Is Research that is Both Causally Adequate and Adequate on the Level of Meaning Possible or Necessary in Business Research? A Critical Analysis of some Methodological Alternatives.

D.A.L. Coldwell
School of Management, University of KwaZulu-Natal, Durban, South Africa
Open University, Milton Keynes, UK
Coldwell@ukzn.ac.za
Coldwell@open.ac.uk

Abstract: There has been a recent resurgence of interest in both statistical methods aimed at generating causally adequate explanations in business research and criticisms of these. Running parallel with this discussion has been critical discussion on the adequacy of such explanations at the level of meaning and specific attempts to address this issue with techniques such as those used in grounded theory. All too often the two methodological approaches have remained separated from each other- as a qualitative and a quantitative mainstream in business research. This is partly because of the different skills of the researchers involved and/or their different attitudes regarding the validity of the methods used. The Weberian methodological paradigm of explanation that is both causally adequate and adequate at the level of meaning has to some extent been lost sight of since Denzin's triangulated model was put forward as a possible solution in the 70's. However, the issue remains: is causally adequate explanation possible with statistical -type analyses and are idiographic techniques such as grounded theory able to capture explanations that are valid at the level of meaning? The paper critiques some older and more recent methods aimed at implementing statistical analyses in generating causally adequate explanation and qualitative techniques aimed at providing explanations that are adequate at the level of meaning. The paper reviews an empirical study aimed at providing such a complete explanation and questions, building on the perspectives of evidence-based management and critical realism, whether such fully adequate explanations are practically possible or, indeed, fundamentally necessary in generating knowledge that is practically useful for solving specific managerial problems.

Keywords: Causal adequacy, adequacy at the level of meaning, phenomenology, grounded research, imponderable evidence, dialectical triangulation, methodological triangulation, critical realism, evidence-based research, dualism, piecemeal social engineer.

1. Introduction: What comprises explanations that are adequate at the level of meaning and causally adequate?

As a means of simplifying an already complex subject matter, meaning and causal types of explanation initially will be considered separately in the discussion. In addition it seems reasonable to suggest that if adequacy cannot be attained at either one or both levels, the hope of obtaining explanations that are adequate at both levels simultaneously is highly unlikely. Adequacy is taken to mean in this context that such explanations are; “enough or good enough; sufficient, suitable” (Collins dictionary, 1978, p.9) and not that they are: “barely satisfactory” (ibid). In other words adequacy is taken to mean that explanations must be sufficient, suitable and good enough to satisfy specific requirements at these two methodological levels. Attempts at the meaning level of explanation generally are regarded as the preserve of phenomenology and phenomenological methodologists, under which general rubric are subsumed qualitative methodologies including, for example, grounded research, ethno methodology ((Turner,1975) and symbolic interactionism (Blumer, 1969). All these methodological approaches are quintessentially idiographic and qualitative. There are of course detailed differences between them, thus for example, while phenomenology aims to understand people’s subjective experience of phenomena as an end in itself, grounded theory aims to understand people’s experience of, usually, specific phenomena with a view to building middle-range theories or models.(Glaser and Strauss, 1967)

1.1 Explanatory adequacy at the level of meaning

According to Husserl phenomenology tries to get back to “the things themselves”. In other words, to understand phenomena, one must first understand how they appear to each person’s consciousness. This idea resembles closely Weber’s notion of verstehen. Weber (1964) considers verstehen to be both observational and explanatory. Observational understanding is obtained by viewing an action or behaviour in a specific context. Explanatory understanding is obtained by comprehending action in terms of its subjectively determined meaning. As Weber (1964, p. 95) puts it: “Thus we understand the chopping of wood

Reference this paper as:
Coldwell D A L (2007) “Is Research that is Both Causally Adequate and Adequate on the Level of Meaning Possible or Necessary in Business Research? A Critical Analysis of some Methodological Alternatives.” *The Electronic Journal of Business Research Methods* Volume 5 Issue 1, pp 1 - 10, available online at www.ejbrm.com

or aiming of a gun in terms of the motive if we know that the woodchopper is working for a wage or is chopping a supply of firewood for his own use or is possibly doing it for recreation. But he might also be working off a fit of rage, an irrational case". Weber's main concern is to build ideal types (mental constructs), which must conform to two basic criteria: they should be causally adequate and adequate on the level of meaning. While causal adequacy essentially concerns probability, adequacy on the level of meaning entails verstehen . As indicated earlier, at this point in the discussion the emphasis is on a delineation of what adequate explanation at the level of meaning actually entails, later we will return specifically to a discussion of the possibility and utility of explanations that satisfy explanatory requirements at both causal and meaning levels.

There is no basic singular format for phenomenological research and it takes many forms: "one cannot pick up a book of rules on phenomenological analysis and jump in. The adoption of a new paradigm for research involves the researcher in a major reformulation of his thinking". (Psathas, 1973, p.17). However, whether the approach is grounded research or ethnomethodology, phenomenological-type research involves interpretative in-depth analyses focusing on how individuals understand natural objects in the world and the meanings they attach to particular social action and individual behaviour. Essentially it seeks to obtain data about individual and collective interpretations and meanings of the world without any pre-conceptions imposed by a researcher as regards the form or shape they might take. For example, a phenomenological technique widely gaining popularity in social research today is that of "grounded theory". Very briefly, grounded theory is made up of a series of steps towards building theory that when correctly performed "guarantee" its validity (Corbin and Strauss 1990). According to Borgatti (2006, p.1-2) the methods used by grounded theorists: "…is to read (and re-read) a textual database (such as a corpus of field notes and "discover" or label variables (called categories, concepts and properties) and their interrelationships. The ability to perceive variables and relationships is termed "theoretical sensitivity" and is affected by a number of things including one's reading of the literature and one's use of techniques designed to enhance sensitivity". It is therefore an inductive process that attempts to get back to the things themselves thus ensuring that the theoretical edifices built are grounded in the phenomena they wish to describe. This approach contrasts quite starkly with Popper's (1963). Popper (1963) maintains that theories and models are hunches or conjectures about the natural and social worlds and that the strength of a specific theory depends on its testability and its ability to survive persistent attempts at its falsification. The way a theory is devised is unimportant, what is important is amenability to attempts at is falsification and the degree to which it has been corroborated by empirical evidence.

1.2 Causally adequate explanation

The words "causal" and "causal explanation" have fallen into some degree of disrepute. This is because they have been adopted in a myriad of ways in recent research (both quantitative and qualitative) that bear little or superficial resemblance to the stringent requirements normally expected for attaining valid explanations at this level. Thus in qualitative research techniques are being used by researchers such as "cognitive causal" mapping (Kelly,1955 and Brown, 1992) which breaches at the very least the causal requirement of constant conjunction between "cause" A and outcome B. Such "illicit" uses of the causal concept devalue the rigorous requirements of explanations at this level, while suggesting by the loose adoption of the term that such explanations are being generated by the technique used. Similarly in quantitative approaches the term "cause" as such has been largely abandoned and has been substituted by, for example, techniques that infer causes rather than find causal explanations per se (causal inference analysis), possibly as a means of protecting and distancing such analyses from excessive scrutiny as to the actual causal veracity of such inferential explanations! What is causal explanation? For Hume causal explanation has three important and indispensable components. First, it establishes a contingent and external relation between two distinct objects or events. Second, a cause must precede an effect. Finally, there must be a *constant conjunction* between cause and effect. In other words, although we can observe that A precedes B in time and that there is a contingent external relation between the two, we cannot verify that B (the effect) necessarily follows A (the cause). The necessary connection between A and B is not demonstrable or self-evident but is derived from observations of a constant conjunction between A and B occurring reliably over time. A major problem with causal explanation, even in the natural sciences where it has been applied most successfully, is that if A causes B under certain conditions and these conditions have causes, it may be necessary to conclude that the cause of B is the whole antecedent universe prior to the occurrence of B. In other words, it is meaningless to say that A causes B and such statements should be replaced by probability statements such as: "when A occurs we can be 99 per cent sure B will occur". (Cohen,1968).

Of course when the concept of causality is applied to the social sciences with management clearly included here, numerous additional difficulties emerge. Very briefly these are, inter alia, that:

- Social phenomena are intrinsically different from natural phenomena that make causal explanations inappropriate.
- The concept of causality is inappropriate because human social behaviour unlike the behaviour of natural physical phenomena is not governed by invariable laws.
- Causal explanation is inappropriate because it is impossible to say how A causes B because we cannot explain the causal machinery working between the two phenomena (this criticism which applies also to the natural sciences is compounded when dealing with human beings with the recognition of human volition, motive and will in the causal machinery).
- Causal explanation is inappropriate because: "the constant conjunction aspect of causal explanation does not fit the explanation of actions in the common–sense world" (Spurling, 1977p.83).

Having said this, it has been argued that such criticisms in no way fatally militate against the use of the concept of causality in the social sciences. In the first instance Popper (1977) has argued for the existence of three distinct "worlds": the physical, the mental and the world consisting of the objective content of thought. In the latter case Popper suggests that it is possible to treat spoken or written subjective thoughts as objective ideas existing independently from the individual who spoke or wrote about them initially. The second criticism concerning the difficulty of attaining invariable laws in the social sciences and thus making the use of causal explanation inappropriate can be countered by the argument that although law like statements are usually beyond the scope of the social sciences, causal explanation is still possible. All that is required is that we find regularities and conjunctions that allow us to make statements about the probabilities of such conjunctions occurring in the future. The third criticism about the lack of explanation of the causal machinery at work between two phenomena is countered by Hume (1973) who suggested that the causal power of one event over another is not intelligible but merely familiar. For Popper (1961), in the social sciences this means that causal explanation is attainable when a deductive explanation is reasonable in a specific situation. For example, as Ryan (1970; p.111) puts it: "When we explain Caesar's crossing the Rubicon in terms of his ambitions, we appeal to a causal generalisation linking ambition with the taking of bold and decisive action at key moments, and Caesar plainly fits into the particular conditions of being an ambitious man at a point where striking at a key point is possible and called for. The nature of mental states is not in question, nor whether such things as 'ambition' are wholly mental or partially physical phenomena: all we want are generalisations which will act as 'covering laws' for the particular events we need to explain"
The essential point of outlining this debate is to indicate that for the social sciences in general and management in particular the attainment of causal explanations may be *beyond* its methodological capacity. Later the argument will be put forward that with due attention to both causal and meaning levels of explanation in a methodological synthesis it may be unnecessary to reach strictly adequate explanations at either level in order for the discipline to make reliable, valid and *practically useable* statements about business behaviour.

2. Is causally adequate explanation possible in business research?

In the preceding section I have tried to outline some of the main theoretical/philosophical reasons for the inappropriateness of causal explanation in management disciplines, this section focuses on a brief description of some of the more prominent recent discussions relating to specific techniques and the identification of conditions for establishing causal explanations in the social sciences. My intention will be to show that strictly speaking even the most elaborate and rigorous new approaches fall short of causal explanation. Statistical attempts at causal explanation using techniques such as cross-lagged correlation analysis (Miles, 1974) have generally been regarded as lacking essentially because adequate experimental controls are not possible-there is no way of knowing whether A causes B, B causes A or the actual causal variable is an unidentified "third variable''. In randomised experimental situations when these are possible in the social sciences, and this is by no means always the case particularly in business research, an additional problem emerges. Here causal explanations are difficult because: "It is impossible to observe the value of Y_t (**u**) and Y_c(**u**) on the same unit, and therefore, it is impossible to observe the effect of t on **u"** (Holland,1986,p.947). Where Y represents the effect on a specific dependent variable in population unit (**u**) in controlled situation (c) and treatment situation (t). In other words, Holland (1986) maintains that causal explanations are only possible when the same unit is observed in both the controlled and treatment experimental situations and that since this is logically impossible the only way to obtain a causally adequate explanation in such circumstances is to estimate "the causal impact of t on **u** that would equal the theoretically defined value if the assumptions underlying the implementation were met." (Kenny and Judd, 2004, p.6). Holland (op.cit.) also maintains that only some variables can be manipulated (are malleable) while others have an unchanging attribute. It is only in the former instance that causal explanations are possible.

However, Holland's (1986) model, rigorous as it undoubtedly is, is also open to criticism. For example, Holland's assumptions regarding unit malleability are not usually applicable with investigations involving human beings and the theoretical estimate of the effects on a specific unit in both controlled and treatment experimental situations cannot itself be empirically tested and therefore remains hypothetical. The requirement of unit homogeneity is not fully explained in relation to studying human behaviour in widely different contexts. The problem of temporal stability because of both maturation and history effects in studies involving human subjects is intractable and the problem of finding the correct causal interval is not addressed in the Holland model. Finally, the problem of satisfying the condition of non-spuriousness (Suppes, 1970) or, in other words, the possibility of eliminating effects of unidentified, non –malleable third variables even in randomised experimental situations dealing with human beings is not convincingly addressed in Holland's model. In short, it is my contention that causally adequate explanations are not fully possible in the social sciences (they are not strictly possible in the natural sciences either if we accept the infinite regress criticism outlined earlier, but to a lesser extent than in the social sciences, because the phenomena studied can be fully manipulated and subjected to tightly controlled experimental situations that considerably diminish the possibility of spurious observations and inferences).

3. Is adequate explanation on the level of meaning possible in business research?

We have seen from our earlier discussion that explanation on the level of meaning is theoretically possible but the issue remains that if we cannot find uniformities in inter-subjective meanings of the world, as some would argue, all we are left with is a body of in- depth qualitative data of little use to man or beast. Popper (1963,p.46) puts this point well in his illustration: "…..of the man who dedicated his life to natural science, wrote down everything he could observe and bequeathed his priceless collection of observations to the Royal Society to be used as inductive evidence...." In other words it is absurd to consider that the mere collection of observational or interpretative data can be done without some basic selectivity arising from a particular conjecture or curious interest…observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem." (ibid). Thus a serious problem in terms of the possibility of obtaining adequate explanation on the level of meaning in social scientific research (including business research) is the difficulty of documenting meaningfully adequate data and communicating it effectively to an uninitiated audience in an intelligible manner. And also maintaining a real propensity for generating intelligible reliable and valid bodies of knowledge, including information on how such knowledge can be obtained and replicated. The essence of this particular problem of explanatory adequacy is clearly identified by Wittgenstein in his idea of imponderable evidence. Wittgenstein puts it thus: "Suppose there were imponderable evidence for the chemical (internal) structure of a substance, still it would have to prove itself to be evidence by certain consequences which can be weighed. (Imponderable evidence might convince someone that a picture is genuine…but it is possible for this to be proved right by documentary evidence as well). Imponderable evidence includes subtleties of glance gesture and tone. I may recognise a genuine loving look, distinguish it from a pretended one (and here there can, of course, be 'ponderable' confirmation of my judgement). But I may be quite incapable of describing the difference. And this is not because the languages I know have no words for it. For why introduce words?-If I were a very talented painter I might conceivably represent the genuine and the simulated glance in pictures. Ask yourself: How does a man learn to get a 'nose' for something? And how can this nose be used? (Wittgenstein, in Monk 2005, p.100). Monk (2005, p. 101) adds: " To understand a person is to be able to tell, for example, whether he means what he says or not, whether his expressions of feeling are genuine or feigned". Clearly, if we accept Wittgenstein's (1958) notion of imponderable evidence there are aspects of explanations at the level of meaning that require interpretative skills that are not only difficult to communicate to others as a verifiable body of knowledge but also require considerable experience and expertise. In short, fully adequate explanation at the level of meaning in the social sciences and business research is unlikely to be attained by all but the most expert researchers in all circumstances and may very well prove unattainable in most.

4. Cause–meaning-synthesis triangulation as a methodological heuristic for discovering practically adequate explanations in business research

Many of the problems associated with methodological approaches adopted in business research reside in a lack of effective communication between the protagonists of causally adequate explanation on the one hand and the champions of explanations that are adequate on the level of meaning on the other. All too often the two methodological approaches have remained separated from each other-as a qualitative and a quantitative mainstream in business research. This is partly because of the different skills of the researchers involved and/or their different attitudes regarding the validity of the methods used. To a degree grounded research is

an attempt by some researchers to break out of this methodological straightjacket. However, although, grounded research requires building from the ground up or, to use the building of a house as an analogy, building the foundations first, whereas dialectical triangulation (to be discussed shortly) necessitates building the foundation and the house together and ensuring, as it were, that as the building of the house proceeds it's foundations are constantly checked for adequacy and sustainability.

Grounded research may lead on to causal inference analysis as a systematic building block but it is not used to check whether a construct or constructs derived from it are both causally adequate and adequate on the level of meaning. Because of this it is possible for grounded research to form a foundation on which its theoretical edifice is built to be spurious or to continue with the building analogy, built on sand. This is because grounded research is incremental, moving in cautious systematic data-gathering process towards the generation of new knowledge, whereas dialectical triangulation (to be clearly distinguished from methodological triangulation such as that put forward by Denzin, 1971) effectively audits explanations for their synthetic causal adequacy and adequacy on the level of meaning. In other words, grounded research leaves its foundations behind, once these have been established ex ante to build further on this structure without, as it were, "looking back". Explanatory triangulation checks the structure for its explanatory adequacy by synthesising both levels of explanation and auditing the extent of their corroboration.

Triangulation has been defined as: "the use of more than one research method to provide convergent evidence" (Page and Meyer, 2000 p.44). Although Denzin (1970) is credited with the use of multi-methods across methodological paradigms (qualitative and quantitative) the use of triangulation for validation within one paradigm (quantitative) is not new and can be traced to Campbell and Fiske's (1959) multi-trait multi-method technique. Coldwell (1981, 1982 and 1984) used a dialectical technique incorporating not simply multiple methods in a triangulated format to investigate the validity of specific findings more completely, but as a deliberate attempt to corroborate causal inferential findings on the level of meaning. To accomplish this, the two oft-regarded antithetical approaches were combined in a triangulated methodological synthesis. In other words, the technique aims at finding explanations that are both causally adequate and adequate on the level of meaning. The study referred to above focussed on the relationships between role conflict, situational anxiety and job satisfaction in unskilled industrial workers in South Africa. A sample of 200 unskilled male workers was randomly selected from three manufacturing units. The study by using triangulation consisting of a combination of nomothetic and idiographic approaches aimed at providing a methodological (provisional) synthesis, and an explanation of the interrelations between these phenomena that was both causally and meaningfully adequate.

Causal adequacy was attempted using static and cross-lagged correlations in a panel design with the data being accessed from items arranged on five-point Likert-type scales. Instruments were devised to measure role conflict, job satisfaction and situational anxiety. The instruments were subjected to tests of validity and reliability. Cronbach alpha tests revealed the 16-item role conflict and 28 item job satisfaction scales to attain internal consistency coefficients of 0,871 and 0,908 respectively. The situational anxiety scale (adapted from Zuckerman, 1960) was tested using the test-retest method of reliability assessment and a comparatively poor test-re-test coefficient of 0.443 was obtained. Validity was tested using factor analyses, which generally confirmed the validity of the role conflict and job satisfaction constructs used in the investigation (Coldwell, 1982). Although the cross-lagged correlation approach has been shown to be ineffective in showing causal predominance between phenomena since the study was conducted (Rogasa, 1980), a brief resume of it purpose and objectives is in order here. The static and dynamic aspects of the correlation analyses used in this technique effectively try to address the constant conjunction requirement of causal explanation while, according to Pelz and Andrews (1964) and Miles (1975), the cross-lagged correlations and frequency-of-change-in product- moment (FCP) analysis (Greene,1973) attempt to ascertain the source and direction of causality. Adequacy on the level of meaning was attempted using open-ended phenomenal analysis: "The phenomenal analyst restricts himself to one question carefully aimed at obtaining spontaneous descriptions of subjective experience and it is formulated so that the subjects are able to relate freely a wide variety of situations. The purpose is to discover the moments common to all individual experiences of the same kind." (Van Kaam, 1966, p.328). Following this approach, the idiographic section of the questionnaire consisted of items concerning general aspects of the meaning of work such as: work expectations, likes and dislikes of work, why people work and supervision. The questions aimed to expose workers' because and in order to motives towards work and were phrased accordingly. Latterly, the questions focused on the specific meanings their current jobs had for them. As far as possible the meaning of work for workers was recorded in the words they used to describe it. However, in order to discover uniformities in responses of different workers, data reduction ultimately necessitated the collation of information into specific categories.

The entire questionnaire (idiographic and nomothetic) was translated from English into the various languages of the respondents by a panel of translators expert in the respective (Zulu, Northern Sotho and Xhosa) languages. Subsequently, the translations were translated back into English by alternate translators and the goodness-of fit to the original items assessed. Items were rewritten in consultation with the translators where this proved to be prudent and/or necessary. Both parts of the questionnaire were administered in individual interviews by specially trained interviewers. The idiographic (anti-thesis) section of the questionnaire was presented to respondents *before* the nomothetic (thesis) so as not to prime subjects for particular responses and the two parts were subsequently compared in a methodological synthesis aimed at assessing the validity of the concepts and the findings at the nomothetic and idiographic levels of analysis. The findings of the nomothetic and idiographic analyses were "synthesised" using chi-squared tests between respondents' high and low scores on the role conflict job satisfaction and situational anxiety instruments (high/low defined as scores 1 standard deviation above or below mean scores) and their phenomenological awareness /experience or non-awareness/non-experience of these phenomena respectively (as assessed by the collation of the "grounded" analysis). The findings of this synthetic analysis indicated in each case that the nomothetic analysis was corroborated by the idiographic analysis and that therefore the *concepts* of role conflict, job satisfaction and situational anxiety per se could be regarded as valid at both nomothetic and idiographic levels of analysis. In other words, for example the analysis showed that respondents who scored high on the role conflict-measuring instrument were also subjectively conscious of this phenomenon in the work situation.

Tests of causal inferences stemmed from the procedure outlined above. A static correlation analyses showed that role conflict (RC), situational anxiety (SA) and job satisfaction (JS) scores were significantly interrelated (RC/JS =-0.65, $p<0.01$, SA/JS= -0.65, $p< 0.01$ RC/SA=0.67, $p<0.01$). And cross-lagged correlations and FCP analyses suggested that the relationship between these variables was consistent over time although the source and direction of the causal relationships between role conflict and situational anxiety, and situational anxiety and job satisfaction were indeterminate. To ascertain whether the correlation and assumed causal associations between the variables were valid on the level of meaning an exploratory analysis was conducted involving an investigation into high and low scores on specific instruments and the preponderance of a phenomenological linking of these aspects on the level of individual meaning. In this regard it was found that, of those respondents who scored high on the role conflict instrument and low on the job satisfaction instrument, 54% were found to subjectively associate role conflict with their job dissatisfaction. This tentatively suggested that role conflict was subjectively seen as being a "cause" of job dissatisfaction by a sizeable portion of pertinent sample. However, as indicated earlier this was not corroborated by the cross-lagged or FCP analyses. In short, this triangulated dialectical empirical synthesis constituted an attempt at integrating the two methodological paradigms to obtain holistically adequate explanations. And, the idea was not simply to check the validity of the findings using different techniques but to find explanations that conformed to the requirements of adequate explanations when investigating human behaviour. And, to recognise in such dialectical explanatory syntheses that they are provisional and open to change. (Coldwell, 1981). This approach conforms quite closely to that of the critical realists (Baskar,1996, Ackroyd and Fleetwood, 2000, Akroyd, 2004) in that it recognises the importance of a scientific (causally explanatory) orientation in social research, while not in any way discounting the central importance of actors' meanings in generating adequate explanations of the social world (Layder, 1993). In short it wishes to provide explanations that although not fully adequate at the causal and meaning levels for reasons which have already been described in some detail, attempts to generate research data that will allow management to make the kind of scientifically oriented, evidence-based decisions described by Pfeffer and Sutton (2006)
The realist ontological position propounded by Baskar (1978) incorporates three domains; the real, the actual and the empirical.

The domain of the real is regarded as the underlying 'real' structures, mechanisms, relations, events, behaviours and experiences that exist independently/outside ourselves, sometimes as past historical events, but which the meanings we attach to the social world and our social behaviour are shaped and constrained. The domain of the actual consists of actual events and behaviours that occur as we observe them. Finally, the domain of the empirical consists of our experiences of events and the meanings we attach to them. From an epistemological point of view, critical realism suggests that facts (i.e. our knowledge of the real and actual domains) are inextricably intertwined with values (i.e. our knowledge of the empirical world). Thus, as Layder (1993) points out, critical realism, while being non-positivistic in its approach, adopts a scientific attitude towards social research, it recognises the core importance of the meanings actors attach to events in the social world in generating adequate explanations of social phenomena. More recently, Olsen (2004), while adopting the realist perspective, brings the idea of a triangulated dynamic synthesis into focus again (Coldwell, 1981). Olsen (2004) points out specific recent developments in the philosophy of science

"…..have argued that the two traditions should not have a separate-but-equal status, and should instead interact" (op.cit.p.1). She suggests that triangulation is not simply aimed at validation but at: "…….deepening and widening one's understanding" (op.cit. p.1) Olsen argues that triangulation is a technique to generate a learning dialectic, which goes beyond the mere validation of findings to achieve innovations of original conceptual frameworks (Olsen, 2003). This is made possible through an ongoing dialectic of investigation. Essentially this dialectic consists of a "bottom-up" qualitative and "top down" quantitative operationalisation of concepts in a dialectical synthesis that aims to validate existing research constructs and facilitate the emergence of further conceptual innovations.

Thus it has been suggested that neither causal adequacy nor adequacy on the level of meaning is a realistically obtainable goal in business research. And it has been indicated that a triangulated dialectical approach operating from the platform of critical realism takes account of man's ontological situation and offers a coherent epistemological basis for our knowledge of the social world. So by adopting a triangulated dialectic that takes account of the dynamics of the business situation, business research must aim at providing adequate knowledge that is practically useful to managers. What kind of usefully adequate knowledge is this? And how might business research proceed? Pfeffer and Sutton (2006) provide some idea of the level of explanation needed in business research. Pfeffer and Sutton (2006) suggest that evidence-based research can provide the kind adequate, useful knowledge on which management can base their decisions. While not discounting the importance of learning from experience, Pfeffer and Sutton (2006) maintain that intuitions derived from personal experience often lead to poor decision-making. Managers also need to make their decisions on up-to-date evidence that recognises the dynamic and constantly changing business situation. Furthermore the evidence obtained needs to be pertinent- it is of no use to simply imitate the evidence-based decisions of managers in other organisations whose structures and circumstances bear little or no resemblance to their own. In short, adequate and useful managerial decisions are derived from evidence-based, non-intuitive, up-to-date, pertinent knowledge. However, it is suggested here that to provide the kind of research to effectively fuel evidence-based research, it needs to approach business research with a coherent ontological perspective that takes account of the reality of what it seeks to describe. It is argued here that critical realism provides the necessary backdrop for this to occur. In short the approach that will best allow the collection of reliable and valid date on which management can make the most adequate and effective decisions is that suggested most recently by Olsen (2004)- a triangulated dialectical methodology that aims at causal adequacy and adequacy on the level of meaning , but is never able to achieve this while recognising the dynamics and transience of knowledge in the business situation.

5. Conclusion

This paper has briefly outlined major issues in generating explanations in social science and management that are both causally adequate and adequate at the level of meaning. It has been argued that truly causally adequate explanation is beyond the capacity of such research and that adequate explanation on the level of meaning also is, at best, problematical. In this final section I want to consider two questions that can be derived from this conclusion. The first is: is our apparent inability to present explanations that are causally adequate and adequate on the level of meaning fatal to generating potentially useful business research outcomes? And the second is: What other means are available to generate practically useable concepts and knowledge in business research? In answer to the first question concerning our inability to provide explanations that are both causally adequate and adequate at the level of meaning (in fact, our inability to provide explanations fully adequate at either level), on the viability and utility of the knowledge obtained in business research; the answer is; probably not, if we accept that business research needs only to generate practically and dynamically sensitive useable knowledge and not invariable laws. This` answer is not meant to suggest that business research should therefore abandon its quest to generate knowledge that approaches explanations that are adequate as closely as possible at these levels, but only that since such adequacy is unlikely to be achieved it is preferable to adopt a methodological approach that is capable of producing practically useable research outcomes. By practically useable research outcomes I mean knowledge that is derived from as sophisticated sampling and quantitative and qualitative combinations as the content and context of the study allows, ranging from experimental and cross-sectional designs to time series and one-shot case studies (Ghauri and Gronhaug, 1995). This is the kind of research that feeds evidence-based, scientifically oriented management decision-making advocated by Pfeffer and Sutton (2006).

In answer to the second question posed above it is argued that business research should adopt the triangulated dialectical synthetic model outlined earlier to generate practically useful research outcomes. This dialectical synthetic model corresponds to the approach advocated by the critical realists (Bhaskar,

1998, Ackroyd and Fleetwood 2000, Ackroyd, 2004), and incorporated specifically in a triangulated framework most recently by Olsen (2003). The advantages of this triangulated method, and more specifically the dialectical methodological approach proposed by Coldwell (1981) is that it conforms quite nicely to the ontological paradigm of the critical realists in social research practice in that it incorporates the two quantitative domains of the real and actual while interrogating the qualitative domain of the empirical.. Layder (1993) regards this dualism as a core feature in realism, which attempts to preserve both a scientific orientation towards social research and also recognises the central importance of actors' meanings for adequate explanations of the social world. And, furthermore, such an approach provides scientifically-oriented, tested evidence that allows management to generate the kind of valid decision-making on which the health of organisations depend, while taking account of (through the transience of the dialectical synthesis) the dynamically changing environment in which businesses operate today. In sum, the approach of the business researcher considered appropriate in the research context per se is regarded as being fairly similar to that outlined by Popper (1961: 66-67) in his description of a piecemeal social engineer: " The piecemeal engineer knows, like Socrates, how little he knows. He knows that we can only learn from our mistakes. Accordingly he will make his way, step by step, carefully comparing the results expected with the results achieved…." This step-by-step cautious approach emphasises the provisional nature of his/her findings. His/her results remain provisional because the syntheses of the dialectic between quantitative and qualitative approaches are transitory and open to modification and refinement if not fundamental change.

References

Ackroyd, S. (2004): "Methodology for management and organisation studies: some implications of critical realism", in S. Fleetwood and S. Ackroyd. (Eds), *Realist applications in organisation and management studies,* Routledge, London.

Ackroyd, S.and S. Fleetwood (2000): *Realistic perspectives in management and organisations*, Routledge, London.

Bhaskar, R. (1978): *A realistic theory of science*, Harvester Press, Sussex.

Borgatti, S. (2006): "Introduction to grounded theory", (online), http://www.analytictech.com/mb870/intrtoGT.htm

Brown, S. (1992): "Cognitive mapping and the repertory grids for qualitative survey research: some comparative observations", *Journal of Management Studies* Vol 29, No.3, 287-307.

Bulmer, H. (1969): *Symbolic Interactionism*, Prentice Hall, Englewood Cliffs.

Campbell, D.T. and D.W. Fiske (1959): "Convergent and discriminant validation by the multitrait-multimethod matrix". *Psychological Bulletin,* Vol 56, 81-105.

Carlsson, S. A. (2005): "Developing information systems design knowledge: a critical realist perspective", *Electronic Journal of Business Research Methods*, Vol 3, No 2, 93-102 (online), www.ejbrm.com

Cohen, P. (1968): *Modern Social Theory,* Heinemann, London.

Coldwell, D.A.L. (1981): "A dialectical approach to industrial research", *Psychologia Africana*, Vol 20, 1-20.

Coldwell, D.A.L. (1982): "Role conflict, job satisfaction and situational anxiety in black industrial workers: the use of a dialectical method in an empirical study", *Psychologia Africana,* Vol 21, 1-31.

Coldwell, D.A.L. (1984): "A dialectical approach to investigating role conflict, job satisfaction and situational anxiety in an African industrial context", *International Journal of Psychology,* Vol 20.

Collins (1978): *Collins Concise English Dictionary*, Collins, London.

Corbin J. and A.L. Strauss (1990): "Grounded theory research: procedures canons and evaluative criteria", *Zeitschrift fur Soziologie,* Vol 19, No. 6.

Denzin, N.K. (1970): *The Research Act*, Aldine, Chicago.

Greene, C.H. (1973): Causal connections among managers' merit, pay, job satisfaction and performance. *Journal of Applied Psychology,* 58, 95-100.

Ghauri, P and K. Gronhaug (2002): *Research Methods in Business Studies: A Practical Guide,* (2nd Ed), Essex, Pearson Education.

Glaser, B.G. and A.L. Strauss (1967): *Grounded Theory*, Aldine, New York.

Holland, P.W. (1986) "Statistics and causal inference", *Journal of the American Statistical Association,* Vol. 81, 945-960.

Hume, D. (1973): *A Treatise of Human Nature,* Oxford University Press, London.

Kelly, G.A. (1955): *The Psychology of Human Constructs: Volume 1*, Norton, New York.

Kenny, D.A. and C.M. Judd (2004): "Should causality be defined in terms of experiments? (online), http://www.cs.ucla.edu/~kaoru/kenny-judd.pdf

Layder, D. (1993): *New strategies in social research*, Polity Press, Sussex.

Miles, R.H. (1975): An empirical test of causal inference analysis between role perceptions of conflict and ambiguity and various personal outcomes, *Journal of Applied Psychology,* 60, 334-339.

Monk, R. (2005): *Wittgenstein,* Granta Books, London.

Olsen, W.K. (2003): "Methodological triangulation and realist research: an Indian exemplar", In B. Carter and C. New (Eds), *Realism and Empirical Research*, Routledge, London.

Olsen, W.K. (2004): "Qualitative and quantitative methods can really be mixed", In *Development Sociology*, M.Holburn (Ed) Causeway Press, Ormskirk.

Pelz, D.C. and F.M. Andrews (1964): detecting causal priorities in panel study data. *American Sociological Review,* 29, 836-848.

Popper, K.R. (1961): *The Poverty of Historicism,* Routledge and Kegan Paul, London.

Popper, K.R. (1963): *Conjectures and Refutations*: The Growth of Scientific Knowledge, Routeledge and Kegan Paul, London.
Popper, K.R. (1972): *Objective Knowledge: An Evolutionary Approach*, Clarendon Press, Oxford.
Popper, K.R. and J.C. Eccles (1977): *The Self and its Brain'*, Springer International, Berlin.
Psathas, G. (1973): *Phenomenological Sociology,* Wiley, New York.
Pfeffer, J. 7 Sutton, R.I. (2006): *Hard facts, dangerous half-truths, and total nonsense*,
Harvard Business School Press, Boston.
Rogasa, D. (1980): A critique of cross-lagged correlation, *Psychological Bulletin,* 88-, 245-258
Ryan, A. (1970): *The Philosophy of the Social Sciences*, Macmillan, London.
Spurling, L. (1977) *Phenomenology and the Social World*, Heinemann, London.
Suppes, P (1970): *A Probabilistic Theory of Causality*, North-Holland, Amsterdam.
Turner, R. (1974): *Ethnomethodology*, Penguin Books, Harmondsworth.
Van Kaam. A. (1966): *Existential Foundations of Psychology,* Pittsburgh, Duquesne University Press
Weber, M. (1964): *The Theory of Social and Economic Organisation*, Free Press, New York.
Wittgenstein, L. (1958): *Philosophical Investigations*, Basil Blackwell, Oxford.
Zuckerman. M. (1960): The development of an affect adjective check list for the measurement of anxiety. *Journal of Consulting Psychology*, 24, 457-462.

