Q-METHODOLOGY: IS IT USEFUL FOR ACCOUNTING RESEARCH?

Mrs RADA MASSINGHAM*
School of Accounting
University of Western Sydney
Campbelltown Campus
Narellan Road
Campbelltown, NSW, 2560
Tel: (61) 2 4620 3551
Fax: (61) 2 4620 3787
Email: r.massingham@uws.edu.au

Dr PETER MASSINGHAM
Centre for Knowledge Management
School of Management and Marketing
University of Wollongong
Northfields Avenue
Wollongong, NSW, Australia, 2522
Tel: (61) 2 42213642
Fax: (61) 2 42272785
Email: peterm@uow.edu.au

ABSTRACT:

In this paper, we describe Q Methodology and consider how it might provide value for researchers and practitioners leading to better access to organisations for primary data. The results show that Q Methodology may provide advantages in data gathering (less respondent burden), data analysis (deeper insight into respondent tacit knowledge), and results (better respondent ‘ownership’ of organisational problems and solutions).
INTRODUCTION
The purpose of this paper is to evaluate the usefulness of Q-Methodology for business research, with a specific focus on the field of accounting. Q-Methodology is a qualitative and quantitative way of gathering and processing data that requires participants to perform a ranking task (Brown, 1993, 1996). By requiring the participants to sort statements into a forced quasi-normal distribution, many of the problems associated with questionnaires (e.g., central tendency, leniency) can be avoided (Kendall and Kendall, 1993). A factor analysis of Q sort data, i.e. interpretive structural modelling (ISM) (Warfield, 1976) can potentially identify groups of employees with similar problems. In this way, Q-Methodology promises a great deal: innovative data gathering, better validity, and statistical modelling. This has created considerable excitement in the business research community as a method that offers the best of qualitative and quantitative research, i.e. a leading edge mixed methods approach. But does it deliver what it promises?

We tackle this question by looking at how Q-Methodology might be used in Accounting research. Accounting is an interesting topic to explore due to the problems associated with gathering and analysing primary data. Accounting researchers can find it difficult to access primary data necessary for empirical research, largely due to the nature of the work involved. Accounting work in organizations is often standardised through policies and procedures, which are largely set by accounting regulators, e.g. the Australian Accounting Standards Board (AASB). There is little opportunity to innovate or create new ways of doing business for practising Accountants. Where does that leave Accounting researchers?

The field of Accounting involves a triangular relationship between regulators, academics, and practitioners. The regulators, such as the AASB, set broad guidelines through standards. Academics provide a conceptual response to the regulator’s guidelines through empirical research. Practitioners follow the standards set by the regulator. In this way, researchers play an important role in providing feedback on the standards which may, in turn, be used to improve them. The standards are then reissued through revisions. Ideally,
researchers should work with both regulators and practitioners to examine the usefulness, relevance, and applicability of standards. This does not always happen. The difficulty for Accounting researchers is that the two other parties in this triangle – the regulators and the practitioners – have alternatives. Regulators are funded by practitioner memberships and have the resources to employ teams of their own researchers or consultants. Practitioners have strong relationships with their audit firm, e.g. Price Waterhouse Coopers, KPMG, who have the advantage over academics of deep knowledge of their client firm and a toolkit of clever consulting techniques.

We can see, therefore, that Accounting researchers face a difficult problem of how to demonstrate relevance and value for industry partners, e.g. regulators and practitioners, if they are to gain access to organisations and primary data. The only other option is research based on secondary data. This paper asks whether Q-Methodology might be the ‘holy grail’ that Accounting researchers have been searching for. Can it provide researchers with a way of demonstrating value to industry? In this sense, may it create a competitive advantage for academics in the crowded market offered to regulators and practitioners? If so, Q-Methodology may provide an opportunity to build sustainable relationships between researchers and industry leading to better research inputs, e.g. Australian Research Council grants, and outputs, e.g. quality publications. This paper, therefore, has particular relevance within the context of the Australian Federal Government’s recently introduced Research Quality Framework.

The paper describes how Q Methodology might provide value for researchers and practitioners leading to better access to organisations for primary data. The results show that Q Methodology may provide advantages in data gathering (less respondent burden), data analysis (deeper insight into respondent tacit knowledge), and results (better respondent ‘ownership’ of organisational problems and solutions).
THE CONTEXT: CONSTRUCTION INDUSTRY RESEARCH

The construction industry provides an interesting context for the exploration of this topic because of the complexity of long-term contracts and the fact that industry participants do not always follow the rules. Research has found that revenue recognition, in areas such as long-term contracts, is the most important and difficult problem that standard setters and accountants face (Rohan, 2004). This research found that that no comprehensive standard on revenue recognition exists in the United States, and there is a significant gap between the broad conceptual guidance in U.S. regulator’s (the FASB) Concepts Statements and the detailed guidance in the authoritative literature. Similarly, research in the United States by regulators (the SEC) found ‘widespread non-compliance and lack of transparency in revenue recognition, financial reporting, and disclosure’ involving accounting for long-term contracts (Larson and Brown, 2004).

Previous research on this topic has been limited and, provides evidence of the nature of the problems facing Accounting researchers in gaining access to primary data. This is clearly an important research topic – identified by both U.S. and U.K. regulators – and the limited previous research has found that practitioners do not follow the regulators guidelines. It is an important topic due to the tax implications of revenue recognition. However, it is very difficult to research because practitioners would naturally be unwilling to admit that they do not follow the standards or engage in any unlawful practices. This presents a quandary. Accounting researchers see the topic as uninteresting because no-one seems to be researching it. Academics rate the interest in a topic is measured by its number of publications. However, the lack of published research may be due to the difficulty in accessing data rather than the topic.

Q-METHODOLOGY

Q Methodology is a mixed methods or pluralist approach because it involves both quantitative and qualitative research aspects. In following the principles of Action Research, Q Methodology involves the participant in a value-oriented political-social goal which aims to facilitate social change (Neuman, 2006). In this way, respondents actively and consciously participate in the research process creating a sense of
empowerment which seeks to raise awareness of the issue under investigation. The outcome is an action that often involves organizational change with the advantage of creating buy-in and support through the research process itself. Q Methodology fulfils one of Stoecker’s (1999) key criteria for Action Research: the democratisation of knowledge by letting participants share their views and opinions, to further explore their experiences, and expand on our knowledge of their behaviours and attitudes (Brown, 1996).

Q Methodology involves three phases. First, there is a data gathering phase – the Concourse. Second, there is an analytical phase – the Sort. Third, there is a results phase – the Factors. The aim is to provide a depth and breadth of understanding about a particular topic. The breadth comes from the range of views that can be gathered using this method, while the depth emerges from the forced ranking processes of the sort. Q Methodology is often associated with quantitative forms of analysis due to the use of factor analysis for the Q-sort technique. This provides it with statistical rigour that makes it attractive to many researchers. It is becoming increasingly popular in the social sciences as a way to explore traditional qualitative research questions: e.g. participant’s views, attitudes, opinions, understanding, and experiences.

Superficially, Q methodology resembles the transpose of R method. R method is the correlation of scores against each other (i.e. an NXN matrix of N traits where N is the number of traits measured). For factor analysis, these traits should be approximately normally distributed. Factor analysis will result in an mXN matrix, with m being the number of latent variables that summarise the data best. When this is transposed to a yXy correlation matrix the N traits are not being correlated against a common unit of measurement and therefore the correlation matrix is not meaningful. Q method overcomes this problem by forcing the respondents to rate items on a quasi-normal distribution, so the individuals’ are on a common unit of measurement to each other (McKeown and Thomas 1988).
From a researcher’s perspective, the ranking technique of the Q Methodology sort is probably the most appealing aspect because it overcomes the clustering effect of typical rating scales. Clustering occurs when the results hover around the middle of the scale, i.e. when the sample mean sits around three on a five point scale, and so on. This happens due to respondent tendency to take the middle ground in rating single items. Therefore, when asked to rate one item, each response is biased towards the centre. This tends to dilute the results and make it difficult for researchers to interpret any real meaning from the findings, e.g. does a difference of mean rating difference of 0.5 between two items represent difference of practical significance?. Q Methodology overcomes this clustering effect by forcing respondents to rank factors into a quasi-normal distribution, and therefore highlights the most extreme items.

**Data gathering**
Initially, Q methodology begins with collating a list of items for respondents to assign a preference to – the Q sample. While this can be anything (e.g. performing a q sort on a collection of paintings), it is common to engage in a ‘concourse’, which involves having the participants provide their thoughts and views. This is an innovative data gathering technique for two reasons. First, it provides the opportunity to capture all of the respondents’ thoughts on the topic under investigation. This is done by asking respondents to write down their opinions or type it into a computer. This is then captured and shared amongst the group. This has the advantage over other qualitative data gathering techniques such as focus groups or face-to-face interviews because it captures thoughts that might otherwise not be articulated. For example, focus groups can be dominated by a vocal few, irrespective of the skills of the facilitator, particularly if some respondents are shy or unwilling to voice their opinions. In an organisational context, respondents may feel the need to agree with others, e.g. peer group pressure, or to let others speak for them, e.g. their supervisor.

The second innovation of the concourse as a data gathering technique is its interactive nature. In this way it resembles a brainstorming session. This is related with another advantage of Q Methodology, that it does not require a large population to produce
meaningful results. A sample of 30 to 50 individuals can produce an accurate picture of the range of views on a topic (McKeown & Thomas, 1988). During the concourse, participants are encouraged to produce as many statements as they can. This captures their full range of thoughts. However, the thoughts expressed in the statements are not limited by personal experiences. Participants are encouraged to reflect on the statements put forward by others, as a way of reflecting on their perceptions, or considering thoughts not in the forefront of their mind. In this way, the concourse captures participants’ tacit understanding of a topic. The value of this is explained by Polanyi’s tacit triangle (1962).

Tacit knowledge was first identified by Polanyi (1962) who argued that ‘we know more than we can tell’. Polanyi believed that the knowledge we can articulate and share with others is just the tip of an iceberg. To extend this analogy, explicit (codified) knowledge is the part of the iceberg above the water, i.e. visible to others; while the majority of what we know is submerged beneath the water, as implicit (tacit) knowledge, invisible to others. Tacit knowledge is valuable, difficult to transfer, and highly context dependant (Nonaka, 1994). It explains the ‘accumulated practical skill or expertise that allows one to do something smoothly and efficiently’ (Kogut and Zander, 1995). It is commonly referred to as the knowledge in people’s heads. Researchers agree that the most important knowledge is tacit (Nonaka and Takeuchi, 1995). Given this context, value may be created for practitioners by researchers who can uncover employees’ tacit views on a topic. However, tacit knowledge is very difficult to articulate and share with others, e.g. in a focus group situation. This difficulty is explained by Polanyi’s (1962) tacit triangle.

Polanyi (1962) proposed that ‘tacit knowledge forms a triangle, at the three corners of which are the subsidiary particulars, the focal target, and the knower who links the two’. In understanding these terms, it is useful to begin with the focal target using one of Polanyi’s favourite examples – hammering a nail. There are two kinds of awareness when exercising a skill: the focal awareness and the subsidiary awareness (Polanyi and Prosch, 1975). As you hammer the nail, your main focus of attention is the nail – that is your task – but you are also subsidiarily aware of the hammer through the feelings in your hand. Subsidiary awareness is the combination of subconscious knowledge that we apply to the
focal task without even thinking about it. In this sense it is a type of intuition that we draw upon to complete the focal task. The third part of Polanyi’s (1962) tacit triangle is the knower, who links the focal target with the subsidiary particulars. The knower, the person with the knowledge, is the crucial part of the triangle. The two dimensions of tacit knowledge – focal awareness and subsidiary awareness – lie dormant unless the knower decides to use them to complete a task. In this way the linkage of focal awareness and subsidiary awareness is the act of the knower. This discussion is the basis of Polanyi’s (1962) points about knowledge being personal and all knowing being action. Knowledge has a recursive form: given a certain context, we blackbox – assimilate, interiorize, instrumentalize – certain things in order to concentrate – focus – on others (Tsoukas, 2003). The tacit knowledge we use is dependant upon the nature of the task. For example, the knowledge I have as an academic does not help me understand what is wrong with my car. The tacit knowledge is also heavily dependant upon the person. The knower draws upon their personal experiences and knowledge to complete a task. In this way the knower has a unique dimension.

The concourse provides an opportunity to capture really deep understanding of participant’s views on a topic. This is explained through the three dimensions of the tacit triangle. The concourse captures participants’ focal knowledge in the initial writing or typing of statements. This represents their first thoughts when they focus on the topic. It also captures their subsidiary awareness in their response to others’ statements. This represents their secondary or sub-conscious thoughts which they would not normally consider if asked to describe their opinion on the topic (e.g. in a focus group or interview situation). It captures the knower’s unique perspective by providing a forum which allows freedom to articulate as many thoughts as possible. The key to capturing the knower’s perspective is that the concourse places no value judgement on thoughts. It does not matter whether the statement is important or unimportant, sensible or insensible, true or false. Participants can write or type anything they want to. This approach provides participants with the confidence and freedom to fully express their unique individual perspective on a topic.
The Analysis
The concourse produces a set of statements, which are called a Q Sample. The researcher analyses the Q Sample by going through the statements looking first for duplication and second for common patterns. This requires knowledge of the participants and the topic. In this way, the researcher reduces the number of statements by combining those that mean the same thing. The process also requires some editing to produce a revised list of statements which may be easily written onto a card and understood by participants.

These statements are analysed in two ways. First, participants are asked to ‘sort’ the statements by making decisions about their relative importance. This step is called the Q sort. They can do this individually or in a group. They are shown a group of small cards. Each card has a statement written on it. They are then asked to rank the statements by placing the cards in order from most important to least important. Participants are given a ‘map’, which has a series of squares where the statement cards can be. Figure 1 provides an example of this map.

![Figure 1 Eleven item Q sort triangle used to rate items.](image)

The best way for participants to do the sort is to go through the whole set of cards and then select the statement they feel is the most important. The relevant card is then placed at the top far right square of the map (see Figure 1). They then select the statement they feel is least important to the topic. They place this card at the top far left square of the map. They then select the second most important statement and place that card to the immediate left of the card at the top far right square of the map. In this way they work from the outside in, from the right and the left, until they come to the middle, which will contain the statement they feel least strongly about (i.e. it is neither important nor
unimportant). The outcome is a record of each participant’s ranking of the comparative importance of the statements.

Second, once all participants have completed the individual sorting process, each sort is compared with each other. This is called the factor analysis. Q Sorts are statistically analysed to find correlations and identify factors that are common to the sorts of several individuals (Stephenson 1953). The number of factors identified depends upon the degree of agreement amongst participants, and in how much detail the researcher feels is useful to analyse. The factors are not necessarily mutually exclusive because a given statement or a given individual may appear on more than one factor. The outcome is a number of factors which reflect the grouping of participants with common views (Cottle and McKeown, 1980).

Once the Q sort is completed, the process of factor analysis is then undertaken. The yXy correlation matrix of the individual’s responses is produced (where y is the number of individuals in the sample). This shows which participants sorted the Q sample statements in a similar order. Exploratory factor analysis is used to produce a mXy matrix of latent variables or factors (where m is the number of factors). These factors account for the common variance among responses, and are generally selected to be as independent as possible from each other (varimax rotation). There are a number of formal and informal techniques which are used to determine the number of latent variables to extract from a factor analysis which are beyond the scope of this paper. The mXy factor solution provides factor loadings, indicating the extent to which each individual’s responses correspond to the idealised factor response. Once individuals with particularly salient attitudes have been identified, these individuals can then be used to calculate factor weightings for individual items (see McKeown and Thomas 1988 p 53 for details of the procedure).

These loadings can then be used to generate a factor weights for each statement (a weighted Z score based on the factor scores for each item). This provides the facility for several different approaches to data analysis. Firstly it identifies the most extreme items
associated with each factor, and this is often used as the basis for providing each factor with a name. In common with R method factor analysis, this name is in a sense arbitrary and results from interpreting the items with especially high levels of agreement or disagreement on that factor. Stopping at this stage is likely to result in discarding a lot of data. This is because it is likely that many individuals will not load highly on an individual factor, therefore without computing a factor score for each latent variable for each individual we do not develop an appreciation of the spread of individual perceptions, just the extremes. To achieve this we compute a score on each factor for each individual’s response. Graphing the factor scores against each other can provide further means of interpreting the spread of opinion within the q sample, and this can be used for interpretation. Computing the factor score for each individual also gives us the means for further statistical analysis of our Q sample. The factor scores in particular lend themselves to factorial designs to for example look at the differences in perceptions between individuals based on other characteristics (e.g. demographics). This provides a bridge between Q methodology and the more traditional R methodology, so we can relate our findings about the structure of the subjective perceptions back to data collected in a more traditional way.

THE RESULTS
As stated at the beginning of this paper, the Q Methodology promises a great deal but does it deliver? Perhaps the best way to answer this question is to look at the results of a typical Q Methodology study. The outcome of the concourse and the sort is the factors. The factors are the groups of participants who feel similarly about a topic. The factor analysis also tells us why they feel this way about the topic. The following exhibit illustrates how a factor analysis might typically look:
### Exhibit 1: Example Results of a Q Methodology Factor Analysis

<table>
<thead>
<tr>
<th>Factor</th>
<th>Description</th>
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<tbody>
<tr>
<td>Factor 1:</td>
<td>Contains the individuals whose statements are most aligned with concern about the value and usability of a technology (i.e. statements might include terms such as <em>usefulness, value, tangible benefits to customers</em>.)</td>
</tr>
<tr>
<td>Factor 2:</td>
<td>Might be similar to Factor 1 or Factor 3 but include an additional differentiating area, such as <em>concern for the environment</em>, not mentioned by the other two groups.</td>
</tr>
<tr>
<td>Factor 3:</td>
<td>Contains the individuals whose statements are concerned about the impact on themselves (i.e. statements might include terms such as <em>career threat, status, job security</em>).</td>
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</tbody>
</table>

This tells the firm that their employees feel differently about a topic, and summarises these different views into factors (three in this example). The factors identify the characteristics of these different employee groups by showing how they share perceptions about the topic. The positive and negative scores explain, in more detail, how the factor groups differ in their opinions about the topic.

Many industry managers might read this and say ‘so what?’ This is information only. It is not knowledge. It helps managers understand the nature of a problem but offers no solution. Q Methodology researchers might respond to questions from disappointed industry partners with comments such as ‘it is your job to place context on the results – what does it mean for you? or the process has engaged your employees in the problem – at least they are now thinking about it’. But that is not enough to persuade the Accounting industry to give access to their organisation to academics. They do not expect to interpret this information and convert it into knowledge. They expect the researcher to do that. They do not want to be told they have a problem - they already know that - they want a solution.
CAN Q METHODOLOGY CREATE VALUE FOR ACCOUNTING RESEARCHERS?

Q Methodology has value as a tool for gathering data and analysis of data. Table 1 summarises the range of benefits identified by this paper:

<table>
<thead>
<tr>
<th>Table 1: Q Methodology Value Proposition</th>
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<tr>
<td>Technique</td>
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<tr>
<td><strong>Concourse</strong></td>
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<td>Data gathering</td>
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<td>Data gathering</td>
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<td>Data gathering</td>
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<td>Data gathering</td>
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<tr>
<td><strong>Sort</strong></td>
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<tr>
<td>Data analysis</td>
</tr>
<tr>
<td>Data analysis</td>
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<tr>
<td><strong>Results</strong></td>
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<tr>
<td>Findings</td>
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</table>

Table 1 shows that the Q Methodology appears to offer most value as a data gathering technique. Information technology (e.g. computers) might be used to reduce respondent burden. This could occur in two ways: (a) using on-line chat room style delivery for the concourse, and (b) a computer based delivery of the sorting phase (it could be like a game of click and drag to line up the various statements) which would take managers only a few minutes to complete. The notion that Q Methodology can capture participants’ full tacit understanding of a topic is particularly novel and interesting for researchers. While the limited time involved will be attractive to practitioners, there is also the potential benefit of increasing participants’ awareness and understanding of the topic under investigation (i.e. action research).
But at the end of the day, industry partners, such as Accountants, want results. They want solutions to problems in order to allow academics access to their organisations. There is an economic cost to allowing researchers to gather data from organisations. For example, interviews with 30 managers in a construction firm might take a total of 30 hours, which equates to $1,500 in terms of their salary. But there is also the opportunity cost in terms of the value these employees could create for the firm in the time they were doing the interview, which is much harder to measure in economic terms. In return, organisations expect an economic benefit. What would the construction firm get in return for the $1,500 in salary time and the opportunity cost?

CONCLUSION
Historically, firms have not seen the value offered by Accounting researchers which has led to the difficulty in gaining access to primary data. This paper set out to examine whether Q Methodology might offer advantages over other research methods which could address the underlying the perceived lack of value in academic research by accounting practitioners and regulators. Table 1 has summarised these advantages. But is limited involvement and increased awareness enough to persuade industry to open their doors to academics? We believe Q Methodology can create a source of competitive advantage for social science researchers struggling to access industry. Its problem is that its value is misunderstood by Q Methodology researchers and they, therefore, do not seem to sell its benefits to industry. The solution is a simple paradigm shift. To understand this shift, we need to delve into the world of research epistemology.

In our view, the problem with many proponents of Q Methodology researchers is that they are constructivists or interpretavists. We state this based on its grounding in Action Research and our observations of working with such researchers. For these researchers, reality is ‘unknowable because it is impossible to reach it directly’; rather it can only be summarized, i.e. interpreted, or represented, i.e. constructed (Girod-Seville and Perret, 2001: 16-17). This view of knowledge privileges the status of understanding

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1 Calculated at $50 per hour for a salary of $100,000 per annum.
(interpretativism) and construction (constructivism). Researchers with these approaches seek to make sense of their world through the social construction of reality. For management researchers this means trying to identify the contextual and subjective setting of the entity under enquiry. As a result these researchers are reluctant to commit to solutions, retreating instead into the safer world of problems. The only tangible outcome is the varying combinations of opinions expressed by the group of participants. But once again…so what?

On the other hand, positivists believe reality exists in itself (and) it has an objective essence, which researchers must seek to discover’ (Girod-Seville and Perret, 2001: 15). This view of knowledge privileges the status of explanation. Positivists seek to make sense of their world by finding universal truth. For management researchers this means trying to identify a ‘best way’ that others may follow. A positivist view provides the meaning lacking in current approaches using Q Methodology. If we can switch the focus of the Q approach from the production of a range of views to the identification of people with similar views, then we may be able to better engage industry. Rather than selling industry the idea of getting deeper insight into the problem, we should be selling them the notion of better understanding their employees – and ways to manage these different views. If we can identify people who are for and against a change management initiative, we can then manage the change process. We can do this by using those who are positive as change agents, and working to address the barriers to change (i.e. roadblocks) presented by those who feel negatively. The Q statements provide us with this ammunition by giving insight into the reasons people feel this way and, therefore, an action program. For example, if the ‘negative’ group felt most strongly about lack of communication from management, this can be immediately addressed. The solution is then: improved communication by management. But we feel Q Methodology researchers need to go one step further. We need to assess the characteristics of the participants in each Factor group in detail. What is their age, seniority, work history, qualifications, business unit, work activity, and so on. This information can be used in a way that still protects respondent anonymity but classifies people in meaningful ways. Managers can then generalise about the characteristics of change agents and roadblocks and develop
strategies that specifically address these employees. This switches the focus to a positivist view, and solutions, rather than problems. However, perhaps the most interesting aspect of Q Methodology is its potential to identify participants’ tacit understanding of a topic. This allows researchers and practitioners to delve into the complexity of employees’ ‘black box’: the triangle between focal awareness, subsidiary awareness, and the knower. It is here that we think Q Methodology offers an opportunity to create real value for industry, and increased organizational access for Accounting researchers.
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