other two cellulose-digesting stomachs that occupy nearly half of the horse part of the centaur's body? The fact is that, even if it was possible to produce such a creature, the centaur would have been either a result of poor genetic engineering, or a natural mistake that would be quickly eliminated by natural selection.

Epistemologies, philosophies of knowledge, and research approaches can also nurture the existence of myths - their own "centaurs". It is likely that a large number of these myths form the basic framework on which epistemologies and a number of research approaches are based. These research approaches frame an even larger number of ill-designed research projects that will lead to assumptions, guidelines, and ultimately normative methodologies that will inform manager's decisions in organisations. This body of normative knowledge is then likely to lead to problems such as poor quality and productivity, lack of motivation, and ultimately a lack of organisational competitiveness and a number of related problems in society in general.

In this paper we discuss the action research approach as regards its application to organisational research. This discussion revolves around the analysis of four contemporary action research myths, which is done against the background provided by an information systems research study involving three organisations. The research approach discussed, action research, has been receiving increasing attention in the 1990s as an alternative to bridge the gap between academic research and organisational practice (McKernan, 1991; Ledford and Mohrman, 1993a; Tichy and Friedman, 1994). Our discussion is based on our definition of organisational action research, which is:

A general term to refer to research methodologies and projects where the researcher(s) tries to directly improve the participating organisation(s) and, at the same time, to generate scientific knowledge.

The above definition states that action research projects search for "direct" organisational improvement. This means that genuine action research projects should search for organisational improvements "during" the research, rather than after the research. In this sense, a research project that seeks to benefit the organisation through the generation of a research report with "useful" information and knowledge cannot be considered a

genuine action research project, as this body of information and knowledge could well be produced by a case study or a questionnaire survey. The definition also highlights that action research should search for scientific knowledge. Although the word "scientific" lacks a clear and generally accepted definition, this means that research projects where intervention is not accompanied by systematic reflection and learning cannot be considered genuine action research projects either. Intervention without research is more characteristic of organisational consulting projects, where the basic theory that informs action is embedded in methodologies and normative approaches that, one expects, had been tested before and are likely to produce predictable outcomes (however, this is not always the case).

We argue that there are at least four contemporary myths related to action research as defined above, which we discuss in this paper. The first myth discussed is that action research is necessarily opposed to positivism. This myth has been identified in the writings of several prominent organisational researchers, who systematically present action research methodologies and underlying epistemologies as ways to overcome the limitations posed by positivism (Argyris, Putnam and Smith, 1985; Reason, 1993), and in the opinions expressed by experienced researchers. The second myth discussed is that action research should begin without a definite research framework. This myth has been identified in published research on methodological issues related to participatory action research (McTaggart, 1991), and descriptions of specific action research projects where there was a strong willingness from the client organisation to participate in the action research project (Marshall and McLean, 1988). The third myth discussed is that action research is a qualitative research approach. This myth has been identified in published research on methodological issues related to qualitative research (Lacity and Janson, 1994) and opinions expressed by experienced action research practitioners. Finally, the fourth myth discussed is that action research allows for fast and easy data collection and analysis. This myth has been identified in recent conversations with novice action research practitioners, and seems to be related to the loose control and lack of research structure normally associated with action research.

Our counter-arguments to these myths are illustrated based on a two-stage action research study involving three organisations. The first stage was an exploratory study, accomplished in a Brazilian organisation. The

second stage involved two iterations in the action research cycle (Susman and Evered, 1978) in two New Zealand organisations. This action research study is described in detail in the following section, which is split into four subsections. This description is followed by a section where each of the four myths is discussed individually.

A STUDY OF COMPUTER-SUPPORTED PROCESS REDESIGN GROUPS

The illustrative example of action research application was conducted in two main stages. The first stage comprised an exploratory study that was conducted without a well defined research framework and provided the basis for a more elaborate research design. Between the first and second stages the researcher set up a research design based on the research results from the first stage and literature review. The second stage comprised two iterations in the action research cycle, whereby field data was collected and analysed based on the framework provided by the research design. These two stages are discussed next, along with the research design and selection of client organisations.

EXPLORATORY STUDY: AN EVENTS ORGANISER

The exploratory action research study was conducted at Equipe (pseudonym), a seventy-employee service company in Brazil that specialises in the organisation of national conferences and exhibitions, and the co-ordination of the participation of Brazilian companies in international exhibitions in US and Europe. The exploratory study took a little over one year to be completed, and was undertaken concurrently with an organisational consulting project. The main goal of the consulting project was to redesign and automate several of Equipe's processes and, in consequence, to achieve considerable improvements in quality and

productivity. An organisational improvement approach based on a methodology (Kock and Tomelin, 1993) rooted in the total quality management movement (Deming, 1986; Juran, 1989; Walton, 1989; Walton, 1991) was used.

A number of computer-supported groups were facilitated at Equipe. These groups have made use of an email-like asynchronous group support system (AGSS) developed by the researcher, and redesigned a number of Equipe's organisational processes. No unit of analysis nor a clear research framework were used in the collection of research data. Data analysis was carried out from a normative perspective, i.e. to inform immediate action. This analysis, discussed in more detail in (Kock and McQueen, 1996a), suggested a number of technology effects, including an increase in the number of concurrent groups and a decrease in the demand for leadership seniority in the groups.

RESEARCH DESIGN AND TOPIC NEGOTIATION

Based on the experience at Equipe, an extensive literature review of theoretical and empirical studies on computer support to process redesign groups was carried out. This led to the definition of three research units of analysis and seventeen research questions. Research questions led in turn to the identification of seventeen research variables.

An initial list with possible client organisations was generated based on their likelihood to participate in the action research study, and on the location of their head offices. Two assumptions influenced organisation selection. The first assumption was that the participation of organisations in previous process-focused quality and productivity improvement projects would increase their likelihood of participation in our action research study. A second assumption was that in order for commitment, or at least direct consent, to be gained from the client organisations' head offices, a directly link between the researcher and those offices should be established. This assumption was based on Ledford and Mohrman's (1993, p. 169) rule of thumb that *"the appropriate [action research] client is the social system at least one level of analysis higher than the level at which the key changes are to be enacted"*. A directory of New Zealand organisations that had been certified based on the quality standards ISO 9001 and ISO 9002 (Telarc,

1993), was then used to generate a list of 17 organisations whose head office was conveniently accessible to the researcher.

Six of those organisations were contacted initially through CEOs or business managers. These initial contacts were followed by meetings with management staff in which research conditions were “negotiated”. This negotiation led to a refinement in the research topic and, in consequence, in the research framework previously defined. Researcher and organisation tried to reach a compromise about costs to be met by the organisation (e.g. equipment, venues, and staff time required), opportunities for the generation of scientific knowledge, and opportunities for organisational improvement.

Two organisations agreed to participate in the action research study. The negotiation that led to those agreements spanned 6 months for one of the organisations, and 11 months for the other. It was agreed that process redesign groups in both organisations would be facilitated through a methodology devised by the researcher, MetaProi (Kock, 1995), and supported by an AGSS prototype developed by the researcher. One iteration in Susman and Evered’s (1978) action research cycle was carried out in each of the two organisations. In those two iterations the researcher followed a specific action research methodology (Kock, McQueen and Fernandes, 1995; Kock, McQueen and Scott, 1995).

FIRST ITERATION IN THE ACTION RESEARCH CYCLE: A UNIVERSITY SCHOOL OF STUDIES

The client organisation in the first iteration was School (pseudonym) a school of studies of a New Zealand university, which agreed to participate in a pilot research study involving one process redesign group. The group had staff from two departments and redesigned two processes related to the laboratory portion of a course.

Two structured interview transcripts, twelve unstructured interview notes, participant observation notes, and the transcript of the electronic discussion were used as raw data for analysis. The study at School suggested several effects of AGSS support on groups, including that AGSS support reduced barriers to interdepartmental communication and drastically reduced the amount of interaction in groups.

The limited scope of the first iteration (e.g. only one group was studied) prompted the researcher to perform a second iteration in the action research cycle. It was assumed that the second iteration should use the same research framework used in the first. However, a few desirable changes were identified and implemented. A manual describing MetaProi (Kock, 1995) was produced to be distributed to process redesign groups in the second iteration.

SECOND ITERATION IN THE ACTION RESEARCH CYCLE: A GOVERNMENT BRANCH

The client organisation in the second iteration was MAF Quality Management (MQM), a semi-autonomous branch of the New Zealand Ministry of Agriculture and Fisheries. MQM's senior managers consented to the researcher looking for group leaders among their staff. Fifteen group leaders were contacted, from which 6 agreed to lead process redesign groups. Six process redesign groups were carried out with AGSS support. Those groups involved altogether forty-seven staff from eighteen different office sites (typically in different cities) spread throughout New Zealand.

MQM's main motivations to participate in the action research study were the need for a group process methodology that allowed staff from different office sites to discuss common processes, and the urgent need for change caused by the prospects of deregulation in the main industry sectors supplied by MQM (known at MQM, generally, as "food" and "plant" sectors), and MQM's own privatisation - which had recently been foreseen by government officials and MQM's group director (French, 1994).

The raw data used in the analysis consisted of nine transcripts of structured interviews, six completed questionnaires complemented by notes based on follow-up phone interviews, notes based on thirty-two unstructured interviews and participant observation, and transcripts of computer-mediated discussions. This raw data altogether amounted to approximately 135,200 words, and was analysed along several iterative stages, adapted from Dick (1990), Yin (1994), Miles and Huberman (1994), Jones (1993), James and Brett (1984), and Davis (1985). These stages were: (1) Generation of tables summarising attribute (or variable) content variation across respondents and groups. (2) Compilation of emerging patterns observed in stage 1. (3) Explanation building for the patterns compiled in the stage 2.

(4) Identification of main dependent variables affected by AGSS support in process redesign groups. (5) Generation of causal models where the linkage between AGSS support and the main dependent variables identified in stage 4 is described in terms of intervening and moderating variables. The textual data was re-read and analysed several times along these stages.

Six causal models were generated and cross-analysed against previous findings in the exploratory study and first iteration in the action research cycle. Five of the seventeen variables initially defined had been dropped and 25 new variables had been introduced into the models (the units of analysis remained unchanged) by the end of the second iteration in the action research cycle.

The study suggested, among other findings, that AGSS-supported process redesign may meet with both senior and middle management resistance. This management resistance comes from the fact that senior managers are unlikely to fully engage in AGSS-supported process redesign groups because of their bias towards oral and synchronous types of communication, and the perceived threats brought about by more efficient record-keeping mechanisms present in AGSSs. Middle management resistance follows from the loss of control over how information flows in the organisation.

A CRITICAL ANALYSIS OF FOUR ACTION RESEARCH MYTHS

Four myths are analysed in this section, based on the illustrative example provided above. The first myth discussed is that action research is opposed to positivism; the second is that action research studies should begin without a definite research framework so previous research misconceptions and biases can be avoided; the third is that action research is an instance of qualitative research; and the fourth myth, held mostly by novice action research practitioners, is that action research allows for fast and easy data collection and analysis.

MYTH 1: ACTION RESEARCH IS OPPOSED TO POSITIVISM

Several research philosophies and approaches have been developed to overcome limitations posed by positivism, such as the critical and interpretative research philosophies (Jonsson, 1991; Orlikowski and Baroudi, 1991), some instances of case research (Doolin, 1995), and ethnographic research (Harvey and Myers, 1995). Action research, however, seems to spring to mind as being the essence of anti-positivism in organisational research (Reason, 1993), to the point that action researcher practitioners often apologise for the use of methods that are believed to belong to the positivist tradition (Heller, 1993, p. 1239). The following example illustrates this myth from an academic perspective. An e-mail message recently sent to all staff in one of our schools announced a prize related to the publication of a journal article proposing a methodology for action research in organisations. The article was authored by a member of a department known for its positivist orientation. That e-mail message was sent by a departmental colleague, who wrote that:

Perhaps this work will help dispel the rumour about [the department's] sole dedication to positivist research methodologies!

Interestingly, a further investigation revealed that almost a third of the staff in that department had been in the previous year conducting research that was predominantly interpretative. Some of that research had been conducted in collaboration with organisations in the context of co-operative organisational development projects, which is a distinctive characteristic of action research. However, the staff who had been involved in those research projects never referred to it as action research. One of those staff, when faced with this fact, declared that:

...I wouldn't have thought of what we have been doing as action research...we've been pretty rigorous and quantitative in the data analysis...

Perhaps the fact that exponents in organisational research turned to action research to overcome the limitations of positivism, a term derived from Auguste Comte's "positive philosophy", contributed to feed the myth that action research is opposed to positivism. Chris Argyris and Peter Reason,

for example, whose specific approaches to action research are generally known as, respectively, action science (Argyris et al., 1985) and co-operative inquiry (Reason, 1988), to a large extent justified their research approaches by highlighting negative characteristics of positivism. Peter Reason, in particular, stressed the urgent need for a new epistemology on which to base action research. This new epistemology should break away from dogmas established in "normal science" - i.e. science grounded on positivist assumptions (Reason, 1993).

The main difficulty with trying to oppose action research to positivism is the difference in the scope of these two concepts. While positivism is an epistemology, or a theory of knowledge (Hirschheim, 1985; Teichman and Evans, 1995), action research is a research approach. Being an epistemology, positivism implies a particular interpretation of knowledge, as well as "appropriate" approaches to obtain "valid" knowledge. As a research approach, action research sets out no more than a general method that provides the background for data collection and analysis, with inherent strengths and weaknesses (Jonsson, 1991). Therefore, action research, as case research, can be employed in ways that reflect different epistemologies, such as interpretivism and positivism (Doolin, 1995). Among the main tenets of positivism are (Hughes, 1976; Bell and Newby, 1977; Kolakowski, 1993:

- That there must be a *unity of scientific method* in the generation of knowledge, that is, natural and social sciences should use the same general research method. The most appropriate methods are believed to be those of the natural sciences - particularly experimentation, when the object or situation of study can be controlled. In addition, whether control is or is not possible, the researcher should be as much detached from the object or situation of study as possible.

- That both society and nature conform to certain *fixed and unalterable laws*. These laws can be explained by causal relationships between attributes (often called variables) of real objects or models embodying relevant characteristics of those objects (often called units of analysis). Those causal relationships should be empirically verifiable. The search for these relationships requires a process of formulation and testing.

Our action research study on computer-supported process redesign groups incorporates, to some extent, positivist characteristics. Although presenting distinctive action research characteristics, that study cannot thus be considered as necessarily inconsistent with positivist assumptions. For example, the main product of the research was a set of six causal models. Those causal models were, very much in the positivist tradition, empirically verifiable - which could not be otherwise, since the models were the immediate result of an empirical study. Moreover, the fact that a research framework comprising units of analysis and variables was identified based on research questions before we began the iterations in the action research cycle, indicates that there were some expectations towards results, which implies a process of hypotheses formulation and testing - another characteristic of positivism. Some research expectations were also discussed with prospective organisations. Those expectations could also be seen as research hypotheses, which were stated before the second stage was begun, and were later confirmed or disconfirmed by the research study findings.

Among the distinctive action research characteristics of our research study was the fact that the researcher applied very little control over the environment, in some cases to the extent of refusing intervention that would characterise the research as a field experiment. For example, a few prospective groups were ruled out of the research because their prospective leaders wanted to lead them to "test the new approach proposed by the researcher", rather than improve real processes. This was seen as likely to force the researcher into defining artificial problems and related processes to be redesigned, which could irreversibly bias the study findings. In addition, the researcher was in no way detached from the object and situation of study. On the contrary, the researcher was an instance of one of the units of analysis - process redesign group member. He was also, in consequence, part of the two other units of analysis - process redesign group and the organisation (at least for a while).

There are several emergent methodological varieties through which genuine action research can be carried out. For example, Elden and Chisholm (1993) cite the work by Coch and French (1948) as illustrative of what those authors refer to as "classical" action research. This mode of action research can be positivist to the extent that hypotheses are clearly formulated in advance, control groups are defined, and hypothesis-specific empirical data is collected and statistically analysed. Moreover, Elden and Chisholm

(1993, p. 130) note that this mode of action research has been relatively successful. According to those authors, this action research mode:

...from before the middle of this century appears to be alive and well at the end of the century. It has stood the test of the time. Many researchers particularly in the US, Britain, and Scandinavia continue to use [the classical mode of action research] to improve organizational effectiveness and enhance employee quality of worklife.

The main goal of organisational action research is to search for knowledge of practical relevance to organisations, in the context of organisational development projects. Therefore, action research targets organisational problems or improvement opportunities; is action-oriented, because there can be no improvement without change; involves collaboration between researcher and members of the client organisation; and, finally, is cyclical, since action leads to the generation and refinement of knowledge that becomes the basis for further action (Peters and Robinson, 1984). These characteristics neither confine action research to, nor turn it into a paragon of any specific epistemology.

MYTH 2: ACTION RESEARCH SHOULD BEGIN WITHOUT A DEFINITE RESEARCH FRAMEWORK

This myth states that action research studies should begin without the constraints posed by a definite research framework. The knowledge building process should rather be based on the observation of emergent patterns in the research data, which should be freely gathered from the field. Although widespread among action research practitioners, this myth finds strong support from those engaged in participatory action research, and co-operative inquiry - two forms of action research where researcher and client organisation work closely both in the field intervention and the generation of knowledge. For example, McTaggart (1991, p. 175) views participatory action research as a fully participatory intervention where organisational members own the research project as much as the researcher. He suggests two "good" ways to begin a participatory action research project, both implying the absence of a clear research framework:

One good way to begin a participatory action research project is to collect some initial data in an area of general interest (a reconnaissance), then to reflect, and then to make a plan for changed action; another way to begin is to make an exploratory change, collect data of what happens, reflect, and then build more refined plans for change.

A research framework can take the general form of research questions, units of analysis, and research variables. It can go even further and comprise assumptions about the phenomena being observed, a more elaborate theoretical framework, or an explicit set of hypotheses to be tested. Whatever its level of detail is, a research framework is likely to cause two conflicting effects. First, it has the positive effect of orienting the collection of data. This is positive insofar as the researcher can focus his or her attention on specific issues, therefore freeing himself from collecting data about "everything" that happens in the field (Henstrand, 1993). On the other hand, a research framework can restrict the object of data collection, and thus bias research conclusions. Although action research can provide a richer understanding of the research situation and object of research than field experiments or surveys, a restrictive research framework can prevent a richer understanding from being achieved.

Our own experience suggests yet another problem that may be caused by the lack of a clear research framework early on in an action research study. The exploratory study at Equipe was carried out without a pre-defined research framework and, in consequence, without a clear research focus. This happened particularly because our main goal in that exploratory study was "action" rather than "research". We had been hired as consultants to plan and implement an organisational development project to attain quality and productivity improvements. As a result of that lack of focus, we had to face the problem, at the end of the exploratory study, that some findings had been weakened by the lack of enough support data. The absence of a clear research framework led to an excessively broad scope in data collection, that led to the collection of "little data" about "a lot of things". For example, we have not collected specific data about several attributes of process redesign groups that later proved important from a theoretical perspective, such as member contribution quality and group interaction. This prevented us from reaching any conclusion about the impact of AGSS support on those

attributes. This, in turn, led to difficulties in relating those attributes to others, which later we found to be dependent variables.

Another factor made it almost impossible to start the second stage without a clear research framework. When we entered the second stage, in New Zealand, we had to face a new reality - we had no business contacts, and therefore no "willing" research site. We had then to approach prospective organisations and "convince" their top management staff to participate in the research project. This, in all cases, involved a negotiation process in which the researcher had to explain, in the following order: (1) what the research would contribute to the organisation, directly and indirectly; and (2) what the organisation was expected to contribute, in the form of capital investment, political commitment, staff time, equipment and facilities. In order to explain the first point, and thus justify the second point, the researcher had to declare in a comprehensive way the research hypotheses concerning the impact of computer technology on process redesign groups. The researcher had also to present a clear plan for the research project, including project goals and a time schedule. Our experience suggests that this plan benefited from a well defined research framework, which led to a clear idea of the number of groups to be facilitated, how interviews would be conducted, how much data would be collected, how data analysis would be carried out, and, finally, how long each of these activities would last. It is important to stress, though, that both the research framework and the initial plan were continuously changed along the research project.

Our experience approaching six prospective client organisations in New Zealand for our study contrasted with some accounts of previous action research studies. These accounts typically describe the initial stages of action research as posing few difficulties for the researcher, which we think is an unrealistic view of action research in general. Let us consider, for example, the experience described by Marshall and McLean (1988), when they set out to establish a co-operative inquiry group at Wrekin District Council, in Shropshire, England. In their first meeting with Roger Paine and Norman Rollo, respectively the CEO and the personnel manager, to negotiate permission to study the organisation's culture, they say that:

We were warmly received and talked over an excellent lunch. Both parties knew each other's work and this was an overdue opportunity to meet... There was a ready rapport between us; we easily translated between

each other's experiences and built on each other's ideas. This in itself was enjoyable, exciting...both Roger and Norman gave their ready agreement. They wanted to be identified by name in any publications (pp. 199-200).

In the case described the researchers seemed to have received unconditional management support from the outset. However, according to our experience, what happened at Wrekin Council is more an exception than a rule. National, regional and organisational culture, as well as researcher's prestige and contacts in the organisation, play an important role in the initial negotiation so the researcher can achieve her objectives whatever they are. However, our study suggests that, taking away these influences, senior managers are likely to turn down an invitation that is not accompanied by a detailed plan to be negotiated.

Even when the researcher is allowed to begin an action research project without a clear framework, letting the flow of action determine what data is collected and further interventions are carried out, there are still some difficulties to be dealt with. Some difficulties, for example, may arise from letting the initiative to define the research topic to be with the organisation. Another difficulty, already mentioned before, is not knowing what to collect data about, and in consequence being forced to collect data about "everything".

During the topic negotiation process that preceded the second stage of our study more than one organisation offered to participate provided that there were substantive changes in the research topic. For example, one of the organisations proposed a change in the focus of the research project from the study of effects of group support systems on process redesign groups to the development and implementation of workflow applications (i.e. applications to automate the execution and control of business processes).

While some of the changes proposed by organisations were incorporated to the research plan, several were ruled out because they were seen as likely to push the study into covering areas that had been covered before, in previous research studies, or lead to irrelevant results from an information systems perspective. For example, the proposal regarding workflow systems implied a heavy software development workload, which might lead to an interesting computer science research project. The problem was that the information systems area, where our focus was, is more concerned with the use of information technology and its organisational effects. Moreover, at first glance the proposal did not seem to address the main problem of the

organisation at that time. That problem would be properly addressed, in our view, by the redesign of core processes, not their automation with workflow systems. Therefore, our view of the opportunity for improvement did not match the organisation's view. This is consistent with Rapoport's (1970, p. 509) observation, based on action research projects carried out by the Tavistock Institute in London, that:

...the presenting problem might not be the most important one with which work had to be done...If the researcher allowed the definition of the problem and associated initiatives to rest too exclusively with the client [organisation], he [the researcher] might be slighting both the practical and the scientific goals of the exercise.

The point that the researcher, not the organisation, should define the main characteristics of action research projects is emphasised by Bunning (1995, p.2), who states that:

A collaborative approach to research seeks to find a mutuality of interest, initiated essentially by the researcher. Although discussions are bilateral and some attention is paid to the interests of the co-operating subjects, the parameters of the research project are essentially set by the researcher and it is within that framework that co-operation is sought.

The researcher is unlikely to be able to plan a research project without a clear research framework, and the lack of this framework is also likely to negatively affect the researcher's data collection efforts. Unfocused data collection severely increases the time spent with data analysis, and impairs knowledge building. Knowledge, in this case, has to be generated after the fact, based typically on textual analysis of research notes. However, these notes are unlikely to fully record "all" relevant situations.

Another problem caused by the assumption that action research should begin without a definite research framework is the increased lag that it may cause between research stages and iterations due to the extra time required to analyse data. The minimisation of time spent in data analysis is particularly critical in action research projects, because of the cyclical nature of action research. The researcher needs to generate intermediate reports based on data analysis between stages and iterations in the action research cycle. If

two or more iterations are to be carried out consecutively in the same organisation, a long gap with no “action” between iterations can prevent momentum from being achieved. This is likely to occur in action research studies in which, like ours, the researcher was highly involved in both the “action” and the “research” portions of the study. Although this is highly advisable in action research, so the researcher will have a clear sense of the context being studied, the researcher will be forced to stop the field intervention while performing data analysis. This is necessary mainly because of the large amount of focused effort required from the researcher in the data analysis.

It is important to note that, although we believe that action research should be based on a clear research framework, we think that the researcher should be prepared to change this framework as the study progresses. Our study illustrates this, as not only the research topic varied, but also several research variables were dropped and other added to the research framework along the stages. This refinement of the research framework was to a great extent influenced by the adoption of triangulation in data collection, where structured interviews were used in combination with participant observation notes, unstructured interview notes and group discussion transcripts. From these, only the structured interviews were framework-bound.

MYTH 3: ACTION RESEARCH IS A QUALITATIVE RESEARCH APPROACH

Qualitative analysis is concerned with questions of the type: Why is the outcome quality of process redesign groups increased when computer support is present? What are the intervening variables that intermediate that improvement in quality? Quantitative analysis, on the other hand, is concerned with questions of the type: How much increase occurs in content and style quality? What is the variance in the measures of quality improvement across groups? The myth that action research is a qualitative research approach is widespread and is illustrated by the following comment, in the introductory section of Lacity and Janson's (1994, p. 138) article on qualitative analysis methods in information systems research:

Information systems researchers have argued the need for using qualitative approaches, such as action research, ethnomethodology, phenomenology, and futures research, to supplement widely used quantitative methods.

This myth probably follows from action research being often seen as an instance of "intensive research" (Weick, 1984). As such, action research is viewed as focusing on a few "cases", or instances of the research units of analysis, from which as much data as possible should be collected and analysed. The analysis of "a few cases" is, in turn, unlikely to allow for the generation of number series whose degrees of freedom (see e.g. Mansfield, 1980) are large enough to lead to statistically valid conclusions.

The number of units of analysis studied, however, varies across and even within studies. In our action research study, for example, the number of instances of the unit of analysis "the organisation" studied was three - Equipe, School and MQM - obviously too low to allow for statistical analysis. The number of studied instances of the units of analysis "process redesign group" and "process redesign group member" were, respectively, seven and eighteen. While the quantitative analysis of data collected from only seven groups is unlikely to yield statistically significant results, the analysis of the variation of member-related variables across eighteen group members can allow for several types of statistical analysis. For example, we used part of the data collected in our study to analyse fifteen business processes (Kock and McQueen, 1996). In that analysis we found a correlation between two process-related numeric variables, "number of information exchanges in each process" and "number of departments involved in the execution of each process", of more than 0.7 (Pearson correlation coefficient). A null hypothesis test suggested that, even for a small sample of 15 unit of analysis instances, when the significance level of the test is set at 0.05 (a typical significance in statistical tests), correlation coefficients above 0.6 could be reliably taken as an indication of an actual correlation between variables.

Also, even when studying small samples, the analysis of simple quantitative measures, such as percentages and distributions, can be crucial to qualitative analysis. Dick (1990), for example, suggests a qualitative analysis method based on the Delphi technique (Linstone and Turoff, 1975). According to this method, the researcher should look for emerging patterns in the forms of agreements and disagreements in textual data sources based

on respondents perceptions, e.g. transcripts of interviewee responses to open-ended questions. One simple way of identifying emerging patterns, which was used in our research, is to classify and calculate the frequencies of certain types of responses. This is a simple form of quantitative analysis of textual data.

The close association between qualitative analysis methods and action research has perhaps been widely due to the orientation and background of action research practitioners. Comments like the following, which indicate that a lack of a strong statistical background can influence this association, have been commonplace in our conversations with colleagues who wanted to use qualitative research methods:

I don't want to do a survey or experiment because I know nothing about statistics. I would rather do something more qualitative, such as case research or action research.

It also seems to be a shared belief, especially among PhD students, that in experimental and survey research thesis examiners are likely to focus more intensely on methodological issues than in action research. This belief is sometimes nurtured even by seasoned action researchers who supervise PhD students. The following comments from an experienced supervisor in a seminar to PhD students illustrates this belief:

You are going to be assessed primarily by the amount of effort you put into your doctoral research project...in action research you're expected to solve practical problems, which is not easy...if you decide to do a field experiment, it's likely that the [thesis] examiners will scrutinise your research design with a lot of rigour...it's much easier to run an experiment than do real action research.

Action research can apply both qualitative and quantitative methods. The research methods used in action research should be chosen based on both the researcher's background and specific characteristics of the research project. This choice should also be targetted at the generation of relevant knowledge, rather than the demonstration that "a lot of effort" has been put into the research project. Moreover, those who think that qualitative analysis is easier than quantitative analysis may be surprised by the difficulties posed by the former, as discussed in the next section.

MYTH 4: ACTION RESEARCH ALLOWS FOR FAST AND EASY DATA COLLECTION AND ANALYSIS

This myth, differently from the other myths discussed in this paper, seems to be held particularly by novice action research practitioners and some doctoral students. Some of these researchers think that by doing action research they will be able to skip the initial stages of literature review and research design, and proceed directly to collect field data. This field data, these researchers think, will be mostly in the form of participant observation notes, which are easy to collect and analyse through qualitative analysis. According to Yin (1989, p. 1) this myth also seems to be common among novice case research practitioners. This view can be illustrated by the following comment from a would-be action researcher, during a meeting in which the “lack of control over the object of study” characteristic of action research had been highlighted.

Doing action research sounds much more exciting than running an experiment...it's much easier and makes much more sense to me to observe what people do in real organisations, than to have them do something in a lab...I've got a friend that had to run two experiments...that was a lot of work, a lot of time really..

Our study suggests that if the researcher does not have access to the research site due to professional activities (e.g. as in our exploratory study at Equipe), or a power contact in a prospective client organisation (e.g. a close friendship or family connection with the CEO), it is likely that gaining access to a research site will be a long and time consuming process in action research. As an illustration we note that it took 6 months for the researcher to gain access (i.e. consent to apply positive intervention) to School, and 11 months to MQM.

Previous research suggests that the local prestige of the research institution to which the researcher belongs, and the researcher's own personal prestige, can make this process easier (Marshall and McLean, 1988). However, novice action research practitioners and PhD students are likely to be in a disadvantaged position in this respect, and therefore have to balance this with extra effort and creativity. Our research study suggests that the

researcher needs to enter the negotiation process with not only a clear research framework, but also a detailed plan with clear goals and deadlines for their accomplishment. Negotiation skills and flexibility to change the research topic are also required. This flexibility demands, in turn, a broad knowledge of the research subject area, so changes can be made without compromising research topic relevance.

On a different note, the excessive reliance on participant observation notes found in some studies (Barley, 1989) can severely distort conclusions towards the researcher's personal preferences. This is specially true in action research, where the researcher may be subconsciously tempted to manufacture self-serving explanations (or even complex theories) for the lack of success of some of his or her own interventions in the client organisation. For example, in our study the researcher was, at a certain stage, faced with opposition from a senior manager who seemed determined to prevent the research project from continuing. A review of participant observation notes suggested, as an explanation, that the senior manager felt threatened by the action research project, particularly by the fact that computer support allowed groups to be initiated and led in a decentralised fashion. However, the analysis of group discussion transcripts and structured and unstructured interviews with the senior manager and his subordinates ruled out that explanation and pointed strongly to another - that the senior manager was uncomfortable about using the new group communication medium, as many senior managers in other organisational contexts have been found to be (Mintzberg, 1975), because it was asynchronous. These senior managers thus felt segregated from the discussion. These are different explanations which show that the over-reliance on participant observation notes is likely to lead to wrong research findings. On reflection, we can say that there was a researcher preference bias towards the first explanation, because it was seen as likely to lead to more "relevant" scientific findings than the second explanation, which was seen as relatively trivial.

Our study suggests that participant observation notes, while perhaps one of the most important sources of data in action research, should necessarily be combined with other forms of data that are free of the researcher's personal biases. However, this demands more time and effort from the researcher than in research studies where only one data collection method is applied. One interesting approach, which was used in our study, seems to be the combination of data collection techniques that are free of bias with techniques

in which the researcher's and the participants' perspectives are taken into consideration. For example, in our study, participant observation notes were based on the researcher's perceptions, interviews and questionnaire transcripts incorporated participant's perceptions, and the transcripts of electronic discussions were free (to a large extent) from personal bias. The matching of conclusions against these different sources of data, a form of triangulation (Jick, 1979), was necessary yet very time consuming.

Neither gaining access to a research site, nor data collection and analysis is easier in action research than in other research approaches. On the contrary, our research study and previous accounts of action research projects (Rapoport, 1970) suggest that action research is likely to put heavier strains on researchers than other research approaches, such as those based on surveys and experiments. Data analysis in action research is likely to take as much effort as, or more, than other research approaches.

CONCLUSION

The main attribute of organisational action research projects is their explicit dual goal. These projects clearly seek to improve the client organisation(s) and, at the same time, to generate scientific (rather than only normative) knowledge. Although this attribute provides ground for grouping together distinctive research methodologies, such as action science and participatory action research, it also has spurred the existence of myths in which action research is wrongly tied to specific epistemologies, research philosophies, data collection and analysis methods, and research assumptions and expectations. Four such myths have been discussed in this paper.

The first myth discussed is that action research is necessarily opposed to positivism. This myth has been identified in the writings of several prominent organisational researchers, who systematically present action research methodologies and underlying epistemologies as ways to overcome the limitations posed by positivism, and in the opinions expressed by experienced researchers. The truth, however, is that action research can be, and has been, carried out in ways that incorporate positivist assumptions.

The second myth discussed is that action research should begin without a definite research framework. This myth has been identified in published research on methodological issues related to participatory action research, and descriptions of specific action research projects where there was a strong willingness of the client organisation to participate in the action research project. The main argument in support of this myth is that, by avoiding a strict research framework, the researcher will free his or her study from theoretical bias. However, our experience suggests that when a clear research framework is not present: data collection is likely to be unfocused; data analysis is likely to take much longer than if it was based on a research framework; the process of gaining access to a research site is likely to be hampered; and the initiative to define the research topic is likely to move from the researcher to the client organisation.

The third myth discussed is that action research is a qualitative research approach. This myth has been identified in published research on methodological issues related to qualitative research and opinions expressed by experienced action research practitioners. This myth finds support in the belief that action research is an instance of "intensive research". As such, action research is viewed as focusing on a few "cases", or instances of the research units of analysis, from which as much data as possible should be collected and analysed. The analysis of "a few cases" is, in turn, unlikely to yield enough numeric data to warrant statistical analysis. However, our experience suggests that action research can benefit from simple statistical analysis, such as content frequency analysis in texts and correlational analysis.

Finally, the fourth myth discussed is that action research allows for fast and easy data collection and analysis. This myth has been identified in recent conversations with novice action research practitioners, and seems to be related to the loose control and lack of research structure normally associated with action research. Our experience suggests, however, that neither gaining access to a research site, nor data collection and analysis is easier in action research than in other research approaches. On the contrary, action research is likely to put heavier strains on researchers than other research approaches, such as those based on surveys and experiments.

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