

SCIENTIFIC REVOLUTIONS, PROGRESS AND ACCOUNTING RESEARCH

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ABSTRACT

Thomas Kuhn's concept of a normal science paradigm has been utilised and criticised across a range of social science fields. However, Kuhn's aim was to argue that science progresses not in an incremental manner but through a series of paradigms that need a revolution in thought to shift from one to the next.

This paper addresses Kuhn's work focusing on the totality of his model, but recognising the ambiguities concerning paradigm shifts that have led to charges of relativism. To address this weakness an argument is advanced for a political economy analysis of the publication process and the development of critical accounting research centred on human emancipation. The paper concludes with some suggested research agendas particularly relevant to the Irish context.

INTRODUCTION

Thomas Kuhn's (1996) *The Structure of Scientific Revolutions* has had an impact far beyond its initial intention, to challenge the perception of scientific discovery as an incremental accumulation of facts. Kuhn's schema has been utilised across the natural and social sciences as a model to explain the development of individual research fields. However, Kuhn's work has also been criticised as a collection of '... manifest failures of intellectual responsibility on several levels ...' (Fuller, 2003, p. 17). Much of this criticism has focused on Kuhn's conception of a normal science paradigm, which, it is argued, researchers operate within for the majority of their careers. Whilst recognising these debates, the aim of this paper is to focus on the paradigm shifts (or scientific revolutions) element of his work. As a starting proposition, this element has been much over-looked in the debates about Kuhn's schema, partly due to Kuhn's vague formulations concerning how scientific revolutions occur.

These vague formulations have opened the space for allegations of relativism in Kuhn's work.

The argument advanced here is that the same vagueness also allows an alternative explanation based on a sociological analysis. Thus to develop and enhance Kuhn's model it is posited that a political economy analysis allows for a robust and defensible explanation of how paradigm shifts occur. This analysis includes the information flows (journal publications), the role of the individuals (journal editors) and the social and economic context in which knowledge is produced. Having set out Kuhn's schema and placed it within a political economy approach, the different accounting research schools are explored. This provides the backdrop for the arguments developed in the rest of the paper, starting with the problem of assessing progress. Once we have explained how paradigm shifts occur, how can we know if this represents progress? This paper seeks to develop an argument in favour of critical research that has the concept of human emancipation at its heart. The deployment of human emancipation is as an objective criterion upon which we can judge progress. Further critical accounting research is the only school of research in accounting that has this criterion overtly stated as an objective. The rest of this paper is structured as follows: the next section discusses Kuhn's schema. After outlining his approach, there is a critical discussion of the revolutionary element of the schema, which identifies a weakness in Kuhn's approach and posits a political economy inspired explanation to overcome that weakness. The following section applies these ideas to accounting research and draws on the accounting schools (Hopper and Powell, 1985; Chua, 1986) already established in that field. Having established that accounting currently has three research schools the next section argues that accounting is in a Kuhnian *state of crisis*. The implications of this crisis for progress in accounting research and more broadly in the social sciences is discussed, with the concept of emancipation (Alvesson and Willmott, 1992; Bhaskar, 2002; Gallhofer and Haslam, 2003) seen as an appropriate criterion on which to evaluate such progress. The paper concludes with a call for increased work within critical accounting research (CAR), including examples of potential topics in the Irish context, if accounting is to progress beyond the current crisis stage into a new normal science paradigm.

KUHN: PROGRESS AND SCIENTIFIC REVOLUTIONS

There have been three significant attempts to map out the philosophical and by extension methodological approaches in accounting research (see Laughlin, 1995; Hopper and Powell, 1985; Chua, 1986). One of the difficulties with these analyses lies in the ahistorical and abstracted nature of their models.¹ We get categories of research based on traditional research methods but there is little attention focused on how these categories came into being or change over time, how those changes are generated and what influence the current generation of researchers has on future categories. This is not just a criticism of accounting research but lies at the heart of the approaches adopted in both natural and social sciences. This section attempts to address these issues by revising and adding to Kuhn's (1996) work. The established

view is that science progresses in an incremental manner with scientists finding answers to ever more questions, with greater precision. Chalmers (1999, p. 3) starts his discussion of 'What is science?' by positing that two philosophical traditions, empiricism and positivism, '... share the common view that scientific knowledge should in some way be derived from the facts arrived at by observation'. Thus, the role of the scientist is to 'discover' or observe more facts. Whether the scientist follows in the deductive or inductive tradition or even Popperian falsification (Popper, 1994), any progress in science is assumed to be linear and incremental. A little thought leads to the conclusion that this premise is untenable as a bald statement. Questions such as 'What constitutes a fact?', 'What do we mean by observation?' and 'What role is there for theory and social context in defining a fact?' lead to a series of differing philosophical traditions.

This incrementalist approach was criticised by Kuhn (1996), who argued that scientific advances occurred not in a linear manner but through a series of disjointed paradigms, with a revolution in thought needed to shift from one paradigm to the next. The central tenet of Kuhn's analysis is the concept of a 'paradigm'. Benton and Craib (2001, p. 59) describe Kuhn's paradigm as an all-embracing '... source of guidance for conducting and evaluating research which is consensual within a particular scientific discipline'. This can take numerous forms such as shared theoretical assumptions or ontological positions. In addition, the paradigm plays a role in preparing students for future membership of that scientific community. For this to be sustained the paradigm must be both 'sufficiently unprecedented' and 'sufficiently open-ended' but seldom evoking disagreement over fundamentals. Therefore, the paradigm sets the limits for answering the question 'What is science?' In so doing, it establishes what is an observable fact and moulds prospective entrants to its perspective. Kuhn's (1996) work however was not solely about establishing the characteristics of normal science at a moment in time. His concern was to seek an alternative explanation for progress in science.

Initially based on his analysis of the Copernican revolution in astronomy but further developed in *The Structure of Scientific Revolutions*, Kuhn (1996) proposes a disjointed, almost circular process of moving from one paradigm to the next:

- *Pre-science* – the stage before a scientific paradigm has been formed. There are numerous competing theories and a lack of consensus to such an extent that the research area cannot be considered a science.
- *Normal science* – the stage where consensus on key theoretical elements has been reached and a paradigm can be said to exist.
- *Crisis* – the all-embracing paradigm established in the normal science stage comes under sustained attack, as the level of unexplained anomalies increases. Alternative theories start to emerge and gain acceptance among sections of the scientific community.
- *Revolution* – the crisis develops to such a level that the old normal science paradigm can no longer hold and members of the scientific community swap allegiances to an emerging alternative paradigm.

Smyth

- *New normal science* – once the revolutionary crisis has passed and the research community has accepted the new consensual theories, a new normal science paradigm is established.
- *New crisis* – the revolutionary process is then repeated through the new and subsequent paradigms.

Kuhn's schema advances a strong critique of the ahistorical, incrementalist approach to scientific progress. Kuhn develops a grand narrative using the grand sweep of scientific history to substantiate his argument, whether that is the discussion of the Copernican revolution or the history of physical optics. By taking such a general approach, Kuhn is able to identify specific paradigms and turning points that would be missed if a narrower focus was utilised.

There are, however, limitations and weaknesses to Kuhn's concept of normal science paradigms. For example, Masterman (1970) identifies 22 different ways in which Kuhn uses the term 'paradigm' in his text, thus allowing critics to question the validity and usefulness of Kuhn's schema. Callinicos (1995) uses the concept of normal science paradigms to illustrate the manner in which philosophical trends² can become stagnant and ossified. This highlights a major difficulty at the heart of Kuhn's model: if there is no disagreement about the fundamentals of the paradigm and any fact that falls outside the paradigm's limits is deemed not to be part of science, how does science progress from one paradigm to another? As Kuhn (1996, p. 34) himself states:

Work under the paradigm can be conducted in no other way, and to desert the paradigm is to cease practicing the science it defines ... [yet] such desertions do occur. They are the pivots about which scientific revolutions turn.

Arguably, the motor or basis for scientific revolution is where Kuhn is at his most ambiguous. The sometimes contradictory and often vague formulations in Kuhn's work have led to various and competing interpretations of his work. Before expounding an alternative solution to this issue based on political economy (Arnold, 2009; Cooper and Sherer, 1984), the following section explores the explanations advanced covering the basis and processes for scientific revolutions.

Chalmers (1999) emphasises the 'gestalt switches' and 'religious conversions' metaphors that Kuhn uses to describe the process individual members of a scientific community go through when moving from one paradigm to another – metaphors which Chalmers rejects as an acceptable explanation of this process. Kuhn himself refers to competition between different schools in a scientific community, which could be interpreted as the basis on which science progresses. But this again leads to a difficulty that Benton and Craib (2001, p. 60) have labelled as a 'thesis of incommensurability'. Here we have two schools, each adhering to their own normal science paradigm with differing theoretical foundations and methods – how can the schools then communicate with each other rather than past each other? For example, those who claim that astrology is as much a science as astronomy. The two groups are unable to find an agreed starting point on what constitutes scientific knowledge. This difficulty has allowed some to argue (Chalmers, 1999, p. 122) that

at the heart of Kuhn's ideas is a relativist view of scientific progress,³ where science progresses because one school of scientists tells us it has. Benton and Craib (2001) hint at an alternative view, where Kuhn's perceived relativism opens the door for a sociological explanation of the motor for scientific revolutions:

In the absence of objectively rational, paradigm-neutral criteria for theory choice, scientific revolutions are accomplished by way of power struggles in the scientific community, in which editorial control over key journals, capture of particular university departments, the use of rhetoric and propaganda may all have a place (Benton and Craib, 2001, p. 61).

Crucial to the ability of the individual scientists (who have come up with the new anomaly or theory) to proselytise their ideas is access to the pages of not just academic journals, but top-ranking journals. This seems to be an obvious first link in the chain of how a new paradigm might gain acceptance, but to fully understand the process of scientific revolutions it is necessary to continue the movement along the chain. Thus, the priorities of the editors of top-ranking journals predominate. These priorities are mediated by a range of forces such as the funding streams for the journal, the impact of managerialist exercises such as the Research Excellence Framework (REF) and the relationship between the editor and the university he or she works for, including the promotion criteria. These forces are in turn mediated by wider priorities such as government and industry research funding, and government policy towards research in higher education. The point is that scientific research does not exist in a vacuum but is part of broader society, a society that is dominated by the interests of capital such as the commodification of knowledge (Arnold, 2009). Kuhn's model recognises the former in the manner in which he challenges the incrementalist approach to scientific progress but he fails to flesh out the broader relations. There is a research tradition that can help in this matter, that of political economy (Tinker, 1980; Cooper and Sherer, 1984; Arnold, 2009).

There are numerous versions of political economy utilised both within and beyond accounting research. Cooper and Sherer (1984, p. 217) state that '... most emphasize the inter-relationship between political and economic forces in society'. Space limits the expansion of a political economy analysis of accounting knowledge, however we can briefly apply Cooper and Sherer's (1984) three features of political economy.⁴ These are a recognition of power and conflict in society, the specific historical and institutional environment, and a more emancipated view of human motivation and ability to change society. Thus by taking just one aspect of the production of accounting knowledge – publishing in academic journals – we can identify a range of forces that influence whether and where a paper is published. These include '... the institutional incentives faced by accounting scholars, including the tenure and promotion system and university rankings ...' (Arnold, 2009, p. 806). Moizer (2009) analyses the double-blind reviewing process and identifies work that shows little consistency in the process, leading to a lottery of publication. Added to this he shows how the use of assessment exercises as performance measurements mean '... the focus of research becomes what can be published rather than what is of high inherent value to the long term future of the discipline' (Moizer, 2009, p. 295). In this whole process the editors become the gatekeepers (Tinker, 2006) of

Smyth

what accounting knowledge is. This claim is backed empirically and expanded by Williams and Rodgers (1995, p. 281) in their study of *The Accounting Review*:

We find that in accounting, like other academic fields, there is an elite who control the direction the field will take. And likewise as in other fields, this elite consists of graduates of a certain set of schools.

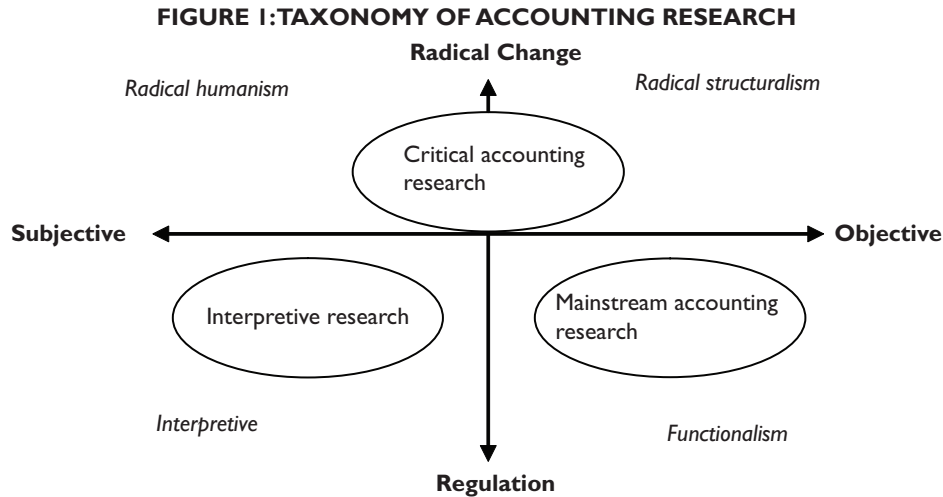
Thus, we can identify that accounting research takes place in a social context which is riven with conflict and power (for example between researchers, reviewers, editors or academics and the management in their institutions). Accounting research also takes place in the context of performance measurement schemes such as assessment exercises and increasingly competitive funding practices. Crucially, though, individuals (in this case editors individually but also groups of like-minded academics) can play a key role in sustaining or challenging the process and outcomes of accounting research. The foregoing discussion is important because it starts to sketch out an alternative sociological (materialist and dialectical) explanation for how accounting knowledge changes.

Summary

The previous section has developed a critique of the incrementalist conception of progress in science by relying on Kuhn's (1996) schema. This model has strengths and certainly achieves Kuhn's stated objective of developing an alternative explanation of scientific progress, based on an analysis of the history of science. Kuhn's schema also has weaknesses and limitations. The central one of concern for this paper is the allegation of philosophical relativism at the heart of his model, due to a lack of clarity over how paradigm shifts occur. It has been argued that the contradictory formulations that allow the space for the relativism allegations can also allow an alternative sociological explanation to be developed, and that the most appropriate sociological explanation is based on a political economy analysis. Of course anybody who is familiar with Kuhn's work will have a pertinent question based on the discussion to this point – what relevance does Kuhn have for the social sciences? Kuhn is conscious of the differences between the social and natural sciences, referring at regular points in his work to the differing circumstances applicable in the social sciences. Kuhn is agnostic about the general applicability of his model to the social sciences. At one point he distinguishes between economics and other social sciences, where it may be '... significant that economists argue less about whether their field is a science than do practitioners of some other fields of social science' (Kuhn, 1996, p. 161). Overall though Kuhn leaves the question of normal science paradigms in the social sciences open. Chalmers is slightly more definitive, when he states 'much of modern sociology lacks a paradigm and consequently fails to qualify as science' (1999, p. 109). The argument in this paper is contrary to Chalmers' conclusion. Rather than accounting research failing to be a science with no accepted paradigm, instead accounting research is in a state of ongoing crisis. Thus, the next section will take Kuhn's model and apply it to accounting research and locate where accounting research falls within Kuhn's schema, before exploring the implications for accounting research, particularly from an Irish perspective.

'NORMAL SCIENCE' AND ACCOUNTING RESEARCH

In the first eighteen years after the first publication of *The Structure of Scientific Revolutions* in 1962, Gutting (1980) identified 119 'works about Thomas Kuhn' from a range of social science fields including political science, economics, history and education. Accounting research too has a history of using Kuhn's work. Cushing (1989) makes clear and robust use of Kuhn's schema, concluding that accounting developed a normal science paradigm in the sixteenth century that developed through 'puzzle-solving' until it reached a crisis point in the 1960s. One of the outcomes of Cushing's (1989) work is a comprehensive review of where Kuhn's schema has been used in accounting research from its first appearance in Chambers (1966) to the late 1980s.⁵ Since that time accounting researchers have continued to use Kuhn's work in various forms. For example, Dempsey (1996) explores the 'cost of capital' paradigm and possible alternatives in corporate financial management; Arthur (1999) follows in the footsteps of Cushing (1989) by drawing attention to the role of a 'practitioner paradigm' influencing accounting practice, and contrasts this with researcher-led paradigms more often found in recent literature; while Bryer (1998) invokes Kuhn's schema to enlighten the debate about the nature of accounting history research. These papers focus on defining a Kuhnian paradigm within accounting as a discipline. The focus in this paper is on accounting research rather than the discipline itself. Obviously, the two are related and, in a point echoed by Cushing (1989), this paper argues that there is a crisis in accounting research with three competing alternatives, the existence of which '... is indicative that accounting is no longer in a normal science stage, but has instead entered a crisis stage' (Cushing, 1989, p. 19). This position is in sharp contrast to the conclusion of Norreklit, Norreklit and Mitchell (2010), who, drawing on the earlier work of Laughlin (1981), conclude that '... as accounting is a social rather than a physical science it does not have a paradigmatic consensus ...' (Norreklit et al., 2010, p. 735). Somewhat inconsistently though, Norreklit et al. (2010) do argue that there is such a thing as a practice paradigm for accounting. This conclusion seems at odds with their definitive view that Kuhn's idea of paradigms is '... too simplistic for exploring accounting' (Norreklit et al., 2010, p. 735), thereby asserting that accounting research is an activity qualitatively different from accounting itself. The argument developed in this paper is that rather than applying the normal science paradigms in a static manner we can establish that accounting is in a crisis stage. Further, there are a number of accounting academics (Wells, 1976; Cushing, 1989) who refute Norreklit et al.'s (2010) conclusion, arguing instead that accounting did have a normal science paradigm but that accounting research is now in a crisis state according to Kuhn's model (see discussion below). At a minimum, the disagreement over the use of paradigms in accounting does not negate Kuhn's schema; indeed it can be argued that it is evidence that the research is in a state of crisis. Thus Kuhn's schema endures but the basis of paradigm shifts needs to be reformulated (using a political economy approach as argued above) and his whole schema applied in a dynamic manner. We will now turn to the use of paradigms in organisational studies research more broadly before looking at accounting research specifically.



Source: Adapted from Burrell and Morgan (1979, p. 22), © Ashgate Publishing, 1985, adapted with permission; Hopper and Powell (1985); and Chua (1986).

One of the most influential works using paradigms in social science is Burrell and Morgan's (1979) *Sociological Paradigms and Organisational Analysis*. Burrell and Morgan (1979) sought to develop their classification over two axes: subjective–objective and radical change–regulation (see Figure 1). The first axis, subjective–objective, has four further sub-scales (see Table 1): ontology, epistemology, human nature and methodology.

TABLE 1: THE SUB-SCALES OF THE SUBJECTIVISM–OBJECTIVISM AXIS

Sub-Scales	Subjective	Objective
<i>Ontology</i>	Individual consciousness	Concrete construction
<i>Epistemology</i>	Interpretation	Observation
<i>Human nature</i>	Free will	Determinism
<i>Methodology</i>	Hermeneutics	Scientific method

Source: Adapted from Burrell and Morgan (1979, p. 3), © Ashgate Publishing, 1985, adapted with permission.

Ontology concerns the nature of reality, with the two extremes being that reality occurs within an individual's own mind or that reality exists independent of human beings. Epistemology concerns the nature of knowledge, with Burrell and Morgan (1979) emphasising how knowledge is obtained through accumulation of observable 'facts' or the interpretation of facts through the development of prior frameworks or theories. The sub-scale of human nature deals with the question of agency and structures, with one end emphasising the role of human beings in determining their own future, and the opposing end representing human action being driven by structures (e.g. economic determinism). Finally, the methodology sub-scale is largely a product of the stances taken in the previous three sub-scales. Thus, fixed design (Robson, 2002) methodologies with an emphasis on identification of correlations and frequencies is described above as the scientific method, as opposed

to flexible design methods, such as hermeneutics, which emphasise the interpretive skills of the researcher.

Hopper and Powell (1985) took the work of Burrell and Morgan (1979) and applied it to accounting research. The resulting taxonomy saw accounting research broadly split into three categories: mainstream accounting research, interpretive research and critical accounting research. Chua (1986) sets out the characteristics of each category of research under the headings 'beliefs and knowledge', 'beliefs about physical and social reality', and 'relationship between accounting theory and practice':

1. *Mainstream Accounting Research (MAR)* is based on a realist ontological and a positivist epistemological approach, where theory and observation are separate. MAR is based on two assumptions: first, human behaviour is purposive, driven by a single superordinate goal – 'utility maximisation' – and, second, there is a controllable social order where '[d]ysfunctional behaviour occurs when individual or group interests override what is best for the organization in some reified sense' (Chua, 1986, p. 609), which can be counteracted by effective budgeting, cost allocations and other accounting controls. MAR also sees a dichotomy between the 'means' of producing accounting information and the 'ends' it is used for. This requires the accountants to take a 'value-free' stance and to not make moral judgements about the end users' decisions and actions. The MAR category is the equivalent of Burrell and Morgan's (1979) *functionalist* paradigm.
2. *Interpretive Accounting Research* emphasises the role of language and interpretation of the individual, so that knowledge creation is a subjective activity drawn from an emergent reality. Thus '... the aim of the interpretive scientist is to enrich people's understanding of the meanings of their actions ...' (Chua, 1986, p. 615). In the context of accounting research, work in this category has tended to focus on the behavioural implications of accounting, seeking to explain rather than change the status quo. This category is again matched to Burrell and Morgan's (1979) *interpretive* paradigm.
3. *Critical Accounting Research (CAR)* seeks to overcome the inherent limitations in both previous categories. The subjective–objective dichotomy (which each of the previous categories takes one side of) is overcome by placing both elements in a dialectical relationship. 'Empirical reality is characterised by objective, real relations which are transformed and reproduced through subjective interpretation' (Chua, 1986, p. 622). In addition, each phenomenon is seen as being part of an inter-related reality (or totality) where every phenomenon mediates the others. Crucially, CAR seeks to challenge the status quo and find appropriate methods to change social relations. In comparison to Burrell and Morgan's (1979) schema, CAR does not distinguish between their humanist and structuralist paradigms. This is not to say such distinctions have not occurred in CAR but that critical accounting researchers have had a more plural approach.

Burrell and Morgan (1979), and by extension Hopper and Powell (1985), do not subscribe to the full use of Kuhn's model, instead seeking to use paradigms as a map

to both structure and navigate through four possible sociological paradigms.⁶ Their analysis allows the researcher to see where they have been, where they currently are and where they could possibly go in theoretical and methodological terms. However, they note that most researchers are likely to operate within a particular paradigm due to each paradigm being based on elementary positions in relation to ontology and epistemology. With echoes of Kuhn, they argue that for a researcher to move from one paradigm to another can only be described as a *gestalt switch*. Burrell and Morgan (1979) locate Kuhn's own work in their *interpretive* paradigm, with its emphasis on the social constructionist nature of science. At root, this application of Kuhn's work is again static in that it sees competing paradigms co-existing permanently, rather than being an expression of a crisis.

THE CREATION OF A 'CRISIS' IN THE PARADIGM

Kuhn sees a process of transcendence from one paradigm to the next, with each successive paradigm growing out of anomalies in the previous paradigm but also representing a fundamental break.⁷ If we apply Kuhn's model with this process of transcendence we are left with two alternatives: the study of accounting is either at the pre-science stage or we are experiencing a crisis or revolution in the normal science paradigm. Thus a choice is presented between a multi-paradigm science (Riahi-Belkaoui, 2004) and a science in the middle of a crisis or revolution (Wells, 1976; Cushing, 1989).⁸ Wai Fong Chua's (1986) influential paper 'Radical Developments in Accounting Thought' recognises this split in the accounting literature but does not side with either (although when she does set out her stance it is a remarkably similar description of a normal science paradigm in crisis). Riahi-Belkaoui's (2004) approach is similar to that of Burrell and Morgan (1979), where the researchers make a value-based choice on which paradigm to work within and so multiple paradigms can co-exist within the same field of science. Wells (1976) and Cushing (1989) on the other hand take an approach closer to the interpretation of Kuhn's schema set out above, arguing that in accounting research a normal science paradigm emerged which has come under sustained and increasing attack since the 1960s; a normal science paradigm continues today with the dominance of MAR. However the growth of interpretive and critical accounting research has created a crisis in the MAR paradigm. It is this second interpretation that represents the starting point for the rest of this paper. What follows is a discussion on the basis of progress into a new normal science paradigm.

DISCUSSION

While the foregoing may be of passing interest in and of itself, the bigger question is what is the relevance of such an analysis for the practice of accounting research? After all, the use of Kuhnian paradigms in social science studies broadly and accounting research is not unique, as previously discussed. The arguments in this paper have twofold implications: first, on a theoretical level saving the paradigm

shifts from mystical explanations (as has been argued above) and, second, as a pointer for future research in accounting. Chalmers (1999), in his discussion of Kuhn's work, calls for a ditching of the gestalt switches and their replacement with '... an objective characterisation of paradigms and the relationship between them' (Chalmers, 1999, p. 128). The remainder of this paper addresses Chalmers' (1999) call and outlines a research agenda to that end.

The growth of *interpretive* research over the last 30 years has also brought to the fore radical relativist and post-modernist preoccupations with the concepts of progress in science, objective reality and the Enlightenment project as a whole (Crotty, 1998). While this is not the place for a detailed discussion on postmodernism (see Cooper, 1997), a couple of points will suffice. As with any philosophical school, post-modernism has a number of different and sometimes contradictory interpretations – for example James Joyce is claimed to be both a modernist and a post-modernist depending on who you read. One definition of postmodernism outlines the reactive nature of the philosophy. Lyotard (1984, p. 5) states 'I define *postmodern* as incredulity toward metanarratives', and explains this by using:

... the term 'modern' to designate any science that legitimates itself with reference to a metadiscourse ... making an explicit appeal to some grand narrative, such as the dialectics of Spirit, the hermeneutics of meaning, the emancipation of the rational or working subject, or the creation of wealth (Lyotard, 1984, pp. xxiii–xxiv).

The conclusion of Lyotard's (1984) definition is expressed by Rue (1994, p. 272): '[t]here are no absolute truths and no objective values.' The lack of a materialist explanation for paradigm shifts opens the space for Kuhn's schema to be closely related to the relativism of that outlined by Rue (1994). Therefore, Kuhn's schema does not in and of itself answer the challenges laid down by postmodernism, and indeed it could be argued that his work could be appropriated to aid the post-modern project. Again, answers must be sought elsewhere if Kuhn's work is to be rooted as part of the Enlightenment project and avoid the relativism of the post-modern project. Thus, there have been attempts made to formulate non-relativistic criteria for establishing scientific progress. For example, Popper (1994), while drawing the parallels between scientific progress and evolution in nature, gives two criteria. First, the new theory must conflict with the previously held views: '[i]n this sense, progress in science ... is always revolutionary' (Popper, 1994, p. 12). And second, the new theory must '... yield results at least as good as those of its predecessor and, if possible, better results' (Popper, 1994, p. 12). While Popper's (1994) criteria undoubtedly have relevance they are again abstracted and shorn of their social setting, and so suffer from the same limitations as Kuhn's criteria highlighted above.

As an alternative, we can posit the very un-postmodern idea of emancipation (Alvesson and Willmott, 1992; Bhaskar, 2002; Gallhofer and Haslam, 2003) as the criterion against which progress in science and research could be evaluated. While post-modernists will argue whose emancipation and emancipation from what, we can turn to the work of philosopher Roy Bhaskar for some insights into the project of human emancipation. Bhaskar (2002), drawing on a formulation by Rousseau, recognises that human beings are born free but are everywhere in chains. Thus the project of human emancipation is to throw off those chains. 'This immediately

Smyth

gives rise to a general definition of emancipation or liberation as the shedding or disemergence of unwanted and unnecessary determinations' (Bhaskar, 2002, p. 29). For Bhaskar this is one of the essential elements '... of the charter of social science ...' and as social science encompasses the study of human behaviour and outcomes 'human emancipation is something that cannot be imposed from without; so it has to be self-emancipation' (Bhaskar, 2002, p. 21). Bringing these ideas into the management studies field, Alvesson and Willmott (1992) argue that emancipation:

... describes the process through which individuals and groups become freed from repressive social and ideological conditions, in particular those that place socially unnecessary restrictions upon the development and articulation of human consciousness (Alvesson and Willmott, 1992, p. 432).⁹

However, when we turn towards the accounting literature there are few works that address the concept of emancipation directly, choosing to align accounting with an emancipatory project (Gallhofer and Haslam, 2003) or seeking to recast the emancipatory possibilities of social accounting through civil society campaigns (Spence, 2009).

This point leads us to the role that research can and should play. Thus the first task for accounting researchers is the need to develop further the idea of emancipation – primarily by drawing on works in other social sciences but latterly with the aim of developing accounting-based insights into the project of human self-emancipation. Central tasks here include developing a vision of human emancipation that is relevant in capitalist societies of the early twenty-first century and of no less importance is the question of how we transcend the current oppressive social structures (i.e. what is the role of agency?). To that end, Cooper (1997) recognises that the working class (that is, both those workers involved with the production of accounting information and those workers who suffer from '... the effects of new accounting regimes ...' (Cooper, 1997, p. 35)) is largely absent from the accounting literature. The argument here is not just that we should study an excluded social group because of their absence but that on a more profound level workers carry agency, the ability to not only change the world around them but also challenge the effects of accounting in the world. A prime example of this is the workers' occupations of their workplaces that took place at the end of 2011 and start of 2012. The occupations at La Senza and Vita Cortex raise questions concerning the role of accounting firms acting as administrators (Nihill, 2012) and the manner in which a group structure is utilised to avoid payment of redundancy monies (*The Phoenix*, 2012). On a broader scale, the role of state bodies such as the National Asset Management Agency (NAMA) and the Labour Relations Commission (LRC) need to be interwoven into our understanding of accounting practice and information. To address these research topics requires a challenging of the 'means' and 'ends' dichotomy (Chua, 1986) that dominates accounting research.

This leads us to the second task facing accounting researchers: the concerns identified above need different theoretical and philosophical frameworks to those that had been used prior to the great crash of 2008. As Arnold (2009) has argued:

Our dominant theories provided an insufficient bases [sic] for understanding the transformations that were occurring in the international political economy over the past quarter century. ... Most importantly, we did not develop a sufficiently broad culture of critique within our academic community (Arnold, 2009, p. 808).

We need to look beyond the existing walls of accounting research into other social sciences to help us address the fundamental issues common to all social science research. For example, the past decade or more has seen the establishment of critical realist currents within organisation and management studies (Ackroyd, 2009; Fleetwood, 2004) and economics (Lawson, 1994, 1997; O'Boyle and McDonough, 2011) in response to the limitations of positivism highlighted by the post-modern critique and the slippery slope towards solipsism that postmodernism represents. Critical realism as an under-labouring philosophical approach allows us to address fundamental issues such as the relationship between structure and agency, the nature of reality and our knowledge of it, and most importantly how change occurs in social structures. Furthermore, the recent history of the Irish state (the Celtic Tiger, the property bubble, the financial and banking crash and the troika deal) provides an almost unique experience that has relevance beyond the shores of this island. For example, we have the troika's structural adjustment plan, once the preserve of the global south, now being imposed much closer to the heart of global capitalism. One aspect of this adjustment is the discourse around the budget deficit, a figure that is portrayed as being an absolute fact. Yet accounting figures have a range of assumptions and subjective judgements embedded in them. This leads to two tasks for accounting researchers: first, to unpack the assumptions and judgements in the figures quoted by government and the troika, and second, to address the ideological manner in which accounting figures have been deployed as justification for the course of action taken by successive Irish governments. New light could be shed upon these issues by the application of the models of financialisation, privatisation and accumulation by dispossession by critics of the neoliberal project such as Harvey (2003, 2005) and Ashman and Callinicos (2007). The ideological aspects could be addressed through the use of Gramsci's (1971) concept of hegemony and the application of a dialogical analysis based on Bakhtin's (1981) and Volosinov's (1986) work.

The above are suggestions of possible research agendas that could be pursued as part of a broad critical school of accounting research. Such a school must be heterodox in nature, if we are to avoid the pitfalls Arnold (2009) identified previously, and needs to be open to ideas from other disciplines. Further, if the logic of Kuhn's model as adapted above is to be followed and we are to progress to a new paradigm, then the goal of human emancipation needs to be central to such a research agenda. There remains one final point - that the effort expended in such a research agenda ultimately needs to see the light of day. This brings us back to the points made earlier concerning the political economy of publishing academic research. Not only do we need to change the type and focus of research but we also need to change the social structures that maintain research capacity in our higher education institutions. This is likely to involve both a change in the performance measurement systems surrounding research (e.g. the REF) and the funding

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of research, as well as an acceptance of the importance of heterodox research at local levels in accounting departments and among journal editors.

CONCLUSION

The central arguments in this paper can be summarised as follows: accounting research had created a normal science paradigm (Mainstream Accounting Research), which has been under attack since the 1960s. This attack has come from the growth of both the interpretive and critical research schools in accounting. While the advance of postmodern approaches has been somewhat less pronounced in accounting than in other social sciences, accounting research could accurately be portrayed as being in a state of crisis, according to Kuhn's schema. This raises a number of questions: Is Kuhn's schema appropriate for social science research such as accounting? Is progress through a paradigm shift possible in accounting research or will a permanent state of crisis prevail? If a paradigm shift to a new normal science is possible, how do we know if this represents progress? The arguments in this paper have proceeded on the basis that Kuhn's schema can be applied to social sciences; that a permanent state of crisis is not inevitable and therefore a paradigm shift to a new normal science is possible. Finally, we would do well to remember the alternative relativistic interpretation of Kuhn's schema, developed by Burrell and Morgan (1979). This relativism, in much the same way as postmodernism ends up making excuses for maintaining the status quo, almost inevitably leads to portraying the functionalist (MAR) paradigm as the one truly developed paradigm, while '... to avoid emasculation and incorporation within the functionalist problematic, the [alternative] paradigms need to provide a basis for their self-preservation by developing on their own account' (Burrell and Morgan, 1979, p. 398). Based on the arguments developed here the stakes are actually much higher, encompassing not just the existence of a particular research school but progress in the accounting discipline as a whole. It has been posited that human emancipation is the most appropriate criteria on which to make judgements about whether any paradigm shift represents progress. Thus, the final point is a call for accounting, and indeed other social science, researchers to engage in Critical Accounting Research to develop an emancipatory accounting (Gallhofer and Haslam, 2003). This research needs to address issues of transcendence and agency, theoretical perspectives and methodological approaches, and ultimately be supported by existing and future generations of researchers. In this way, we can hold on to the prospect of facilitating a paradigm shift and progress in our discipline.

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determination in seeking copyright authorisations. All errors remain the sole responsibility of the author.

ENDNOTES

- ¹ Laughlin (1995) does trace the philosophical history of each of the categories he develops; however in the model itself once the categories have been created they are stripped of their historical content and treated in an ahistorical and abstracted manner. This criticism is not unique to Laughlin's model but follows as a consequence of attempting to find generic models.
- ² The philosophical trend he was analysing here is post-modernism.
- ³ Something which Kuhn denies – see the postscript to the third edition of *The Structure of Scientific Revolutions* (Kuhn, 1996).
- ⁴ Cooper and Sherer (1984) also call on researchers to be explicitly normative, in other words to state clearly the frameworks and approaches they are using in their work. Thus the version of political economy adopted in this paper is influenced by the classical Marxist tradition with a central emphasis (Callinicos, 1983, 2006; Rees, 1998) on materialism and dialectical analysis.
- ⁵ Cushing's (1989) literature review covers thirteen papers that directly deal with the application of Kuhn's schema in the context of accounting research, whether that application is either utilising or criticising the schema.
- ⁶ Burrell and Morgan's (1979) work sets out four paradigms: functionalist, interpretive, radical humanist and radical structuralist. These paradigms represent the four quadrants when two continuums are overlaid, that of subjective-objective and regulation-radical change.
- ⁷ A very dialectical notion.
- ⁸ There are significant differences between Wells' (1976) and Cushing's (1989) methods for arriving at the conclusion that accounting as a discipline and accounting research are in a state of crisis. Wells (1976) argues that a normal science paradigm started in the 1940s whereas Cushing (1989) locates this in sixteenth century. However, these differences are not relevant here as both locate accounting being in a crisis since the 1960s.
- ⁹ Alvesson and Willmott's (1992) conception of emancipation is heavily influenced by the critical theory of Habermas (1984) and his concept of communicative rationality. An alternative approach to emancipation following a classical Marxist approach (Callinicos, 1983, 2006; Rees, 1998) would place class struggle over the economic, political and ideological levels at its heart.

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