

**THE ACCOUNTING IMPRINTS OF STRATEGIC
CHANGE,
ACTOR-NETWORK THEORY IN MANAGEMENT
ACCOUNTING**

Salla Siivonen,

And

Esa Puolamäki

THE ACCOUNTING IMPRINTS OF STRATEGIC CHANGE, ACTOR-NETWORK THEORY IN MANAGEMENT ACCOUNTING

ABSTRACT

This paper critically examines the ability of actor-network theory (ANT) to highlight the supposed constitutive role of management accounting (MA) in strategic change. We review contemporary management accounting literature and compare ANT to other lines of practice theory and traditional contingency theory in studying strategising in organisations. Our main concern is the empirical puzzle of diverse accountings constructed and mobilised by privileged key actors, who occupy significant positions in the organizations, and the possibility to theorize the various forms of management accounting phenomena which appear in specific locations of time and space in organizational life leaving observable signs of normative pursuit. The main conclusion of the paper is that ANT has exclusive dynamic features which contribute to our search for the sources of long-term change in companies and in the society around them.

Key words – Management accounting, Strategy, Strategising, Actor-network theory, Structuration theory, Contingency theory

1. INTRODUCTION

This paper critically examines the ability of actor-network theory (ANT) to highlight the supposed constitutive role of management accounting (MA). Until the late 70's the technical role of accounting dominated the academic discussion. Accounting was regarded mainly as a derivative practice, a neutral device that documents and reports the economic facts of economic activity using numerical computations of revenues, costs, profits, losses and returns. Management accounting research concentrated either on normative, technical, advice or on prescriptive, contingent, relationships between conceptual variables, such as environment, technology or strategy and management accounting. During the 80's research recognized the social role of accounting. These studies perceive MA as a means of intervening, of acting upon individuals, entities and processes to transform them and to achieve specific ends and thus, as constitutive of social relations rather than derivative. We further this line of studies by exploring the theoretical implications of ANT which introduces non-human actants into the social context of management accounting.

Our main concern is the empirical puzzle of diverse accountings constructed and mobilised by privileged key actors who occupy positions in the significant intersections of the main processes of the technological advancement, in other words, decisions on the potential combinations of human beings and machines, on the flows of external and internal information, and finally on the allocation of human and financial resources.

The main motivation is the vague understanding of the supposed constitutive role of management accounting in a strategy process. The basic notions of the strategic context of management accounting emerge from large organisations. The concepts are embedded in the organisational cultures and they were first used by the consultants of positioning and planning schools of strategic management. Strategy is mainly perceived as a position in relation to customers, technology, suppliers and competitors determined by some key measures. Thus, strategic change implies permanent change in this position. Strategic planning is part of the organisations' yearly planning cycle and it concentrates mainly on formal issues of investment decisions, long-term production levels, personnel management and partnership relationships with subcontractors and other business partners (see e.g. Mintzberg et al. 1998). MA refers to a collection of practices such as budgeting, product costing and other control and diverse decision support calculations. Management control systems (MCS) refer to the purposeful use of MA to achieve some goals and it includes also non-financial controls.

Contemporary studies have highlighted the relationship between management accounting and strategy but they have paid less attention to the role of management accounting in a strategic change situation and in forming new technological, organisational and financial arrangements. The former studies are typically functionalist contingency studies and the latter are mostly interpretative case studies which apply various social theories. Contingency-based research examines management accounting and more widely

management control system designs that best suit the nature of the environment, technology, size, structure, strategy and national culture (Chenhall 2003). So far these functionalist studies represent the mainstream and the interpretative studies the alternative line of research. The research methods are different. Positivist paradigm applies quantitative methods of data analysis and the interpretative paradigm ideographic methods. The ideographic research methods emphasise details, participation, observation, experience, and process.

Baxter & Chua (2003) highlight seven different alternative management accounting research perspectives: non-rational design school, naturalistic research, the radical alternative, institutional theory, structuration theory, a Foucauldian approach and a Latourian approach. Each of these perspectives has its trademark theories, studies and interpretations of management accounting practice. Most of these interpretative studies share a common theoretical concern with the specific uses of management accounting as a personal means of influence. Ahrens & Chapman (2007) refer to the categories of social research in general and define this type of research as practice theorising.

This paper contributes to our understanding of action which is related to a specific use of accounting during a specific period of strategic change which is called strategising in the contemporary literature (Chua, 2007). This line of research assumes that accounting shapes the activities and relationships which it then reports upon. Accounting may change the configurations of the organisational reality and challenge existing routines on a long-term basis. In the studying of the role of accounting it is necessary to identify the key factors which are involved in the construction of the world by the accounting numbers. In this sense, theory is a methodological lens to look into the organisational life and to possibly find significant management accounting practices which shape the future of the enterprise. We expand this idea as follows. First, we review the theoretical background of contemporary research of the relationship between strategy and management accounting and consider current and potential contributions of three approaches in this field: contingency theory, structuration theory (ST) and actor-network theory (ANT). Second, we continue with a closer analysis of the basic principles of actor-network theory. Finally, we discuss the potential contribution of ANT in the strategising context and end the paper with concluding comments.

2. THEORIZING THE RELATIONSHIP BETWEEN STRATEGY AND MA

In this section we review the contributions of the main theoretical approaches to the relationship between strategy and management accounting. We start with a paradigmatic discussion and divide the contemporary research into two separate categories which both rely on the assumptions and research traditions of their own. Baxter and Chua (2003) label the dominant research relying on sociological functionalism as “mainstream” and all the other approaches as “alternative”. The theme of this paper easily produces a similar dichotomy of contemporary research. The mainstream research perceives accounting from a positivist angle as an objective, value-free and technical function.

Analogously, the traditional accountants see themselves as appraisers of economic facts. The alternative MA research embraces various perspectives, but they all share the insight of management accounting as an interpretive and constitutive practice. This type of research has the capacity to change, in educational institutions, the assumptions of the normative role of accountants. The contemporary accountant is supposed to be a business controller taking a managerial role and actively steering the future of the firm distinguishing himself from the former bean-counters of the accounting function (see e.g. Granlund & Lukka, 1997). The theme of strategic change notably emphasises the hypothetical role of accounting as a constitutive device in shaping the future of the organisation and its environment.

Although the alternative research takes a non-positivist stand, it does not deny the derivative role of accounting as one important way of understanding accounting. As the research approaches in management accounting have evolved, the relevance of subjective-objective dichotomy, as defined by Burrell & Morgan (1979), has become more obscure. However, the ontological and epistemological assumptions of the alternative research differ fundamentally from the mainstream research. The rather narrow positivist view of accounting as objective representation of reality broadens significantly by appreciating accounting as versatile but merely one element in a large process of shaping the reality in the organisation and in the society at large. The epistemological assumption of constitutive accounting has a methodological impact on the empirical studies. Especially, in a strategic context the focus of the empirical data is on actors which produce normative calculations regardless of the actor's status, position, and organisational function.

Anecdotal case evidence suggests accounting exists outside the limits of accounting organisation and formal accounting systems. Lord's (1996) case evidence assumed that the case firm had successfully collected and used competitor information without any input from the management accountant. This led her to conclude that the techniques for gathering and using information necessary for survival in a hostile and competitive environment may be part of the operational management of firms. The findings in Dixon's (1998) case study suggest that the collection and use of competitor information for strategic purposes can be achieved without implementing a formal process.

The next subsections discuss the contributions of functionalist contingency research and interpretative practice theorising serving as preliminaries to a deeper assessment and argumentation of actor-network theory.

2.1 Contingency theory

The conventional functionalist contingency-based research approach assumes that management control systems (MCS) are adopted to assist managers achieve desired organisational outcomes or organisational goals under specific conditions. Thus, it perceives MCS as a passive tool designed to assist managers' decision making. The methods are surveys, samples are large, and the analyses are statistical assuming mainly

unidirectional relationships between the context and the control systems of the firm (Chenhall 2003). Contingency research deals with control systems which suit particular types of strategies. A common feature of these studies is that MCS is viewed as playing a supportive role within the rational strategy implementation process (Langfield-Smith 1997, 221; Govindarajan 1988; Govindarajan and Gupta 1985).

Chenhall (2003) presents the findings from an extensive selection of contingency-based management accounting research. The main contextual variables are environment, technology, organisational structure, size, strategy and culture. According to contingency theory there are some general findings concerning the contextual variables. First, environmental uncertainty is associated with a need for more open, externally focused, nonfinancial styles of MCS, but hostile and turbulent conditions with a reliance on formal controls and with an emphasis on budgets. Next, technologies characterised by more standardised and automated processes are served by a more traditional formal management control system with highly developed process controls, high budget use and high budgetary controls. Third, large decentralised firms are associated with a strong emphasis on formal management control systems. Large firms also tend to adopt more formal management control systems. Contingency research has provided mixed results as to whether culture does have effects across the aspects of MCS. To summarise, a general proposition relating culture to MCS is that the national culture is associated with the design of MCS.

Langfield- Smith (1997) provides a summary of research into MCS and strategy using the concepts of the positioning school from the late 80's. Whereas strategies characterised by conservatism, defender orientations and cost leadership are associated with formal, traditional MCS focused on cost control, specific operating goals and budgets and rigid budget controls, strategies characterised by defender and harvest orientations and following cost leadership are associated with formal performance measurement systems including objective budget performance targets. However, the role of strategy is dynamic because managers continually assess the combinations of various contingency factors (Chenhall 2003, 151). During the 90's emerged the concept of strategic management accounting (SMA) and contingency studies which presuppose the existence of SMA as a set of management accounting techniques for strategic purposes. Activity-based costing and balanced scorecard are practices which are motivated by assumed support to strategic control.

Guilting et al. (2000) identified 12 strategic management accounting practices: attribute costing, brand value budgeting and monitoring, competitor cost assessment, competitive position monitoring, competitor appraisal based on published financial statements, life cycle costing, quality costing, strategic costing, strategic pricing, target costing, and value chain costing. They studied these SMA practices in large companies in New Zealand, in The United Kingdom and in the United States and measured SMA usage, perceived merit of SMA and the familiarity with the term "strategic management accounting". Their study revealed that strategic costing practices are rare in organisations. Strategic pricing was the only practice in this group that scored even moderately. Competitor accounting appeared to be more developed than strategic costing practices. Again, brand value

monitoring and budgeting scored relatively low. Generally, perceived merit scores are significantly above the usage scores. It appeared that “SMA” is a rarely used term in organisations and that appreciation of the term is limited (Guilding et al. 2000).

The studies provide evidence of management beliefs that changes in manufacturing strategies to emphasise quality, flexibility, dependability and low cost should be accompanied by changes in formal performance measurement systems to place greater emphasis on non-financial, operations-based measures. The results suggest that both advanced technology and advanced management practices in interaction are important in explaining management choices of performance measures (Perera et al. 1997; Abernethy and Lillis 1995). The results suggest that effective organisations benefit from ABC techniques combined with traditional accounting techniques but they also suggest an inconsistency in low performing organisations when high benefits from ABC are combined with low benefits from management techniques. Furthermore, the results support the importance of strategic planning techniques in high-performing organisations including both low price and product differentiation strategies. (Chenhall and Langfield - Smith 1998).

The definition of MCS has evolved over the years from one focusing on the provision of formal and financially quantifiable information to assist managerial decision making to a definition embracing a much broader scope of information. MCS is not a passive tool but a dynamic concept which is difficult to examine using static contingency theory. Contingency-based research has limited its focus on specific elements of accounting controls in isolation from other organisational controls. From the interpretative perspective contingency theory ignores learning, dynamic relationships, culture and organisational politics and it tends to make organisations and their members dependent upon forces operating in an external world, rather than recognizing that they are active agents operating with others in the construction of that world. Contingency theory claims that management control system is a passive tool, at least partly old-fashioned and should be replaced with more dynamic views. Chenhall (2003, 161) is aware of the limitations and problems in contingency research and points out that maintaining the relevance of MCS contingency-based research, scholars will need to focus their attention on contemporary dimensions of MCS, context and organisational and social outcomes. Insights drawn from “alternate” theories can assist in elaborating the traditional contingency based model.

The functionalist contingency research perceives MCS as a passive and static tool which is adopted to assist managers to achieve specific goals. The methods used are surveys, and analyses are statistical which assume the unidirectional relationship between two variables. The central concept is fit, e.g. between a particular type of strategy (cost leadership versus differentiation) and MCS. However, current developments such as the MCS to include broader scope of information (also non-financial) and its dynamic nature together with larger trends in economy have resulted in the view that contingency theory is too static a theory to address unique and intensive phenomena.

2.2 Practice theories

The concept practice theory developed during the 70's and it originated as a way to overcome the divisions between structurally oriented collectivistic studies and more processually and individually oriented studies. The father of practice theory is the French theorist and sociologist Pierre Bourdieu. His concept of habitus represents an important formulation of the principles of practice theory. Practice theorists claim that social action and order are best explained with reference to the existence of social practices that span across time and space. Practice theory has been well received in recent strategy research, in which the notion of "strategising" has become the emblem for a concern with the details of how strategy is being practised in the everyday operations of an organisation. Strategising means the same as to mobilise different strategic objectives to which practices are supposed to contribute and it examines how strategy is being practised in the everyday operations of an organisation. (Jørgensen & Messner 2010, 186) Interpretive studies have sought to explore possible relationships between the local and its context. A central understanding of this literature is that accounting cannot be understood simply with reference to its supposed functional properties because it is implicated in the shaping of its own context (Ahrens & Chapman 2007, 100).

The organisation of a practice is an array of understandings, rules, ends, projects, and even emotions. This organisation can be described as normativized: a normativized array of understandings, desires, beliefs, expectations, and emotions (Schatzki 2005, 481). Theorising management accounting practice is about understanding how people in organisations make specific uses of widely available accounting solutions, how such solutions come to be at their disposal, and how their use might change existing accountings and give rise to new accounting solutions which others can use. Many studies of accounting have pointed to the diverse ways in which social order has been structured through activities involving accounting, in other words, describing many social phenomena that hinged on specific accountings. These studies have furthered our understanding of the constitutive powers of accounting in relation to organisations and society (Ahrens & Chapman 2007, 99-100).

Among alternative research perspectives highlighted by Baxter & Chua (2003) are two of interest in our setting. A range of studies of the relationship between strategy and MA has drawn on either Giddens' (1984) structuration theory or Latour's (1987; 2005) actor-network theory. Structuration theory conceptualises the interconnection between the agency and the production of social structures. Actor-network theory argues that the society is constituted by networks of human and non-human actants. Actants can give agency to non-humans, in other words, fabricate facts. Essential features in ANT are the assumption of constant change of the social and emphasis on how the new institutions, procedures and concepts are able to collect and to reconnect the social (Latour 2005). Next in this subsection we explore the basic assumptions of these theories and the studies they have inspired.

STRUCTURATION THEORY

Giddens' (1984) structuration theory describes structures and practices as interactive elements which do not exist without one another. He calls this balancing of agency and structure as "duality of structure". The central theme of the theory is that institutions and ultimately the whole society are constituted by individuals in their daily interaction with each other. Social structures have three interlinked dimensions: signification, legitimation and domination. The corresponding elements of interaction are communication sanction and power. Modalities such as interpretative schemes, facilities and norms relate the knowledgeable capacities of agents to structural features. The elements of the framework are linked and only analytically separate. Agents use modalities to create interaction while they are also the medium for reproducing the structural properties (Giddens 1984, 28).

Structures do not have objective reality except as they are represented in activity or retained mentally as remembered codes of conduct or rights to resources. Structure exists as memory traces orienting the conduct of knowledgeable human agents. Thus the concept of structure differs from the structure concept of management literature which refers to structures as observable organisational configurations. Structure may refer to rules and resources of a part of an organisation or to the whole organisation. Individuals participate also in different social systems and they may draw upon the rules and resources of professional systems and introduce the alien norms to the organisation, particularly, when they are in top management (see e.g. Whittington 1993). Agency refers to the actions of the individuals in social settings. Agency takes place as a continuous flow of action. Agents intervene, not merely with automatic responses but rather in a way that presents them with the possibility of acting in such a manner that social structures are sometimes modified or radically altered (Macintosh and Scapens 1990, 458). The rules and resources drawn upon in the production and reproduction of social action are at the same time the means of system reproduction (the duality of structure).

The theory of structuration captures simultaneous change and stability. Actors reflexively monitor social and physical aspects of the contexts in which they move. By the rationalisation of action the actors maintain a continuing theoretical understanding of the basis of their activity. The reflexive monitoring of action in situations of co-presence is the main anchoring feature of social integration. The structuration process of social systems may imply change but simultaneously it leaves the socially embedded principles intact. The reproduction of social systems is closely linked to the agent's conscious or unconscious need of ontological security which is grounded on primary anxiety controlling mechanisms and which expresses bodily control within predictable routines (Giddens 1984, 50). Situations that are predictable, stable over time and ordered in space are an important means of coping with unconscious anxiety (Macintosh and Scapens 1990, 459).

Giddens's (1984, 164) notion of multiple social systems has relevance to management accounting studies. In the modern world social systems increasingly intersect in various contexts, such as globalisation, ownerships, partnerships and professions. In the intersection of the institutions none of them has undiluted priority which causes tensions between systems. An individual is engaged in a multitude of plural and overlapping

social systems which thus create a network where the individual actors link the different social systems. A fundamental component of manager's activity is choice (Whittington 1992).

Roberts & Scapens (1985) argue that understanding accounting practices in their organisational contexts require understanding the ways in which accounting systems become embodied through the use in organisational systems of accountability. If there is a daily face-to face contact between people, the use and impact of accounting information can only be understood within the whole context of their relationship. Explanations given on the basis of accounting information can, in such context, be questioned or challenged. With distance the relative importance of accounting information increases since it becomes the principal source of information. So the image of an organisation which is given through accounts will be from a particular point of view, at a particular point of time and will be selective in its focus. Later Roberts (1990) applied these theoretical insights to analysing the relationship between the use of accounting information for performance reporting and control and the formulation and implementation of business and corporate strategy. He explored the tension between strategic management and the use of accounting as an instrument of internal control. The strategic context emphasises change of owner and change of dominance from production culture to financial culture in the case company. The main finding of the study is the potential significance of the use of internal conferences in resolving the tension between accounting and strategy. Roberts refers to the concepts of interaction and structure to analyse the reciprocity of accountability. The study also suggests that strategy is potentially a much more powerful set of meanings around which to mobilise action than abstract accounting information can ever provide.

Granlund (1998) studied the interplay between management accounting, change and stability in a strategic context of imperative financial crisis in a case company which had undergone a major take-over. He argues, against the contingency theorists, that no linear relationship between accounting and corporate changes can conveniently be established and that the exogenous contingency variables do not dictate the form of firms' control packages. Furthermore, he emphasises that the potential of human agency is always to some extent conditional. The usefulness of accounting does not only depend on individuals, but on how accountability is mobilised via interaction. Puolamäki (2004) reported the construction processes of management control systems in his structuration analysis of two strategy processes. His study emphasises the role of key actors, the division managers, who drew on the rules and resources of external systems and introduced to their respective division control systems which carried new social principles and values into the organisations. Using the concepts of structuration theory the case study explains the success and failure of introducing strategic management accounting practices and illustrates how the managers reflexively monitor their social setting and employ strategic conduct of their behaviour in their interaction to promote change or status quo in the corporate context. In general, structuration theory has mainly encouraged a debate which discusses management accounting systems as parallels with Giddens' concepts of structures.

ACTOR-NETWORK THEORY

Actor-network theory derives from the work of Latour and his collaborators Callon and Law in the early 80's. The metaphor of heterogeneous network lies at the heart of actor-network theory, and is a way of suggesting that society, organisations, agents and machines are all effects generated in patterned networks of diverse (not simply) human materials. An "actor" in actor-network theory is a semiotic definition – an actant – that is, something that acts or to which activity is granted by others. An actant can literally be anything provided it is granted to be the source of an action (Latour 1997). The networks of ANT are neither solely the structures of traditional sociology nor networks of information technology. Actor-network theory states that order is an effect generated by heterogeneous means and there is no reason to assume, a priori, that either objects or people in general determine the character of social change or stability. In particular cases, social relations may shape machines, or machine relations shape their social counterparts (Law 1992, 3).

Latour (see e.g. 2005) introduces the concepts of mediators and intermediaries as qualities of entities in actor-networks. Intermediaries are ostensive entities which transport meaning or force without transformation. An intermediary always counts for one entity in spite of its multifaceted configuration. Mediators transform, translate, distort, and modify the meaning or the elements they are supposed to carry. They are performative entities. However, a properly functioning intermediary entity can turn into a complex mediator. Whilst breaking, a part of a machine becomes a mediator associating spare parts, operators, maintenance, and service providers. Similarly, a business unit management team discussing highly controversial strategic issues may turn out to be an ostensive intermediary, when accepting the opinions of the corporate headquarters. This constant uncertainty determines the nature of entities in an actor-network, whether they are behaving as intermediaries or as mediators.

So far ANT has inspired management accounting researchers to study more or less operative issues such as budgeting in hospitals. These studies have highlighted the changing and fragile nature of management accounting systems. The accounting numbers are fabricated to serve the interests of disparate groups (e.g. Preston et al 1992; Bloomfield et al 1992; Chua 1995; Pinch et al. 1989). Interestingly, the context of these studies comes from the strategic impulse of the public management reform. Pipan & Czarniawska (2010) report attempts to introduce management accounting in the Italian Ministry of Finance. The report frames the developments as a construction of actor-networks, where local translations of a general idea lead to local variations in practice. The study revealed that the traditional account of implementation is too simple to grasp all the complexity of introducing new technologies and practices. The actor-network perspective also shows why a prescription for a successful implementation cannot exist. Miller (1991) and Ogden (1997) discuss how new accounting practices, such as discounted cash flows and new performance measures, ameliorated the government policies. These studies turn the assumed unidirectional relationships of contingency theory around. Latour calls this reversal causality. The social was to be explained instead of providing the explanation (Latour 2005, 108). Ahrens & Chapman (2007, 104) notice that in recent management control literature, studies are inspired by ANT, rather than

straightforward applications of it. For example, Briers & Chua (2001) developed the concepts of boundary objects to analyse the factors that were able to stabilise and mediate diverse interests in management accounting change.

Although ANT has contributed to the theorising of management accounting practices as networks of activity, the research of strategic control and strategy work in general is scarce. The research has also focused on the tensions and processes of creating social order rather than on the observable constructs. It is obvious that ANT has not achieved its full potential. ANT has the ability to reveal those hidden fabrications of calculations which have long-term impacts. Although the consequences of the calculations have become self-evident facts, the calculations themselves have turned into obscurity.

SUMMARY OF PRACTICE THEORY

Practice theorising is a marginal approach in the field of management accounting studies and is emerging in studies of the relationship between strategy and management accounting. The evidence of these studies is mostly anecdotal. However, they challenge the positivist notions of contingency theorists.

Both structuration theory and actor-network theory are attempts to reconcile structure and interaction, though their motivations arise from different origins. The most pertinent aspect in Giddens's (1984) structuration theory is the duality of structure. According to this principle the structures hinder and contribute to agents' action in reality. Actor-network theory does not recognise social structures; it describes the connections between actants. The basic difference between these two theories concerning change is that structuration theory assumes that change does not necessarily imply transformation of structures whereas actor-network theory regards associations of entities as constantly susceptible to change.

The primary aim of ST is to balance the theoretical dichotomies in sociology such as subjective/objective, micro/macro and agency/structure. Anyhow, the theory recognises the existence of dichotomist concepts, but attempts to overcome the paradigmatic problems by treating the factors equally important. ANT originates from the science studies and its initial purpose was to create an understanding of innovation processes in science and technology, which Latour calls blackboxing because technological success has a tendency to conceal the preceding complex scientific and technical history and process. Latour (2005, 170-171) reaches further than Giddens by arguing that the difficulty to stay either in a place considered as local interaction or in a place taken as contextual structure for the former one, simply means that those places do not exist or they cannot be reached by sociological apparatus. He suggests that researchers follow the routes from the place of interaction to places in other times, other locations, and agents to find the sources of the ingredients of interaction and ignore the notion of context and structure. Networks are hierarchical because every actant consists of a network of other actants. Blindness to the ingredients of actants is called punctualisation. When technology fails, the punctualisation ceases and the entities in the network become apparent.

From the standpoint of our theme, structuration theory underlines the social context and the important role of accounting constituting it, while ANT emphasises the association between entities which are in no way recognizable as being social in the ordinary manner. The concept of a social network as a structure in ST differs substantially from the concept in actor-network theory because human beings interact with non-human beings as well. Social relations may shape machines or machine relations shape their social counterparts. In structuration theory individuals are furnished with power but in actor-network theory power can be determined to other materials too.

To sum up the discussion of the possible theoretical approaches to empirically study the relationship between strategy and management accounting, we list the basic insights concerning the ontology of the different approaches under scrutiny. The choice of the theoretical background is not merely a semiotic problem of concept application in an empirical setting but a fundamental decision on the organisation of the research project and utilising fully the theoretical potential.

Our theoretical review focused on three approaches: contingency theory, structuration theory, and actor-network theory. Their ontology differs fundamentally from one another. Contingency theory perceives management control systems as objects, or entities which are separate from the interaction. Structuration theory overcomes the dichotomy by claiming that management control systems are entities which have the qualities of objective structures and subjective interaction. Actor-network theory breaks down the technological reality of management control systems into an endless hierarchy of black boxes which unfold to the networks of activity.

Structuration theory provides analytical concepts to explain the social structures of management control systems and wider structural changes in organisations and society without considering the evolutionary origins of those changes. ANT focuses on understanding the social processes of technological advancement and it has the potentiality to problematise the self-evidence of innovative management accounting practices and strategic concepts. The ontology of ANT allows the researcher to trace the origins of strategic change and identify those management accounting practices which shape the future of the enterprise.

3. ASSESSING THE PRINCIPLES OF ANT

An important contribution of ANT is its distinctive concept of social network, which is based on two fundamental principles. The first principle is the general symmetry principle which emphasises the significance of the material artefacts in networks. The second principle is the sociology of translation, which is an interactive platform for the focal network. In this section we describe these principles of ANT and outline how they might provide novel ideas for the qualitative empirical research.

GENERAL SYMMETRY PRINCIPLE

ANT assumes that all the entities in a network are described in the same terms. Whichever word is used for humans it can be used for non-humans as well (Latour and Callon 1992, 346). There is no thinkable social life without the participation of non-humans and especially machines and artifacts (Callon 1986, 23; Latour and Callon 1992, 348). What counts as a person is an effect generated by a network of heterogeneous, interacting, materials. The argument is that thinking, acting, writing – all the attributes that are normally ascribed to human beings, are generated in networks that pass through and ramify both within and beyond the body. Hence the term, actor-network – an actor is also always a network (Law 1992, 4).

Latour (1992) argues that even technologies that are so commonplace that people do not even think about them can shape the decisions people make, the effects people's actions have, and the way people move through the world. People can "act at a distance" through the technologies they create and implement and a technology can appear to determine or compel actions. Technologies play an important role in mediating human relationships, so it is impossible to understand how societies work without an understanding of how technologies shape people's everyday life. The distinctions between humans and non-humans, embodied or disembodied skills, are less interesting than the complete chain along which competences and actions are distributed. However, Latour and Callon point out that if non-humans are actors, then it is possible to determine their power (Latour & Callon 1992, 347). Chua (1995, 116) argues that the movement of some physical artefacts assumes the power of non-human resources. In some settings (when appropriate) the accounting documents work in this way. These various physical documents make technological black boxes visible.

Joerges & Czarniawska (1998) examine the notion of inscription by presenting the technology-as-text metaphor. According to them the technical norms are the institutional structure of machinery and they present three sub-genres of technical norms that are interrelated to each other (and as well to non-technical genres of inscription). The sub-genres are norms for human action which define human rights and duties, norms for machine behaviour which prescribe how specific technical artefacts are constructed and how they function, and norms for the natural environment which prescribe the extent to which incursions of environment by technical undertakings are to be tolerated. The writers emphasise that the examples they have used for three kinds of technical norms are by no means unambiguous, and their attribution to one class or the other is usually controversial. However, how the norms are classified into three sub-genres has clear consequences, which can be pragmatically evaluated in a given time and space. (Joerges & Czarniawska 1998, 380)

SOCIOLOGY OF TRANSLATION

According to Latour (2005, 106-108), sociology of translation is a more accurate name of actor-network theory, a name which Latour is not so satisfied with. The word "translation" has a specialised meaning of a relation which induces two mediators into coexisting. Another name for this type of approach is "the sociology of associations", which claims that there is no society, no social realm, and no social ties, but there exist translations between mediators that may generate traceable associations. These

associations are not causal relationships as in traditional sociology but deploy strings of mediators as networks.

“Translation” actually gives actor-network theory its dynamic nature. Translation can happen by different methods. Translation should be anchored to particular movements of money or materials (e.g. written documents). Materials or artifacts are different in their durability, which means that some networks are more durable than others. But this durability is a relational factor. The durability of materials can change when they are placed in different settings. Translation creates the possibility to transmit even the immutable things. It should also be responsive to anticipating the responses of actors translated. This point can be demanding in the case of non-human actors, how to anticipate the response of a machine or building? The last factor to notice is the scope of translation which is never ending. An organisation can be seen as a set of strategies which operate so as to create the configuration of network durability (Law 1992). Translation occurs by choosing from a spectrum of methods that ranges from seduction to pure violence by way of simple bargaining (Callon 1986, 26). Entities are converted into inscriptions: reports, memoranda, documents, survey results, and scientific papers. These are sent out and received back. Also materials and money move like the inscriptions. Translation cannot be effective (lead to stable constructions), if it is not anchored to such movements, to physical and social displacements (Callon 1986, 27).

The concept of fact production underlines the sociology of translation and ANT. When the statements come to be regarded as unproblematic so that they do not need to be explicitly formulated, they can be presupposed. Actors engage with one another and consciously or unconsciously enrol allies to move their claims in the direction of fact and away from artefact. These allies take the form, in addition to other humans, of texts, inscriptions machines and technology. The actor-world can be compared to a black box which contains a network of black boxes that depend upon one another both for their proper functioning as individuals and for the proper functioning of the whole. Therefore the operations that lead to changes in the composition and functioning of an actor-world are extremely complex. Black technological boxes of expertise and technology are enrolled into the fact production process (Callon 1986, 31; Lowe 2001, 82).

Latour (1997) presents some advantages of thinking in terms of networks. The first is that elements which are close when disconnected may be infinitely remote if their connections are analyzed. Conversely, elements which would appear as infinitely distant may be close when their connections are brought back into the picture. The second advantage is that the notion of network allows the researcher to dissolve the micro- macro distinction. The whole metaphor of scales is replaced by a metaphor of connections. A network is never bigger than another one; it is simply longer or more intensely connected. Law (1992, 5) refers to Latour and argues that network patterns which are widely performed are often those which can be punctualised - they are routines. They can be counted as resources which may come in any of a variety of forms: agents, devices, texts, relatively standardized sets of organisational relation, social technologies, boundary protocols, and organisational forms (Law 1992, 5). The third advantage is that a network is all boundary without inside and outside. Literally, a network has no outside (Latour 1997). The only

question one may ask is whether or not a connection is established between two elements. Instead of opposing the individual level to the mass, or the agency to the structure, the actor-network theory follows how a given element becomes strategic through the number of connections it commands and how it loses its importance when losing its connections (Latour 1997).

The critics of ANT attack its theoretical status. According to Calás & Smircich (1999, 663) actor-network theory has never been able to coalesce into a coherent theoretical perspective in the modernist sense. The second type of criticism is directed against the absurdity of assigning agency to nonhuman actors (see e.g. Lee & Brown 1994, 781). The third specific criticism stresses that because ANT assumes all actors are equal within the network, no accommodations for power imbalances can be made (Bloor 1999, 82).

4. CONTEXTUAL CONSIDERATIONS

The following section relates ANT to the context of strategising in empirical settings. We start with basic contextual issues and then proceed to a discussion which emphasises management accounting as a group of highly situated practices.

The case companies are two international enterprises which operate in the metal processing industry (case company A) and in the pulp industry (case company B). Both case companies have experienced major changes in their strategies and structures. Particularly the current economic downturn has affected both the companies and forced them to cut their production volume. Case company A is a European metal company. Its operations focus on the initial stages of the processing chain, in other words exploration, mining, smelting, refining and recycling. The case company's mining areas and smelters are in northern Europe and the majority of the Group's finished metals are sold to customers in Europe. The case company's overall goal is to generate sustainable growth, based on its core competencies and its mining and smelting assets. The pulp industry company, case company B manufactures bleached pulp grades. Its pulp mills are located in different parts of Europe. Case company B's pulp grades have been developed for the manufacture of high quality printing papers, folding box boards, and tissue. The business environment of the pulp market is quite stable but fragmentary; nobody holds a dominant position in the market. The most cost effective competitors are in Chile and Brazil. Future growth is expected from China where the growing consumption of paper demands a new paper mill. However, in Asia the problem is the difficulty to build a plantation. (Annual Reviews 2008).

It is evident that the case companies possess many similar characteristics. They both operate capital-intensive (the ratio of technology to human effort it employs) businesses using continuous processes and employ cost leadership strategy. Such technologies are associated with highly analyzable processes. Both case companies are process industry companies which mean the emphasis is on the growth of the firm. This implies that technological investments and expansions are under consideration in a certain time frame. A capital intensive, a mass production technology requires standardized, administrative

controls such as traditional, formal financial MCS (Chenhall 2003, 139) with highly developed process controls (Khandwalla 1977), high budget use (Merchant 1984) and high budgetary controls (Dunk 1992). Capital intensive mass production is associated with the cost leadership strategy. A cost leadership strategy is characterised by cost control, specific operating goals, budgets and rigid budget controls (Chenhall 2003, 150). China is a market area which gives future growth potential to both the case companies. Both case companies are suffering from the lack of raw materials, which is a real threat to them. Furthermore, the strategic issues are described using similar concepts. The current economic situation has forced the companies to cut their production, which is a threat to their financial situation.

According to contingency theory the case companies operate in an environment where controls are traditional, formal and financial type of MCS. The evidence from the case companies suggests that cost control is a very important element in both companies. Both case companies have set the operating goals and they adjust their operations according to these goals. Case company B made a strategic decision and decided to concentrate on the domestic activities during the next few years. Case company A has outsourced its support functions such as maintenance, security services and transport services to its partners. It uses the term partnership strategy to refer to these relationships which differ according to their intensity, importance and closeness. According to case company A is manager, these partnership relationships help to adjust functions to the current economic circumstances. When these partners have established similar relationships with other big producers in the area, they can own the specific knowhow and share it with partners according to their current needs.

Analysing the data from companies using ANT gives deeper insights than contingency theory. ANT has the potential to build the image of MA as a constitutive practice and to change the conventional impression of calculations. ANT studies of accounting describe how the social order has been structured through activities. But social is not only human, it includes non-human materials such as machines and buildings as well. ANT is a suitable theory to analyse the capital intensive industries where technology is a predominant factor in business. So far management accounting researchers who have exploited ANT in their studies have mainly researched operative issues such as budgeting. All entities such as societies or organisations are effects generated in patterned networks. To analyze strategic change we have to analyze networks and how these networks change.

According to Latour (1994) translation is the process of converting entities, of making them similar or simplifying while retaining difference. He presents seven steps which describe different stages of translation. The first step describes the momentum where two agents or actants have no interest to work together to achieve a common goal. In the second step the agents or actants have an interest to reach the new goal. Within these both first two steps agents have two distinct goals but not yet a common one. The difference between these first two steps is that in the second step agents start to be interested in working together. The third step identifies the situation in which two agents or actants are in the process of exchanging competences, offering one another new possibilities, new

goals or functions. After that (the fourth step) agents or actants start to work together to reach the common goal. This possible process sets new demands on the operations of agents or actors; for example they have to get the approval of the management for the new goal or they need other special resources. The fifth step, on one hand describes the degree to which networks are defined by a common history and a shared space. On the other hand, it describes the degree of goal congruence. The next step suggests how the single point actants (black boxes) are formed. It should be noted that the black boxes, however, may always be reopened. The last step describes the situation where the agreement as a result of translation is achieved. That kind of networks are highly coordinated and they demonstrate high level irreversibility.

To illustrate the use of Latour's (1994) seven steps of translation we present an analysis of an empirical example of strategising on the local level:

We describe a situation where case company A builds a new power plant with its partner company X. The situation starts when the power plant is functioning as expected, in other words, it is a black box, and the future partners are unaware of each other. Eventually, technology is failing in case company A and lack of heat energy creates a problem. Actants in company A become conscious of the goals of a solution and possible other networks sharing the same goal. The fabrication of a platform for a central network starts. Next, the negotiations start between case company A and company X considering a new plant. After a while they find a common solution – a new power plant – which uses bio-energy (for example firewood and peat) as a fuel. Before the construction work starts the parties of the project need to carry out an environmental impact assessment. After two years the new plant is built and the partners start to plan an expansion of the plant.

Translation is often anchored to the physical movements of some kind of inscriptions, materials or money. The network patterns (e.g. inscriptions) which are widely performed are routines and they can be understood as resources. According to Latour (1997) those actors which have many connections with other actors have strategic importance. This perception means that those accounting reports which have many connections with actors or which are performed widely have strategic importance.

Latour refers to the black boxes which unfold the network of activities. These black boxes comprise various instruments or objects and they enable various things to happen, such as enlargement of organisations or the division of power between some individuals. Some black technological boxes have a central role in the fact production process as well. The actant or actor-world is a single point black box but when black box is formed it does not mean that it cannot be reopened. In the previous example, for example the power plant is the black box which includes other technological black boxes which have to be opened.

The process of translation embodies various formal and informal calculations, visual presentations, and statements, which we call the accounting imprints of strategic change. After the formal strategic decision is made most of the preceding process, in various locations and various times, is concealed or forgotten. We argue that to understand the nature of strategic change the black boxes in the chain of the activities must be unfolded.

The findings from both case companies indicate that the various calculations outside the accounting function such as benchmarking data, raw material accounts and key indicators leave accounting imprints in the process of strategic change which eventually are concretised in configurations of human beings, machines and buildings.

5. CONCLUDING COMMENTS

In this paper we critically examine the ability of actor-network theory to highlight the supposed constitutive role of management accounting and we discuss ANT in the analysis of the nature of MA in action. We compare the relationship of ANT to traditional contingency theory and to another type of practice theory, structuration theory. These concluding comments summarise our interpretation of the comparability, commensurability and possible combination of these three perspectives in understanding the roles of management accounting in strategic change.

The ontological and epistemological assumptions of the alternative research differ considerably from the mainstream research. According to mainstream research accounting is an objective, value-free and technical function. Within this positivist view accounting is regarded mainly as a derivative practice which reports the economic facts using numerical computations of various things. Contingency research is an example of the mainstream research.

The central idea of contingency theory is that organisations adapt to their environment. The normative message is that organisations should find and achieve the best possible fit of organisational structures with the organisation's environment. Contingency theory has produced empirically tested generalisations of various contingency factors. The theory assumes that organisations are separate from their environment and passively react to the environment which mutates every now and then. Organisational structures and their environmental contexts have both concrete and objective existence. A good manager aligns the structural elements, control systems, rules and procedures with the specific rate of uncertainty in the organisation's environment. Management accounting techniques are one part of these structural elements, and the role of accounting is derivative. Contingency theory addresses research problems which are well structured and focus on highly specified phenomena. Its use in studying MA in strategic change is thus limited to the analysis of unidirectional relationship between generalised strategy style and management accounting. However, it is important to notice that the findings of contingency research provide valuable insights into the formal management control systems in case settings.

When examining strategy, contingency theory draws on planning or positioning schools of strategy. In this case strategic change is perceived as a permanent change in this position. Contingency theory takes a similar view to the MCS as to strategy – perceives it as a passive tool that supports managers' decision-making. Contingency theory has faced criticism concerning its static nature and it has limited its focus on particular parts of accounting controls. Today firms operate in a dynamic environment where the boundaries

between subcontractors, customers and other producers have become less clear. Because accounting impacts over the borders of the accounting function, it can change the configurations of the organisational reality and challenge existing routines. In that new situation the concept of MCS embraces a much broader scope of information than before. Functional contingency studies have highlighted the relationship between strategy and MCS but they have paid less attention to the role of MA in a strategic change and MCS's ability to form new arrangements. As strategic change is characterised by uniqueness, peculiarity, conflict and complexity, the research problems focus on the constitutive elements, and the theoretical perspectives emphasise action and this wider societal consequence(s) of strategic change in an organisation.

The alternative research takes a non-positivist stand. Alternative social theories assume accounting as versatile but merely as one element in a large process of shaping the reality of organisations or the society at large. Alternative research embraces many perspectives, but they all share the insight of management accounting as a constitutive practice. As a constitutive practice it has potential to shape the future of the organisations and their environment. A promising area of research is the crafting of strategies by the organisational actors. The studies of strategising examine how strategy is being practised in the everyday operations of an organisation. We illustrated the contributions of two approaches of practice theory, structuration theory and actor-network theory. The literature review illustrates how practice studies which have described the social role of accounting have increased our understanding about the constitutive powers of accounting. Structuration theory underlines the social context and examines the important role of accounting constituting it. Actor-network theory emphasises the association between entities which are not recognizable as social in the ordinary manner. In actor-network theory human beings interact with non-human beings as well. Power is assigned to the active mediators who can transform the strategy of company. ANT has inspired studies in recent management control literature but there have been less straightforward applications of it. The issues studied have been mostly operative and have focused on e.g. how the accounting numbers are fabricated to serve the interests of disparate groups or how new accounting practices enhance various issues such as government policies. The research of strategic control and strategy work is still scarce.

The central idea of structuration theory is that institutions and ultimately the whole society are constituted by individuals in their daily interaction with each other. ST tries to balance the theoretical dichotomies in sociology such as subjective/objective, micro/macro and agency/structure by treating these equally important. It underlines the social context and examines the important role of accounting constituting it. Social systems intersect in various contexts but none of the systems has priority which causes tensions between systems. An individual is engaged in a multitude of social systems which create a network where the individual actors link the different systems. In structuration theory actors reflexively monitor social and physical aspects of the contexts in which they move but actors want to maintain a continuing theoretical understanding of their activity because of the rationalisation purposes.

Both actor-network theory and structuration theory describe the change but from a different standpoint. The theory of structuration captures simultaneous change and stability because the structuration process of social systems may imply change but simultaneously it leaves the socially embedded principles intact. Change does not necessarily imply transformation of structures. The change is an integral element of ANT and somehow a wider concept than in structuration theory. According to ANT entities are constantly susceptible to change. ANT assumes the relationships between actors and describes how these relationships change. Particularly, actor-network theory is suitable to suggest various linkages between accounting and actors which in other circumstances seem to be distant.

Both structuration theory and actor-network theory are attempts to reconcile structure and interaction but their motivations arise from different origins. Structuration theory underlines the social context and the important role of accounting constituting it, while ANT emphasises the association between entities (human or non-human) which are in no way recognizable as being social in the ordinary manner. On the contrary, actor-network theory does not recognize the social structures. It emphasises the association between entities which are not recognizable as social in the ordinary manner. There are other differences as well; the concept of a social network as a structure differs fundamentally between the theories because in actor-network theory human beings interact with non-human beings, and the power can be determined to other material too. The research of strategic control and strategy work which has used ANT as theoretical background has focused on the tensions and processes of creating social order rather than on the observable constructs. We believe that ANT has potential to reveal the social essence of strategic change through non-social agency of calculations which have long-term impacts.

Actor-network theory has faced criticism concerning its basic nature or more general status as a theory. Some writers criticise the fact that ANT assigns the agency to nonhuman actors. This derives from a notion that non-human actors such as machines are part of the social life. However, technologies play an important role in many circumstances and shape the activities. This is the case in capital intensive industries where investments are massive and require other investments in buildings and support facilities. Criticism has also been directed against the equal position of all actors within a network, whereby it is possible to determine their power. Latour (1997) suggests that the number of connections the actor commands in networks determines the strategic importance of the actor. Based on this it is possible to determine the power of actors. In the capital intensive industries where machines determine the flow of actions it is appropriate to determine their power as well.

References

- Abernethy, M. A. and Lillis, A. (1995), "The impact of manufacturing flexibility on management control system design". *Accounting, Organizations and Society*, Vol. 20, No. 4, pp. 241-258.
- Ahrens, T and Chapman, C. (2007), *Theorising Practice in Management Accounting Research*. In *Handbook of Management Accounting Research*, Vol. 2. Ed. By Chapman, S. Hopwood A, Shields M. Elsevier: Oxford.
- Annual Review (2008), (case company A and case company B)
- Baxter, J. and Chua, W. F. (2003), "Alternative management accounting research – whence and whither", *Accounting, Organizations and Society*, Vol. 28, No. 2-3, pp. 97-126.
- Bloomfield, G., Coombs, R., Cooper, D. and Rea, D. (1992), "Machines and manoeuvre: responsibility accounting and the construction of hospital information systems", *Accounting, Management and Information Technology*, Vol. 2, No. 4, pp. 197-219.
- Bloor, D. (1999), "Anti-Latour", *Studies in History and Philosophy of Science Part A*. Vol. 30, No. 1, pp. 81-112.
- Briers, M. and Chua, W. F. (2001), "The role of actor networks and boundary objects in management accounting change: a field study of an implementation of activity-based costing", *Accounting, Organizations and Society*. Vol. 26, No. 3, pp. 237-269.
- Burrell, G. and Morgan, G. (1979), *Sociological Paradigms and Organisational Analysis*, Heinemann: London.
- Calás, M. and Smircich, L. (1999), "Past postmodernism? Reflections and tentative directions", *Academy of Management review*. Vol. 24, No. 4, pp. 649-671.
- Callon, M. (1986), *The sociology of actor-network; The case of electric vehicle*. In Callon M, Law J. & Rip A. *Mapping the dynamics of science and technology: Sociology of science in the real world*, pp. 19-34. London: Mac Millan.
- Chenhall, R. (2003), "Management control systems design within its organizational context: findings from contingency-based research and directions for future", *Accounting, organizations and Society*. Vol. 28, No. 2-3, pp. 127-168.
- Chenhall, R. and Langfield-Smith, K. (1998) "The relationship between strategic priorities, management techniques and management accounting: an empirical

- investigation using a systems approach”, *Accounting, Organisations and Society*, Vol. 23, No. 43, pp. 243-264.
- Chua, W. F. (1995), “Experts, networks and inscriptions in the fabrication of accounting images: a story of the representation of three public hospitals”, *Accounting, organizations and society*, Vol. 20, No. 2-3, pp. 111-145.
- Dixon, R. (1998) “Accounting for Strategic Management: A Practical Application”, *Long Range Planning*, Vol. 31, No. 2, pp. 272-279.
- Dunk, A. S. (1992), “Reliance on budgetary control, manufacturing process automation and production sub-unit performance: a research note”, *Accounting, Organizations and Society*, Vol 17, No. 3-4, pp. 195-203.
- Eisenhardt K. (1989), “Building theories From Case Study research”, *The Academy of Management Review*, Vol.14, No. 4, pp. 532-550.
- Giddens. (1984), *The Constitution of Society*. Polity Press, Cambridge.
- Govindarajan, V. (1988), “A contingency approach to strategy implementation at the business-unit level: integrating administrative mechanisms with strategy”, *Academy of Management Journal*, Vol. 31, No. 4, pp 828-853)
- Govindarajan, V. and Gupta, A. (1985) “Linking control systems to business unit strategy: impact on performance, *Accounting, Organizations and Society*, Vol 10, No. 1, pp. 51-66.
- Granlund, M. (1998), The challenge of management accounting change. A Case Study of the Interplay between Management Accounting, Change and Stability. Turun kauppakorkeakoulun julkaisu. Sarja A-7:1998.
- Granlund, M. and Lukka, K. (1997), From Bean-counters to Change Agents: The Finnish Management Accounting Culture in Transition. *Liiketaloudellinen Aikakauskirja*, 3, pp. 203-255.
- Guilding, C., Cravens, K. S. and Tayles, M. (2000), “An international comparison of strategic management accounting practices”, *Management Accounting Research*, Vol. 11, No. 1, pp. 113-135.
- Joerges, B. & Czarniawska, B. (1998) “The Question of Technology, or How Organizations Inscribe the World, *Organization Studies*, Vol. 19, No. 3, pp. 363-385.
- Khandwalla, P. (1977), *Design of Organisations*. New York, Harcourt Brace Jonanovich.

- Langfield-Smith, K. (1997), "Management control systems and strategy: a critical review", *Accounting, Organizations and Society*. Vol. 22, No. 2, pp. 207-232.
- Latour, B. (2005), *Reassembling the social. An introduction to Actor-Network-Theory*. Oxford: New York.
- Latour, B. (1997), On actor-network theory: A few clarifications, available at: <http://www.nettime.org/Lists-Archives/nettime-l-9801/msg00019.html>, (accessed 13 June 2009).
- Latour, B. (1994), "On technical mediation – philosophy, sociology, genealogy", *Common Knowledge*, Vol. 3, No. 2, pp. 29-64.
- Latour, B. (1992), Where are the missing masses? The sociology of a Few Mundane Artifacts. In W. Bijker & J. Law (Eds) *Shaping technology, building sociology: Studies in sociotechnical change*. Cambridge, Ma: MIT Press.
- Latour, B. (1987), *Science in action. How to follow scientists and engineers through Society*. Cambridge: MA: Harvard University Press.
- Latour, B. and Callon M. (1992), "Don't throw the baby out with the Bath school!" In A Pickering (ed.) *Science as practice and culture*, Chicago: The University of Chicago Press.
- Law, J. (1992), "Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity". available at: <http://www.lancs.ac.uk/fass/sociology/papers/law-notes-on-ant.pdf> (accessed 13 June 2009).
- Lee, N. and Brown, S. (1994), "Otherness and the actor network the undiscovered continent", *The American Behavioral Scientist*, Vol. 37, No. 6, pp. 772-790.
- Lord, B.R. (1996), "Strategic management accounting: The emperor's new clothes?" *Management Accounting Research*, Vol. 7, No. 3, pp. 347-366.
- Lowe, A. (2001), "Accounting information systems as knowledge-objects: some effects of objectualization", *Management Accounting Research*, Vol. 12, No. 1, pp. 75-100.
- Macintosh, N.B. and Scapens R. W. (1990) "Structuration Theory in Management Accounting", *Accounting, Organizations and Society*, Vol. 15, No. 5, pp. 455-477.
- Merchant, K. (1984), "Influences on departmental budgeting: an empirical examination of a contingency model", *Accounting, Organizations and Society*, Vol. 9, No. 4, pp. 291-307.

- Miller, P. (1991), "Accounting innovation beyond the enterprise: problematizing investment decisions and programming economic growth in the UK in the 1960s". *Accounting, Organizations and Society*, Vol. 16, No. 8, pp. 733-762.
- Mintzberg, H., Ahlstrand, B., Lampel, J. (1998) *Strategy Safari*. Pearson Education Limited, Great Britain.
- Ogden, S.G. (1997), "Accounting for organizational Performance: the construction of the customer in the privatized water industry", *Accounting, Organizations and Society*, Vol. 22, No. 6, pp. 529-556.
- Perera, S, Harrison, G. and Poole, M. (1997) "Customer-Focused manufacturing strategy and the use of operations-based non-financial performance measures: a research note", *Accounting, Organisations and Society*, Vol. 22, No. 6, pp. 557-572.
- Pinch T., Mulkay, M. and Ashmore, M. (1989), "Clinical budgeting: experimentation in the social sciences: a drama in five acts", *Accounting, organisations and Society*, Vol. 14, No. 3, pp. 271-301.
- Pipan, T. & Czarniawska, B. (2010) "How to construct an actor-network: Management Accounting from idea to practice", *Critical Perspectives on Accounting*. Vol. 21, No. 3, pp. 243-251.
- Preston, A. M., Cooper, D. J. and Coombs, R. W. (1992), "Fabricating Budgets: A Study of the Production of Management Budgeting in the National Health Service. *Accounting, organizations and Society*. Vol. 17, No. 6, pp. 561-593.
- Puolamäki. (2004), *Strategic Management Accounting Constructions in Organisations. A Structuration Analysis of Two Divisional Strategy Processes*. Turun kauppakorkeakoulun julkaisuja. Sarja A-10:2004.
- Roberts, J. (1990), "Strategy and Accounting in a U.K. Conglomerate", *Accounting, Organizations and Society*, Vol. 15, No. 1-2, pp. 107-125.
- Roberts J. and Scapens B. (1985), "Accounting systems and systems of accountability – understanding accounting practices in their organisational contexts", *Accounting, organisations and society*, Vol. 10, No. 4, pp. 443-456.
- Schatzki, T. R. (2005), "The sites of organisations", *Organisation Studies*. Vol. 26, No.3, pp. 465-484.
- Whittington, R. (1993), *What is Strategy and does it matter*. Routledge, London.
- Whittington, R (1992), "Putting Giddens into action: social systems and managerial agency", *Journal of Management Studies*, Vol. 29, No. 5, pp. 693-712.

