Twenty-five years of Giddens' structuration theory in management accounting research: achievements, limitations and the future

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1. Introduction

Twenty five years ago, Roberts and Scapens (1985) introduced Giddens' structuration theory (ST) into the management accounting (MA) field of research, since which there has been continuous and increasing output of such ST-oriented works. Indeed, a quarter of a century later, ST has become one of the most dominant 'sensitizing' approaches used to explore MA as organizational, social and political phenomena (Busco, 2009; Coad & Herbert, 2009; Englund & Gerdin, 2008). To date, the ST-informed MA literature consists of around 60 published articles, of which a large proportion has appeared during the last decade.

This paper represents a comprehensive review of the ST-oriented MA literature, the main purpose for which is to: (i) critically examine how ST has been used during its first 25 years of 'service' (highlighting both achievements and limitations), and; (ii) suggest ways that the cumulative inquiry of ST-oriented MA research might be advanced in future years.

While a number of related literature reviews have already been undertaken, those written so far have been highly selective in different respects. For example, some have covered only published works in one particular journal (Baxter & Chua, 2003); while others honed their investigation towards narrower aspects of the field, such as Ahrens and Chapman's (2006) focus on the notion of accountability, Meira et al.'s (2008) exploration of inter-firm relationships and management control systems, and Englund and Gerdin's (2008) focus on Giddens' notion of modalities as mediating concepts.

The following on the other hand constitutes a more comprehensive (and critical) review of the ST-oriented MA literature, and to our knowledge is the first full examination of all published work in this field. In other words, the scope of our paper is more extensive than previous related contributions, and offers a more detailed and systematic assessment of how ST has influenced our understandings of MA in its organisational, social and political contexts.

Our review follows a grounded approach, allowing us to identify six key themes which, in turn, reflect large variations in the literature. These key themes, which we discuss in detail (later), are: (i) how Giddens' writings have been used in MA research; (ii) to what extent (and how) MA researchers have drawn upon, and contributed to, previous ST-oriented research; (iii), how MA as a phenomenon has been conceptualized; (iv) how MA has been modelled; (v) how social continuity and change have been theorized, and finally; (vi) how MA researchers have studied structuration processes from a methodological perspective.

Undertaking both quantitative and qualitative analyses of the literature, and drawing out the six themes (above), we then advance a number of 'taxonomies', i.e. generalized frameworks, which help us to convey (yet also try to synthesize) the rather fragmented character of this literature. Premised on the six key themes and emergent taxonomies, we then offer in-depth discussion of both the respective accomplishments and the limitations of extant ST-oriented MA literature. And, finally, we then consider the various implications of our study, and present an extensive agenda and lines of inquiry for future ST-oriented MA research.

ST-oriented MA research is now established in its field, and its achievements as a sensitizing lens to understand the organizational, social and political domains of MA practice are impressive. But, having reached a milestone 25 years since the pioneering contributors in this

area, the time seems opportune to consider the legacies of such work and, more specifically, gauge the extent to which subsequent works have accomplished the original aims of Roberts, Scapens and others. Moreover, it would also seem appropriate timing to assess what has *not* been achieved to this point, thus influence ways forward in this particular research stream and ensure a 'cumulative pattern of inquiry' (Hopwood, 2009b). Essentially these are the things which our paper sets out to do.

The remainder of our paper is organized as follows. The next section presents a summary of the core concepts and underlying arguments of ST. Following that, we describe how our review was conducted, especially highlighting the search, selection, and analysis of published articles. Then, we articulate the findings of our review, organized around the six themes (mentioned above). For each particular theme, we also present a grounded taxonomy, including description and synthesis of the various literatures, before discussion of future directions for research in the future. Finally, we offer some overarching conclusions, as well as more general implications for future ST-oriented MA research.

2. Giddens' structuration theory: an overview

In order to provide a backdrop against which the ST-oriented MA literature can be analyzed, we will below sketch out some of the key features of this theory. We start by outlining core concepts and assumptions developed in Giddens' earlier works and then turn to his more recent writings.

Core concepts and assumptions

Table 1 outlines the basic building blocks of ST as developed in the pioneering books from 1976, 1979 and 1984. In these books, Giddens formulated an ontological framework for the study of human activities, focusing neither on "the experience of the individual actor, nor the existence of any form of societal totality, but [on] social practices ordered across space and time" (Giddens, 1984, p. 2).[1] Central to his understanding of such social order is the distinction between situated practices *per se* (i.e. what people actually say and do) and that which generates such practices (i.e. that which underlies and produces the 'patterns' as such). In ST, the former is denoted by *social systems* while the latter is denoted by *social structures*. Social systems then, (a) comprise the actual activities of human actors, (b) are always situated in specific time-space settings, and (c) are always linked to specific subjects. Social structures, on the other hand, constitute (a) the structural properties which allow for the 'binding' of time-space in social systems, (b) are out of time and space with only a virtual existence, and (c) are marked by the absence of the subject (Giddens, 1984).

---- Insert Table 1 about here ----

A second important supposition of ST is that these generative structures, may be divided into a sub-set of structural properties. Specifically, Giddens (1984) proposes that they can be usefully divided into *rules* and *resources,* where rules are connected to both the constitution of meaning and sanctions. On this basis, three dimensions of structures are identified, namely, (a) signification (rules); (b) legitimation (rules); and (c) domination (resources) (see Figure 1).

---- Insert Figure 1 about here ----

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[1] ST is best understood as a response to his critique of some major schools of thought regarding the individual and society, specifically, the 'naturalistic' and 'interpretive' sociology (see Giddens, 1976, 1979).

Structures of signification have their theoretical domain in the 'theory of coding', and hence, provide general 'interpretative schemes' necessary for communication (see left-hand side of Figure 1). Such interpretive rules provide ways for people to see and interpret events, and hence, give meaning to interactions. *Structures of legitimation*, on the other hand, have their theoretical domain in the 'theory of normative regulation', and provide norms which sanction certain forms of conduct (see right-hand side of Figure 1). *Structures of domination*, finally, have their theoretical domain in 'theories of resource authorization and allocation', and provide facilities for the exercise of power. According to Giddens, people draw upon two forms of resources, namely (a) *allocative* (e.g. raw materials, land, and technology) and (b) *authoritative* (e.g. technical knowledge, authority, and linguistic skills).

As suggested by Table 1, a third core idea in ST is that structures and systems are recursively interrelated through the *duality of structure*. That is, those rules and resources that actors draw upon in the production and reproduction of social systems are themselves *the product of social action* (see the vertical double-headed arrows in Figure 1). Consequently, agents and structures do not constitute two independent sets of phenomena (a dualism), but represent two sides of the same coin (Giddens, 1984).

Importantly, however, while ST departures from the observation that continuity characterizes much of social life, Giddens (1984) clearly state that it cannot predict human action since actors are highly *knowledgeable*. That is, a fourth key assumption is that human agents know a great deal about the conditions for, and consequences of, what they do in day-to-day practices and, based on this, they can always choose to do otherwise.

Related to such transformative capacity of human agents, ST also presumes that *power is an integral element of social life*. In its most basic form power is the means of getting things done (1984), and hence, concerns *human agency as such*. However, power is also depicted as *relational* and as a property of social interaction—*power as domination*. In this narrower sense, power refers to the capability that some actors may have to secure outcomes ('power to do'), where the realization of such outcomes depends upon the agency of other individuals ('power over others') (1976). Importantly, though, in order to avoid a deterministic view on power relations, whereby some actors may be seen to be 'controlled' by others, power relations should be analyzed in terms of what Giddens refers to as the *dialectic of control*. That is, regardless of the form of dependence, there are always some resources which 'subordinates' may mobilize so as to influence the conduct of their 'superiors' (see Giddens, 1984).

Overall then, Giddens' notion of *structuration* (see Item *'vi'* in Table 1) emphasizes both the 'ongoingness' and continuity of human activities—where all (re)production is historical and contingent (1981, 1990a)—and changes or dissolution of social systems. He (1995) also stresses that the study of structuration implies the study of the *conditions* under which structures are (re)produced. And as will be elaborated in more detail below, Giddens identifies and discusses a number of such conditions fostering both continuity and transformation.

Giddens' later writings

As suggested by a growing stream of MA research, Giddens' later writings on modernity may also advance our understanding of accounting practices. In these works (see e.g. Giddens, 1990a, 1991, 1994, 1999), Giddens argues that modernity is "vastly more dynamic than any previous type of social order. It is a society – more technically, a complex of institutions – which unlike any preceding culture lives in the future rather than in the past" (Giddens & Pierson, 1998, p. 94).

Three main sources of such 'dynamism' are identified, namely; (i) the separation of time and space, (ii) the development of disembedding mechanisms, and (iii) the reflexive appropriation of knowledge (1990a). As an example of time-space separation, he observes how in modernity, space is typically separated from place, whereby specific locales become "thoroughly

penetrated by and shaped in terms of social influences quite distant from them" (1990a, p. 19). Such processes (which may be related to the idea of globalization as a 'shrinking world') refers to what Giddens terms *disembedding* and *reembedding*, whereby distant events and actions are 'lifted out' of their context (disembedded), and then become recombined and 'pushed back' into other contexts (reembedded). And importantly, he also identifies a major mechanism for this, namely *abstract systems*. Such systems, which include 'symbolic tokens' (e.g. money) and 'expert systems' (e.g. written and electronic media), work to 'bracket time and space' through linking actors who are widely separated in time and space.

Finally, and related, he also suggests that human reflexivity[2] takes on a different character during modernity (Giddens, 1991). That is, although social practices have always been altered in the light of new 'discoveries', it is only in modernity that this form of critical reflection upon conventions and traditions becomes radicalized to cover all aspects of life (1990a, p. 39). Reflexivity is, as Giddens puts it, "introduced into the very basis of system reproduction, such that thought and action are constantly refracted back upon one another [… and] the fact that social practices are constantly examined and reformed in the light of incoming information about those very practices, thus constitutively altering their character" (1990a, p. 38).

3. Method

The review was conducted through the following four steps. First, we searched for works declaring the use of ST in a management accounting and/or control context. This was done through scanning all major accounting journals since their inception, using various integrated electronic databases (covering e.g. ABI/Inform, Emerald, JSTOR, Kluwer, Sage, ScienceDirect, Springer, and Wiley). We also used Google scholar, which added a number of works, mainly from lower-ranked journals, book chapters and different kinds of unpublished material.

Second, we selected papers to review based on the criteria that the works were published, and that there was a substantial use of Giddens' writings. As a result, the following types of papers were removed from our database:

i.   Unpublished works, including dissertations (e.g. Mouritsen, 1990), conference papers/proceedings (e.g. Macintosh & Scapens, 1987), and working papers (e.g. Skoog, 2004).
ii. Papers with a marginal use of, or single references to, Giddens and/or ST (e.g. Burns & Scapens, 2000; Covaleski & Dirsmith, 1998; Johanson, Mårtensson & Skoog, 2001).
iii. Papers with only a marginal MA focus (e.g. Heydebrand, 2009; Le Theule & Fronda, 2005; Yuthas & Dillard, 1997, 1998).
iv. Papers with their main focus on financial accounting or auditing-issues (e.g. Hamilton & Hogartaigh, 2009).

The selection procedure resulted in a set of 60 papers mainly published in research journals, (see Table 3 below for an overview of the literature).

Third, we then carefully (re)read these papers, analyzing them as we went along, in a rather 'inductive' manner. That is, apart from our own readings of Giddens' works and our ambition to in a sympathetic, but critical manner review the papers, we had no predispositions as to any fixed topics that would be (dis)covered. Rather, based on an initial 'open coding' (Strauss & Corbin, 1990) of each paper, where we made notes on key words, references and conclusions, we then searched for similarities and differences among the papers resulting in a number of themes for the

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[2] It should be noted here that this form of reflexivity does not refer to what Giddens elsewhere refers to as the 'reflexive monitoring of action' (e.g. Giddens, 1984), but rather to "the reflexive appropriation of the conditions of system reproduction" (Giddens, 1990b, p. 306), even though they are, of course, interrelated.

review (see Table 2). Within each theme, we then developed one or more grounded taxonomies describing and synthesizing the literature (see Tables 5 and 7-11 below).

---- Insert Table 2 about here ----

Fourth, and finally, as part of our ambition to critically review the literature and suggest potential avenues for future research, we have also tried to take a step back and envisage each theme from the viewpoint of our own readings of Giddens. Although we do realize that this is a somewhat hazardous project—not least as he (1990b) has previously submitted to sometimes be in more agreement with his critics than his pleaders—such an analysis allowed us to identify a number of 'gaps' in the MA literature and also some areas in which we argue the literature (at least parts of it) is in need of refinement.

4. Findings

As indicated above, our literature review covers some 60 papers published during the last 25 years. Table 3 shows an overview of the literature.

------Insert Table 3 about here------

As suggested by the table, the great majority of the ST papers have been published in peer-reviewed journals. In particular, four venues dominate the literature, namely *Accounting, Organizations and Society* (12 papers), *Critical Perspectives on Accounting* (9), *Management Accounting Research* (9), and *Accounting, Auditing & Accountability Journal* (5). It is worthwhile noting, however, that also quite many other journals seem open to ST-oriented MA research. Echoing the introduction section, we also see that there has been a continuous or even growing stream of studies over the years.

The overview in Table 3 also shows that the literature consists of three main categories of ST-papers. First, there is a stream of more conceptually oriented papers (in total 14 papers). These may include empirics for illustrative purposes, but the main objective is to discuss ST as such. A particular group of conceptual papers are those which henceforth will be referred to in terms of 'introducing papers' (e.g. Roberts and Scapens, 1985; Macintosh and Scapens, 1990) as their primary aim was to demonstrate "the potential of a structuration theory approach to the analysis of management control systems" (Macintosh & Scapens, 1991, p. 132). However, there are also quite a few conceptual papers which focus more specifically on particular aspects of Giddens' writings. For instance, Englund & Gerdin (2008) discussed how mediating concepts (between structure and agency) have been used in the MA literature, while Jones and Dugdale (2001) analyzed how an 'accounting regime' may be understood as a social practice involving processes of disembedding and reembedding.

Second, there is a large stream of empirical papers (in total 39 papers). That is, their main purpose is to increase our understandings of MA practices as a social phenomenon through analyses of 'real' settings. Below, we will present and discuss research methodologies applied in this stream in detail, but we can already now conclude that case study research dominates (see Section 4F).

Third and finally, we identify a small, but distinct category of ST-oriented studies, namely, literature reviews (in total 7 papers). As suggested in the introduction above, these have typically focused on specific parts of the literature, e.g. publications in *Accounting, Organizations and Society* (Baxter & Chua, 2003) or work published by single authors (Scapens, 2006).

In the following sections, we shall enter more deeply into these different parts of the literature. In so doing, we will start by analyzing citation patterns, both in terms of how MA authors cite and use Giddens' original work (4A), and how these authors cite and use previous

MA work (4B). After that, we will describe and critically review how MA has been conceptualized (4C) and modeled (4D and 4E), respectively. Finally, we identify and reflect upon research methods used in the literature (4F).

4 A. Citation and use(s) of Giddens' original work

Our review of the MA literature shows that Giddens' works have been used in many different ways. This is evident not least when it comes to the particular ST concept(s) cited by individual studies (see Table 4).

------Insert Table 4 about here------

The table suggests several observations. The perhaps most striking (but not surprising) observation is that by far most attention has been devoted to the notions of 'social structure' and 'the duality of structure'. In particular, many MA researchers have explored how the three modalities 'interpretative scheme', 'facility', and 'norm' are both drawn upon and reproduced by actors during the production of interaction (e.g. Lawrence, Alam, Northcott & Lowe, 1997; Conrad, 2005). Oftentimes, these studies also refer to Giddens' notion of social systems, thereby explicitly acknowledging the distinction between social structures and the situated and reproduced (inter-)actions they recursively organize (see also Items *'i-iii'* in Table 1).

Table 4 also shows that the idea of 'knowledgeable agency' has been frequently referred to, i.e. that human agents are purposive and know much about the grounds for their actions and also have a capability to reflexively monitor their own and others' actions. A large part of the literature also more or less explicitly draws upon the notion of 'structuration' (cf. Item *'vi'* in Table 1) emphasizing both the continuity of human activities (e.g. MA routines/routinization) and changes or dissolution of social systems (cf. the large number of studies which refer to the idea of social change in general).

However, other more specific ST concepts such as 'ontological security', 'reflexive appropriation', 'unintended consequences', and 'abstract/expert systems' are more sparsely used. To some extent this is due to that some of these were developed in Giddens' more recent work. For example, some ten years after its publication, Jones and Dugdale (2001) introduced Giddens' (1990a) notion of modernity into MA research (and associated theoretical concepts), which has resulted in quite a few followers (e.g. Barrett, Cooper & Jamal, 2005; Busco, Riccaboni & Scapens, 2006; Seal, 2003; Seal, Berry & Cullen, 2004; Moilanen, 2008). Related to this observation, Table 4 also shows that 'new' concepts are added to the research agenda, but very few disappear (but see e.g. the ideas about social change introduced by Lawrence *et al.*, 1997). Also this observation is hardly surprising as the first-used concepts such as 'social structure' and 'duality of structure' represent basic and unchanged assumptions of ST.

A more 'qualitative' reading of how Giddens' ideas have been used in the MA literature suggests that there are at least five types of work (see the taxonomy in Table 5). Note that the categories are partly overlapping and, consequently, that an individual study may occur in several groups.

---- Insert Table 5 about here ----

As suggested by the table, the first two categories—'general application' and 'selective application'—both heavily draw upon ST concepts and explore how they can offer insights on MA phenomena (cf. Jones & Karsten, 2008). Normally, they also claim that they contribute specifically to the ST-oriented MA literature. That is, these papers clearly position themselves as ST-oriented and explicitly seek to build on and contribute to earlier papers of the same kind. Another common denominator is that they are more or less passive adopters of ST ideas, i.e. there is no ambition to critically reflect upon or extend original ideas. Most of the papers in Table

4 above which mainly refer to core ST assumptions—including, 'social structures and social systems', 'duality of structure', 'knowledgeable agency' developed in Giddens' earlier writings (1976, 1979, 1984)—are part of either of these two categories. A key difference between them is, however, that papers in the second group are more selective in their use of ST, focusing on particular concepts. Examples of more specific foci include Giddens' ideas about 'unintended consequences' (e.g. Granlund, 2003; Jack, 2005), 'modernity' (Seal, 2003; Seal *et al.*, 2004), and the notion of 'expert systems' as a mechanism for dis-embedding and reembedding (e.g. Jones & Dugdale, 2001; Moilanen, 2008).

Papers in the third group—'smash and grab'—are typically also more selective in their choice of ST concepts. For example, Saravanamuthu & Tinker (2003) focus specifically on 'dialectic of control', while Free (2008) draws upon Giddens' conceptualization of trust in abstract systems. A distinguishing characteristic of these is, however, that although they rely heavily on Giddens' work in their analyses of MA phenomena, their research aim is to contribute to other theoretical fields than the ST-oriented literature.

Finally, we identify two categories of papers which broaden the perspective on ST. One of them (No. *'iv'* in Table 5) includes papers which explicitly combine ST with other theories. For example, Dirsmith, Heian and Covaleski (1997) combine it with institutional theory (see also Collier, 2001) and the sociology of professions. Along the same lines, Cowton and Dopson (2002) argued that their Foucauldian perspective benefitted significantly from Giddens' ideas about individual agency. Note, however, that also this category of research takes ST as such as largely given.

This is not the case for papers in the fifth category—'critical engagement'—depicted in Table 5. Instead, they show a more reflexive treatment of ST, exploring and challenging its assumptions. Importantly, however, we find no study that, in itself, fundamentally develop and/or revise Giddens' original ideas.[3] Rather, scholars in this category typically adopt and introduce others' critical engagement with ST into the MA arena. A good example of this is the introduction of Stone's (2005) 'strong structuration theory' to highlight and discuss the potentials and limitations of ST (see Coad & Herbert, 2009; Jack & Kholeif, 2007, 2008).

Discussion and directions for future research

From the above analyses, it is evident that Giddens' writings have been used in many different ways in MA research. As will be shown in more detail below, it is also clear that this multiplicity of ST applications has generated much new and exciting knowledge about MA as organizational and social practice. Seen as a whole, however, we identify at least three potential problems in the current MA literature. First, the 'general application' and 'selective application' of ST have been and still are the by far most common approaches. That is, *most papers predominately seek to show that the general ST framework (or specific theoretical concepts) 'can be applied'*, although indeed, this is typically done in new empirical domains and MA settings. On the one hand, this may be a natural course as even Giddens (1984) himself argues that ST is very general and abstract and, through this, works primarily as a 'sensitizing device'. It may also be a reasonable research strategy when introducing a new 'framework' into an existing field of research (cf. the 'introducing papers' referred to above). On the other hand, however, an overly passive use of Giddens' ideas risks in the long run to result in that new contexts and MA phenomena are being added to a long list, but few new understandings/explanations emerge.

A second and related problem is that, in comparison with closely related fields, we find *substantially fewer (if any) attempts to develop more phenomenon-specific adaptations of ST*. In the Information Systems (IS) literature, for instance, a number of studies have sought to extend ST to incorporate information technology (cf. 'Adaptive Structuration Theory' developed by

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[3] However, there are examples where MA scholars insightfully reflect upon ST as such (see e.g. Boland, 1993, 1996; Macintosh & Scapens, 1996; Jones & Dugdale, 2001).

DeSanctics and Poole, 1994, and the idea of 'Duality of Technology' launched by Orlikowski, 1992). There are also excellent examples in the organization science literature where scholars such as Barley (1986) and Barley and Tolbert (1997) have sought bring the literature forward through advancements in research method and analysis (see also Englund & Gerdin, 2008).

A third potential problem is that the MA literature *has not yet taken full advantage of Giddens' writings*. A striking example evident in Table 4 above is that while the issue of MA change has received considerable attention, only very few studies explicitly refer to Giddens' more detailed elaboration on this issue. In fact, only one study (Lawrence *et al.*, 1997) explicitly explores the interrelationships between the four major sources of social change suggested by Giddens (1990b), i.e. change generated by the inherent indeterminacy of system reproduction, clashes/contradictions between social systems, reflexive appropriation, and changes in resource access (see also the more detailed discussion in Section 4 E below about sources of continuity and change). We also find that although a core assumption of the ST-oriented literature is that MA systems are important 'binders' of time and space (e.g. Jones & Dugdale, 2001; Macintosh & Scapens, 1991; Lawrence *et al.*, 1997; Roberts & Scapens, 1985), few attempts have been made to explore the processes through which MA practices spread away from their immediate contexts—both spatially and temporally. In fact, the notions proposed by Giddens (1984) to explore such processes, such as for example 'time-space distanciation' and, above all, 'social integration' and 'system integration', have hardly been mobilized at all in the MA literature (but see Roberts & Scapens, 1985).

Taken together, we therefore suggest the following three directions for future research. First, the literature as a whole should seek to explore the full scope of ST, although it may be appropriate to restrict ourselves to a few concepts in individual studies (for a discussion of this, see Giddens, 1984, pp. 326-27). Second, we as MA scholars should, more than is typically the case today (but see e.g. Jones & Dugdale, 2001, and Jack & Kholeif, 2007, for interesting exceptions), adopt a more critical, yet sympathetic, stance towards ST. One promising way of doing this is to increase the number of studies in categories *'iv'* and *'v'* in Table 5 above, i.e. studies which use other (social) theories both to identify potential limitations of ST and to highlight opportunities for theoretical extension. Importantly, however, such an approach should explicitly identify the nature and the extent of the difference(s) between the position taken in the individual MA study and that of Giddens. Third and finally, more effort should be put into developing MA-specific applications of ST. As will be discussed in more detail in Section 4C below, there are interesting, yet unexplored (dis)similarities between the MA literature and the IS literature where that latter, in our opinion, has made more advancements in this respect.

4 B. Communication structure within the MA literature

In this section, we examine communication patterns within the ST-oriented MA literature. We will start with a more quantitatively oriented analysis of citations which is then followed by a more qualitative one. Table 6 shows the extent to which individual MA papers have cited previous work in the field.

-----Insert Table 6 about here-----

As a proxy of network centrality, we use adapted measures from Hesford, Lee, Van der Stede and Young (2007) of indegree and outdegree centrality. Indegree centrality is the number of citations *of* the paper in question, while outdegree centrality is the number of citations of others *in* the paper in question. A high indegree score for a paper is thus a crude indicator of within-network influence in the sense that it is frequently cited. A high outdegree score is a proxy of the degree to which individual MA papers try to pull together ideas from the previous literature.

As suggested by the summary line at the bottom of Table 6, the early papers written by Macintosh, Scapens and Roberts show a very high indegree centrality score. In fact, they are the authors of seven of the most cited papers, each having ten or more citations per paper. The table also shows that over 80% of all papers reviewed cite one or more of these introductory papers. Regarding outdegree centrality, i.e. the extent to which individual papers explicitly build on and synthesize the previous literature, we see that very few papers (13%) cite 10 or more previous works (e.g. Englund & Gerdin, 2008; Jack & Kholeif, 2008; Jayasinghe & Thomas, 2009). The table also shows that more than half of the papers published from 2001 and onwards cite five or less previous works.

We also performed a more qualitative analysis of the MA literature where we identified discussion circles (Lukka & Granlund, 2002). More precisely, we wanted to get a picture of the extent to which researchers have 'clustered' around particular research topics, and the extent to which citations were made to clarify how the paper in question *contributed to* these strands of the literature. Accordingly, papers that cite previous work only to position the study as ST-oriented more generally, or to define particular ST concepts, were not considered as participants in the discussion circles identified.

The emerging taxonomy of discussion circles is presented in Table 7. Note that not all papers in each discussion circle cite all previous work in that particular circle. Note also that there may be yet more studies which elaborate on one or more of the topics in the table. Again, however, only studies which explicitly cite and build on previous work in the particular discussion circle are listed.

---- Insert Table 7 about here ----

The table suggests that several discussion circles have emerged over the years. Some draw heavily on the introductory papers (Roberts & Scapens, 1985; Macintosh & Scapens, 1990, 1991) and elaborate on the different characters and influences that MA structures may have (e.g. Ouibrahim & Scapens, 1989) and how they may be changed (e.g. Gurd, 2008; Lawrence *et al.*, 1997). Yet other studies are focused on understanding structural reproduction (Jack, 2005), including studies of resistance to formal MA change (e.g. Granlund, 2001; Scapens & Roberts, 1993).

The table also indicates that there are discussion circles that focus on specific 'applications' or 'uses' of MA. One stream has examined how MA may be(come) implicated in systems of accountability (Roberts, 1990; Ahrens & Chapman, 2002), while another has focused on theorizing MA as an 'expert system' (e.g. Moilanen, 2008; Seal *et al.*, 2004). Echoing the finding in Table 5 above, there is also a cluster of papers whose primary aim is to (critically) discuss how to understand and use ST within MA research (e.g. Boland, 1993, 1996; Englund & Gerdin, 2008).

Discussion and directions for future research

Our analysis of within-network citations and discussion circles suggests several interesting patterns, of which some are potentially problematic for the literature. First, our proxy of indegree centrality indicates that a hand full of papers have proved very important for the literature as a whole. In fact, not only have they been important for introducing ST to MA researchers, but also for setting the agenda for several of the discussion circles that have emerged over the years (see Table 7 above).

Second, our measure of outdegree centrality suggests a potential problem insofar as there are remarkably few citations to previous ST-oriented research in many studies. Again, a majority of papers cite five or less previous works, and many of these citations are merely made to

position the study as ST-oriented and/or to define core ST concepts. In other words, quite a few papers do not acknowledge, let alone explicitly contribute to previous insights made in the area.

Third and related, a closer look at the discussion circles identified in Table 7 above suggests that, while the topics identified are highly relevant to an MA audience, we find that the circles as such are very small. Our citation analysis also shows that there is very limited transfer of knowledge *between* discussion circles. And, this is despite the fact that several topics can be considered to be closely related.

Overall then, our analyses of within-network communication patterns suggest a less flattering picture of the literature. Indeed, there are several factors that contribute to explain this pattern. For example, the low level of outdegree centrality can to some extent be explained by the fairly large 'smash and grab' use of ST (see Table 5 above), i.e. where scholars certainly rely heavily on Giddens in their analyses, but research contributions are directed toward other MA literatures. We also see examples of more or less pioneering works where authors introduce new ST concepts such as modernity (Jones & Dugdale, 2001; Seal, 2003) of which there, for obvious reasons, is limited knowledge in the preexisting MA literature. Above, we have also noted that several literature reviews have intentionally narrowed their foci, and that some studies combine ST with other theoretical frameworks. However, also after taking these factors into account, the within-network knowledge cumulativity seems low for the literature as a whole (although, indeed, there are notable exceptions). Moreover this would seem to resonate with Hopwood's concern that there has been too little 'cumulative patterns of research' in the MA literature (Hopwood, 2009b, p.890), paralysed and constrained by institutionally-framed and 'careerist'-type research which works against intellectual curiosity (Hopwood, 2008).

It is of course difficult to have a strong opinion about the long-term consequences of such communication structures. However, it could be argued that this limited level of cumulativity may explain why many studies still, some 25 years after ST was introduced, fall into the 'general application' or 'selective application' categories (see Table 5 above). It also seems reasonable to assume that future research would benefit significantly from more thorough examinations of the extant MA literature in order to carve out more specific contributions. Such explicit and comprehensive consideration of previous works would potentially also stimulate more (critical) discussions about insights made, and also enhance cross-circle communication.

4 C. Conceptualizations of management accounting

In this section, we move to the different ways in which MA has been depicted. Regarding the types of MA practices and/or techniques covered, a glance at the literature suggests high diversity. Examples of foci include, management by objectives (Alam, Lawrence & Nandan, 2004; Dirsmith *et al.*, 1997), costing systems (e.g. Granlund, 2001; Hyvönen, Järvinen & Pellinen, 2006; Jack, 2005, 2007), budgets (e.g. Collier, 2001; Seal, 2003), performance evaluation (Busco *et al.*, 2006; Capps, Hopper, Mouritsen, Cooper & Lowe, 1989; Cowton & Dopson, 2002), and transfer pricing (Gurd, 2008). However, a closer look reveals that the literature has essentially addressed either or both of two very traditional ways in which such 'MA techniques' may be implicated in the daily (re)production. One stream of studies has shown how various forms of MA systems are used for *control* by agents representing 'head office', 'top managers', 'division managers', 'factory managers' or the like, to form certain patterns of accountability in organizations (e.g. Ahrens & Chapman, 2002; Capps *et al.*, 1989; Roberts, 1990; Saravanamuthu & Tinker, 2003), while the other has shown how MA information tends to be mobilized by various (groups of) agents for *planning/decision making* (e.g. Granlund, 2001; Jack, 2005, 2007). Hence, the great majority of studies has focused on ways in which managers (more generally) tend to incorporate MA information into processes of structuration. There is, however, also a minor stream of research that has focused on the role of management accountants in the (re)production of MA practices (e.g. Caglio, 2003; see also Seal *et al.*, 2004).

Regarding the question of how MA *per se* has been conceptualized theoretically in the ST literature, we identify three principal approaches (see Table 8). One common approach is to draw upon the early writings of Roberts and Scapens (1985) and Macintosh and Scapens (1990) and view accounting mainly as *social structures* of signification, legitimation, and/or domination (see Item *'i'* in Table 8). For example, this is a distinguishing mark of a number of reform-studies, where researchers focused on the introduction of a new 'language of business' in public sector organizations (e.g. Lawrence and Doolin, 1997; Lawrence *et al.*, 1997; see also Macintosh and Scapens, 1991). An overall feature of this approach thus is that it de-emphasizes the formal systems/techniques *per se* and, instead, emphasizes the incorporation of these systems as modalities of structuration (Macintosh & Scapens, 1990).

---- Insert Table 8 about here ----

A second approach in the literature is where there is a clear focus on *the MA system per se*, i.e. where researchers refer to a computerized system (e.g. Granlund, 2001; Hyvönen *et al.*, 2006) or the manuals, rules, and reports linked to such system (e.g. Barrett *et al.*, 2005). An overall feature of this approach is thus that MA is conceptualized as an 'artefact' (see Item *'ii'* in Table 8). It should also be noted that many of these papers draw upon Giddens' later writings on modernity and the ways in which MA systems may be interpreted as abstract (expert) systems (e.g. Barrett *et al.*, 2005; Hyvönen *et al.*, 2006).

The third approach identified in the ST literature is to *conceptualize MA as structural properties of social systems while retaining some focus on the formal MA system* (see Item *'iii'* in Table 8). For example, some researchers refer synonymously to MA systems and structural properties (e.g. Caglio, 2003; Moilanen, 2008), where the *information system* as such is viewed "neither as pure action nor as pure structure, but rather as modalities of structuration" (Caglio, 2003, p. 127). However, in most cases researchers make a clear distinction between MA as social structures and MA as formal systems, engaging in the interplay between the two in various ways. For example, some researchers have shown how changes in an MA structure may lead to a perceived need for changes of formal MA systems (e.g. Alam *et al.*, 2004; Gurd, 2008), and vice versa (Busco *et al.*, 2006; Granlund, 2003), while others have shown how these interplay in day-to-day practices (e.g. Ahrens & Chapman, 2002; Roberts, 1990).

Discussion and directions for future research

Overall then, MA has been conceptualized in three principal ways in the ST literature; (i) as a social structure; (ii) as an artefact, and; (iii) as both of these. Generally speaking, the first approach as such is quite uncontroversial[4] in the sense that Giddens himself (1984, p. 17) clearly states that structure refers to the virtual structural properties "allowing the 'binding' of time-space in social systems." However, at least two remarks about this strand of the literature are worthwhile making. The first one is that, in some work, the conceptualization of MA as social structure is very broad. In particular, this applies to work where researchers refer to an 'accounting structure' more generally, such as a language of efficiency and effectiveness (Lawrence *et al.*, 1997), or an accounting-finance signification system (Macintosh & Scapens, 1991). Importantly though, while such a notion of MA structures may be thought of as a useful heuristic, especially in contrast to notions such as 'a medical language' (Lawrence *et al.*, 1997), or a 'technical-engineering signification system' (Macintosh & Scapens, 1991), the more precise meanings of such structures become very unclear, unless it is specified what kind of MA practices the structures are constituted in and through (see e.g. Roberts, 1990, for an excellent example of clarity in this respect).

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[4] But see the intense discussion between Boland (1993, 1996) and Macintosh and Scapens (1996), concerning *how* such structures should be conceptualized.

The second remark is that scholars have applied two different ways of conceptualizing MA as structure. One stream depicts MA as a *uniform/monolithic* structure (see e.g., Gurd, 2008; Macintosh & Scapens, 1991), while the other depicts it as *heterogeneous*, i.e. as composed of several, potentially competing structural elements (see e.g., Ahrens & Chapman, 2002; Seal *et al.*, 2004). As we see it, both are theoretically valid. The choice of view can be seen as a matter of what the particular study in question seeks to explain. For example, in studies whose primary contribution is to explore how 'clashes' between MA and non-MA structures shape human action (e.g. Lawrence & Doolin, 1997; Lawrence *et al.*, 1997), it seems reasonable to view such opposing structures as internally coherent and instead focus on the meaning and implications of the clash as such. However, in the same way as it may be misleading to see a language as stable and uniform (Giddens, 1993), "accounting systems are not closed and homogeneous entities" (Ahrens and Chapman, 2002, p. 157). Based on this, we propose that in order to take the next step in understanding MA practices, we should pay more attention to structural heterogeneity and the implications thereof, not only in terms of inconsistencies between MA and non-MA structures, but also *within* an MA structure as such.

The second approach identified in the literature, i.e. to conceptualize MA as an artefact such as the technical components of an accounting system, is more controversial. Indeed, there have been several attempts, not least in the Information Systems (IS) literature, to incorporate technology as such into an ST framework. For example, Orlikowski (1992, p. 410) launched the concept of 'duality of technology', and argued that "human agents build into technology certain interpretative schemes [...,] facilities [...,] and norms". In a similar vein, DeSanctis and Poole (1994) developed an Adaptive Structuration Theory (AST), suggesting that "[o]nce complete, the technology presents an array of social structures for possible use in interpersonal interaction". However, such reification of technological artefacts seems inconsistent with ST as Giddens himself convincingly argues that only social structures, *which are out of time and space, subject-less and only virtually existent*, have structuring properties (see also Section 2 above). Accordingly, as Giddens clarifies, "technology [*per se*] does nothing except as implicated in the actions of human beings" (Giddens & Pierson, 1998, p. 82). In other words, we should avoid talking about MA structures as being *inherent* or *embodied* in MA artefacts as, again, structure is virtual, existing only in its instantiations in daily accounting practice.[5] Along the same lines, we argue that the conceptualization of an MA system as a modality of structuration (cf. Caglio, 2003) represents a 'dead end' as Giddens' notion of modality refers to interpretative schemes and norms of conduct "incorporated within actors' stock of knowledge [...] which actors draw upon in the production and reproduction of interaction" (1984, p. 29). That is, modalities denote what *generates* (MA) practices, a capability which a physical artefact cannot have from a ST point of view (see also the discussion about MA as modalities in Englund & Gerdin, 2008).

Importantly, however, two things should be noted. First, it can be argued that *MA structures leave traces in artefacts* (cf. Englund & Gerdin, 2008; Seal *et al.*, 2004) in the sense that designers and users incorporate some of their structures into the system (see also the discussion in DeSanctis & Poole, 1994). Second, it can be argued that any physical structure, including an MA artefact, "has causal effects in the sense that you can't just walk through a wall" (Giddens & Pierson, 1998, p. 82). That is, MA systems, as part of the physical context in which structures are (re)produced, may both have a highly constraining effect on human action and enable such action (cf. Giddens', 1990a, argument of the enabling feature of actors' trust in 'expert systems').

Taken together, these two features of MA artefacts suggest that there is a highly interesting, yet largely unexplored interplay between MA conceptualized as a social structure and artefact.

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[5] More recently, Orlikowski (2000) and others (Jones & Karsten, 2008) have also argued that notions such as 'duality of technology' is inconsistent with Giddens' ST. Therefore, Orlikowski (2000) revised her ideas and instead makes a useful distinction between 'technology as artefact' and 'technology in practice'.

Indeed, the third category of MA studies identified above has specifically addressed the relationship between formal MA systems and MA structures (e.g. Busco *et al.*, 2006; Collier, 2001). To date, however, there has been no explicit focus on how *different* MA artefacts contribute to (re)shape social structure. We therefore propose that a fruitful avenue for future research is to systematically explore how various artefacts, such as different costing systems, and performance evaluation and reward systems, become implicated in, and thereby affect, the reproduction of daily practice. This would also appear to support important calls for needing 'more engagement with at least some of the frontiers of practice' (Hopwood, 2009b, p.890) and less accounting 'research at a distance' (Hopwood, 2009a, p.799).

Importantly, however, such a research agenda must not be based on an assumption that different MA systems and techniques embody an array of 'external' and 'fixed' physical features or characteristics (since this would imply 'technological determinism', see Giddens and Pierson, 1998). On the contrary, we must view agents as knowledgeable and reflexive (Giddens, 1984) implying that the meanings and applications of MA systems *are (re)shaped in and through repeated and situated MA practices*. That is, conditioned by the specific time-space context and historical experiences of the user, every interaction with a system contains possibility of (re)construction of meanings. As Orlikowski (2000, p. 407) suggests, "technology structures are emergent, not embodied." Accordingly, the questions of how and why interpretations of particular MA artefacts evolve across time are of equal interest (cf. Ahrens & Chapman, 2002). It is also of great interest to investigate to what extent and why different (categories of) actors draw upon partly different properties of a particular MA technique, and when and why such emergent uses tend to diverge from and converge towards system designers' intentions.

4 D. Modelling of management accounting

In principle, it can be argued that notions such as 'MA structures' (and MA practices) are in principle an integral and inseparable part of a larger social structure (and social system). However, premised on Giddens' argument that different dimensions of social structures and systems can be usefully separated analytically, we shall continue to make a distinction between 'MA' and 'non-MA' structures and practices, where the latter category covers a wide array of phenomena ranging from intra-organizational discourses (Scapens & Roberts, 1993; Capps *et al.*, 1989) to societal systems (Ouibrahim & Scapens, 1989; Jayasinghe & Thomas, 2009). The argument is that our grounded analysis of the MA literature suggests that individual studies have tended to focus on either of the following two areas; (1) the role of MA in shaping non-MA structures and social systems, or; (2) the role of non-MA structures in shaping MA structures and practices. Furthermore, within each focus area, a number of 'roles' of such (non-) MA structures emerged in the analysis (see the taxonomy in Table 9).

---- Insert Table 9 about here ----

The first main focus area departs from the viewpoint of MA, and asks *how accounting may contribute to the structuring of organizations and society* (cf. Ouibrahim & Scapens, 1989). Table 9 suggests three ways in which MA may be implicated in such (re)production of social life. First, a number of scholars have shown how MA may contribute to the *reproduction* of existing structures. For example, Alam *et al.* (2004, p. 155) found that the initiation and mobilization of MA controls within the Fijian Development Bank contributed to "the reproduction or reconstitution of race and ethnic relations, and the related tensions and conflicts". In a similar way, Jayasinghe and Thomas' (2009) study of a strongly class divided fishing community in Sri Lanka showed how "indigenous social accounting systems at Kalametiya have facilitated the unequal power patterns and structuration of those patterns through time" (p. 371), and that these

systems "operate as the driving force behind the patronage politics of Kalametiya village" (p. 372).

Second, it has been shown that MA may be mobilized as an important source of *critical reflection/questioning* of an existing social order. For example, drawing upon Giddens' writings on modernity, Seal *et al.* (2004, p. 77) showed how accounting contributed to the formation of an institutionalized reflexivity, i.e. where social practices were "constantly examined and reformed in the light of incoming information about those very practices." Similarly, Hassan (2005) argued that the use of a new costing system in a hospital triggered a process in which the hospital's staff started to question who they were as a hospital.

Third, and related, a number of scholars have shown that MA may work as an important *'mediator' between conflicting social structures/systems* (e.g. Ahrens & Chapman, 2002; Capps *et al.*, 1989; Moilanen 2008; Saravanamuthu & Tinker, 2003). That is, in situations where actors face a variety of conflicting rules of conduct (see Whittington, 1992), MA may be mobilized in such ways as to mediate between them, and hence, avoid outright conflict (Capps *et al.*, 1989). One such example is provided by Saravanamuthu and Tinker (2003, p. 38) who showed how factory managers—caught in contradictory positions as both agents and victims of control—used accounting numbers either to mobilize its "efficiency assumptions in their strategies; or diluting it by accommodating labor's call for greater humanization of work." Another example is provided by Moilanen (2008) who found that MA information was used by actors in an intermediate subsidiary as a 'bumper', thereby avoiding conflict between the different social systems of its Western parent company and subsidiaries in Russia and the Baltic countries.

The second main focus area in Table 9 departs from the context in which accounting is embedded, and asks *how insights into non-MA structural elements may enhance our understanding of MA*. Also in this category, we identified three principal ways in which such pre-existing structures may enable and constrain (new) MA practices. First, a number of studies have shown how the (re)production of non-MA structures may work as *'initiators'* of new forms of accounting practices. For example, Lawrenson (1992) argued that a main reason for the railway engineers studied to introduce and use MA information, was to exclude the accountancy profession from becoming the dominating profession. Hence, in this case, the initiation of—and rather subordinate use of—MA information only made sense in the light of how such practices served to preserve an existing domination structure. Likewise, several studies of public sector organizations have shown how an increased 'business orientation' may lead to a perceived need for new MA systems (Lawrence *et al.*, 1997; Lawrence & Doolin, 1997; Gurd, 2008).

Second, the reproduction of non-MA interpretive schemes may serve as important *'translators'* or *'transformers'*. More specifically, studies in this strand of research show that rather than being 'fully' embraced or rejected, MA initiatives are often translated or modified to existing ways of thinking. For example, Scapens and Roberts (1993, p. 25) observed how an MA project "which had begun primarily as an accounting project and which had attempted to redefine production control in accounting terms, was transformed into a production control project with a much more overt production orientation."

Third, and related, the reproduction of certain non-MA structural properties may also serve to *'repress'* accounting practices altogether. While such 'resistance' may take various forms (see e.g. Cowton & Dopson, 2002), previous findings clearly suggest that perceived threats to the prevailing domination structures (e.g. Ouibrahim & Scapens, 1989), and/or legitimation structures (e.g. Lawrence & Doolin, 1997), will generate resistance. Typically, such resistance appears most clearly where MA practices are introduced into social systems governed by other structural bases than 'capitalist structures' (cf. Whittington, 1992).

Discussion and directions for future research

Several remarks and observations can be made about the emergent taxonomy as illustrated in Table 9. First, it highlights that the literature has modelled MA in two principal ways. Either is the focus on MA as a structuring device, or on how MA practices *per se* are structured. While these two streams are highly valuable in their own right, this largely unacknowledged division in the literature raises several issues. Not least should it be discussed to what extent, and in what respects, studies from the two strands can be related to each other to further advance our knowledge about MA as part of a larger organizational and societal context.

Second and related, the taxonomy suggests that practically all studies have, for obvious reasons, as their principal focus area MA as such. That is, regardless of whether one studies how MA structures, or is being structured, previous research either focuses on existing MA practices or efforts to introduce new practices. Interestingly though, no studies seem to focus on the opposite—i.e. where MA is 'de-routinized'—in favour of other structural principles. From an ST-perspective, we believe this could be an interesting area for future research, not least when considering contemporary potentially competing discourses such as 'business ethics', 'the socially responsible company', and 'sustainable development'.

Third, the taxonomy suggests many different 'roles'[6] for both MA- and non-MA structures. Indeed, some of these mainly confirm an established 'truth', namely, that (non-)MA structures may both contribute to social continuity (cf. the 'reproduction' and 'repressing' roles in Table 9) and change (cf. the 'critical reflection' and 'initiating' roles). However, a more directed focus in future research may well provide a more detailed account of *how* such structures may contribute continuity and change.

Furthermore, our grounded analysis also suggests two less noted roles, namely, the '*mediating*' and '*translating*' roles. And interestingly, both these demonstrate how knowledgeable agents may balance diverging structural demands. Specifically, the mediating role illustrates how MA information as such leaves room for a number of interpretations, something that agents may skilfully exploit as a means of 'buffering' between opposing stakeholder views (Moilanen, 2008; Saravanamuthu & Tinker, 2003). In a similar vein, the translation role shows that agents may handle unfamiliar and/or inconsistent structural logics through (re)shaping and adapting them to the existing ways of thinking (Scapens & Roberts, 1993; Uddin & Tsamenyi, 2005).

Finally note that the roles identified should not be regarded as a fixed set. On the contrary, an important task for future research is to more systematically identify 'new' roles as they (at least currently) are implicated in practice. Furthermore, as ST teaches us that individual roles may well be modified in and through daily reproduction, we should also devote attention to the questions of how and why such transformation may come about.

4 E. Sources of continuity and change

As suggested above, a number of potential 'sources' for continuity in and transformation of MA practices have been advanced in the literature. Although many studies provide an understanding of MA practices as grounded in a multiplicity of such sources, and where the boundaries between sources may be vague, our grounded analysis suggests that the following five main categories of 'drivers' of continuity can be found in the literature (see Table 10).

---- Insert Table 10 about here ----

First, a number of researchers have argued that certain MA practices are preserved because of people's need for *ontological security* (cf. Giddens, 1984). For example, Granlund (2001, p.

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[6] Note, the role concept should not be seen as representing 'a set of given characters', since this could easily turn into a dualistic view (for a critique of the role concept, see Giddens, 1984, pp. 83-86). Rather, it simply denotes ways in which (non-)MA structures have been *implicated in actual practices.*

160) argued that "people fundamentally resist [MA] change because they feel comfortable with routines, which in turn enhance the feeling of (ontological) security". Furthermore, Jayasinghe and Thomas (2009) convincingly showed how individuals avoided changes in the existing forms of accounting in fear of the potential consequences it would have, were they to deviate from the existing power relations (se also Busco *et al.*, 2006; Conrad, 2005).

Second, and related, a few researchers have specifically emphasized the *taken-for-granted* character of routinized MA practices, leading to a form of 'unquestioned reproduction' (Giddens, 1984, p. 60) (see Source No. 2 in Table 10). For example, incremental budgeting (Seal, 2003), and agricultural accounting (Jack, 2005), have proven to be sedimented as taken-for-granted ways in which MA is practiced (see also Ahrens and Chapman, 2002). Interestingly, however, there are also examples of where taken-for-granted *non*-MA structures may hinder accounting practices from entering the scene. For example, Laughlin (1990) suggested that the profoundness of the signification structures drawn upon in the Church of England, ruled out any calls for greater financial accountability among certain parties.

Third, Jack (2005) elaborated on how actors, despite being viewed as knowledgeable agents, are always bounded in their knowledgeability. Interestingly however, while Giddens referred to the 'unconscious' and 'unacknowledged conditions/unintended consequences of action' as forming the ground for such boundedness, Jack explored how actors' *lack of knowledge* constrained their ability to innovate new forms of MA. That is, in her study of agricultural gross margin accounting, she concluded that "the industry itself does not have the management accounting expertise to innovate new costing and performance measurement systems" (2005, p. 76). Consequently, MA practices may not only persist because the repetitiveness of routines becomes taken-for-granted and/or enhances a sense of security, but also because agents are bounded in their ability to form new routines.

Fourth, existing practices may endure as new MA initiatives are overtly resisted by some actors due to *perceived clashes between structures* (see Source No. 4 in Table 10). For example, Lawrence & Doolin (1997), Lawrence *et al.* (1997), and Hassan (2005) have all hinted how 'clinical personnel' in hospitals tend to be "mobilized to effect or resist the new language of accounting and economics taking over from what used to be a mainly medical concern" (Lawrence *et al.*, 1997, p.673). In other contexts, Scapens and colleagues (Ouibrahim & Scapens, 1989; Scapens & Roberts, 1993) have argued that perceived threats of a new MA system 'supplanting the language of production', 'increasing the visibility of activities', and/or 'weakening the positions of certain actors' will engender resistance.

Fifth and related, many MA researchers have explored how *resource asymmetries and the dialectic of control* may explain persistent MA practices. A dominating part of this literature has shown that subordinates may side-step various 'management-initiated' attempts for MA change, through access to resources such as technical/local knowledge (Scapens & Roberts, 1993; Uddin & Tsamenyi, 2005), physical distance from superiors (Ouibrahim & Scapens, 1989), absence of clearly defined measurement systems (Macintosh & Scapens, 1991), or complex command structures (Macintosh & Scapens, 1991). However, the literature has also provided insights into how dominating groups may preserve a certain form of MA, through drawing upon their social positions and asset ownership (Jayasinghe & Thomas, 2009).

Overall then, and to paraphrase Granlund (2001), many studies have contributed to our understanding of why some MA practices seem so resistant to change, despite various 'pressures' for change. However, there is also a large stream of studies that have elaborated on a number of sources of change in such practices. As was the case with the sources of continuity, the boundaries between individual sources of change—and also between sources of change and continuity—are not clear cut. However, for the sake of clearness, also these sources are presented individually (see Table 11).

---- Insert Table 11 about here ----

First, as suggested by the distribution of studies in Table 11, main focus in the literature has been on exploring how *changes in the conditions governing system reproduction* may nurture MA change, i.e. on situations where the prerequisites for the ongoing reproduction of the prevailing social order are no longer met. In our grounded analysis of the MA literature, three categories of such conditions emerged, namely (i) financial crises, (ii) changes in ownership, and (iii) changes in general social conditions.

The first subcategory refers to those studies where MA change is typically viewed as a response to 'issues of profitability' (e.g. Cowton and Dopson, 2002; Macintosh and Scapens, 1991; Seal *et al.*, 2004) or other forms of financial crises such as reduced governmental funding (see e.g. Alam *et al.*, 2004; Lawrence and Doolin, 1997; Lawrence *et al.*, 1997). As suggested by the second category (see Item *'ii'* in Table 11), a number of researchers have also noted how MA practices tend to be altered following changes in ownership. Typically, these studies either focus on the introduction of new MA systems in one company as a result of being acquired by another (e.g. Busco *et al.*, 2006; Caglio, 2003), or the introduction of an 'accounting logic' and formal MA systems as public organizations are privatized (e.g. Conrad, 2005). A third and final subcategory of studies refer to MA change grounded in general changes taking place 'outside' the social system under study (e.g. Jack, 2007; Lawrenson, 1992).

Second, a group of researchers have explored how *reflexive agents may bring about MA change* (see Source No. 2 in Table 11). Indeed, while all forms of social change necessarily have to be brought about by actors from a ST perspective, these researchers have specifically highlighted the ability of certain actors to 'see through' and actively question the (non-)existing MA practices. For example, Lawrence *et al.* (1997) suggested that the attempts by reformers of the New Zealand health sector to establish new forms of morality were linked to their ability to reflexively understand the conditions governing the old system (see also Gurd, 2008; Seal *et al.*, 2004; Uddin & Tsamenyi, 2005).

Third, a group of studies have suggested that MA changes may derive from (internal) *contradictions in social structures* "because of the clashes of interest it intrinsically involves" (Giddens, 1990b, p. 304). For example, Alam *et al.* (2004, p. 154) demonstrate how "the contradictory structures of the wider Fijian social order impinge upon organizational design, and accounting and control systems, and in turn get reconstituted". See also the discussions about contradictions in Capps *et al.* (1989), Lawrence and Doolin (1997), and Seal *et al.* (2004).

Fourth, a small but distinct group of researchers have also referred to how incremental change may come about because of the inherent indeterminacy of social reproduction (see Source No. 4 in Table 11). As suggested by Lawrence and his colleagues (Lawrence & Doolin, 1997; Lawrence *et al.*, 1997), such change is typically part of an *unintended* process (see also Jack, 2005, on this particular aspect) in which practices slowly drift away in an incremental way (cf. Giddens, 1990b). That is, actors creatively draw upon MA, and may therefore subtly change it (Ahrens & Chapman, 2002).

Fifth, and finally, Giddens' later writings on modernity have also inspired a few researchers to explore how mechanisms for dis-/re-embedding may work as sources of MA change. For example, Jones and Dugdale (2001) suggested that 'disembedding'—which refers to how social practices (including MA) are lifted out of their local contexts of interaction—constitutes an important mechanism for extending the scope of time-space distanciation. Likewise, Hyvönen *et al.* (2006, p. 156) argued that standardized accounting softwares *per se* constitute an important mechanism for such dis-/re-embedding and, hence, "can be efficient drivers for management accounting change."

Discussion and directions for future research

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Several reflections can be made about the emergent picture presented in Tables 10 and 11. A first one is that the focus in the literature has been somewhat asymmetrical, in particular when it comes to sources of change. Specifically, our review shows that quite a few scholars have focused on change driven by structural contradictions (Source 3), unintended consequences of day-to-day practices (Source 4), and/or disembedding and re-embedding mechanisms (Source 5). Indeed, the reason may simply be that change (and continuity) is more often driven by certain sources than others (i.e. that the pattern is empirically driven). It may also be that a specific source has only recently begun to attract researchers' interest (such as Source 5), or that individual researchers have conceptualized a source in some previously unexplored way (which seems to be the case with Source 3 regarding continuity, see Table 10).

However, it might also be that some change processes are significantly more elusive and hard to capture from a methodological point of view (see also the discussion below about research methods). The premise is that both 'structural contradictions' and 'unintended change as part of daily MA practices' represent *endogenous* sources of change. That is, rather than being triggered by any 'external' impulses, change is brought about as *daily* social practices are *chronically* questioned in the light of incoming information about those practices (Giddens, 1990b; see also Seal *et al.*, 2004). Importantly though, while such sources may be harder to get wind of, we propose that this is a fruitful avenue for future research, not least when considering the importance of such dynamics in modern organizations and societies (cf. Giddens, 1990a).

A second reflection is that the dominating source of MA change in Table 11—i.e. the 'changing conditions'—is oftentimes treated as part of the historical background to, or context of, a particular change process. That is, ranging from such diverse contexts as the consequences of wars and military coups (Jack, 2005; Alam *et al.*, 2004) to 'a general slump in the economy' (Macintosh & Scapens, 1991), these studies all share in common that change is seen against the backdrop of some triggering issues or events. Although such events may (evidently) constitute important sources of change from a ST perspective, it is worthwhile noting that a 'jolt' as such does not produce change in social systems; only humans do. Hence, while jolts may change *the conditions* for the reproduction of social systems, "the causal links in question always involve the motives and reasons of the *agents* concerned" (Giddens, 1990b, p. 304, emphasis added).

Based on this, we propose that more MA researchers than is typically the case today should explicitly consider both the 'knowledgeable agent' and 'the conditions' that such agents acknowledge as the ground for their activity. That is, regardless of whether such aspects take place in the local context (inside social systems) or in 'distant locales' (outside social systems), we should focus on *how and why actors tend to bring certain issues and events into processes of structuration*. Echoing the more general finding that "there are hardly any studies which describe how various 'jolts' *did not* lead to institutional transformation" (Munir, 2005, p. 94, emphasis in original), we also propose that future studies should not only explore how MA information use may 'trigger' and shape critical reflection (cf. Seal *et al.*, 2004), but also how it may contribute to the construction of 'non-events'.

A third reflection relates to the fact that although a few researchers have explored multiple sources of change and/or continuity in individual papers (see e.g. Lawrence *et al.*, 1997), there have been no attempts to synthesize the various sources in the MA literature. And, remarkably, few researchers explicitly refer to Giddens' own synthetization on this matter (but see Hassan, 2005; Lawrence & Doolin, 1997). This is surprising considering that the use of his 'framework' has the advantage that it fits the epistemological assumptions of ST. That is, it would help solve some of the problems in the literature today, where there are claims made about continuity and change that may seem odd from an ST point of view. For example, it would avoid the flavour of 'contextual determinism' of changing conditions that characterize some papers (see above discussion), and that researchers pinpoint human agency as a key finding (e.g. Gurd, 2008) when in fact this is a core assumption of ST (Giddens, 1984). It would also put the finger on sources

which have hardly been explored at all in the MA literature, such as where incremental change occurs due to the inherent indeterminacy of social systems (see Giddens, 1990b), or where change occurs as a result of social systems 'stretching' across time-space (see Giddens, 1984). Finally, it would hopefully engender more research which systematically explores how the different sources of change (and continuity) interplay across time.

4 F. Research methods used in ST-oriented MA research

In this section, we focus on the methods researchers have used for data collection and analysis in empirical papers. Before doing so, however, we may initially note that the research philosophy adopted (i.e. the ontological and epistemological perspective) is basically 'given' by the theory as such. Furthermore, when it comes to the overall research design, these studies are almost exclusively designed as longitudinal 'case studies' (but see Boland, 1993; Scheytt, Soin & Metz, 2003) involving single or multiple case organizations (e.g. Ahrens & Chapman, 2002; Ouibrahim & Scapens, 1989), a specific industry (e.g. Jack, 2007), or a community (e.g. Jayasinghe & Thomas, 2009). However, a closer look at how data have been collected and analyzed in individual studies suggests large variation. Table 12 provides an overview of the methodologies used.

---- Insert Table 12 about here---

A number of observations may be made about the emerging picture. A first one is that, with a few notable exceptions (e.g. the archival studies by Laughlin, 1990, and Lawrenson, 1992), papers are typically based on interviews, and complemented by various case specific documents (e.g. annual reports, budgets, internal training material, organizational charts, and minutes). In some cases, the interviews are also followed by various forms of informal conversations and feedback from interviewees. Regarding documents it may also be noted that also non-case specific material is sometimes used, such as public material (e.g. documents from external regulatory bodies, constitutional amendments, official statistics, and reports on the economy), and various forms of media (e.g. press releases, newspaper clippings, and trade journals).

Another observation is that less than half of the studies have made some sort of observations. In those particular cases, researchers have primarily studied day-to-day activities through following managers on 'typical' work days (see e.g. Capps *et al.*, 1989), and attending meetings (see e.g. Lawrence *et al.*, 1997).

Table 12 also shows that when it comes to analyzing the collected data, a great majority of researchers apply what Giddens (1984) denotes an 'institutional analysis'. That is, the structural features of a specific social system are described, but as a reader, one is never allowed to see how agents draw upon and reproduce these structural features in specific settings. However, some researchers have also engaged in the analysis of 'strategic conduct'. That is, rather than viewing structural properties as largely given (as is typically the case in 'institutional analyses'), this type of analysis focuses on the inherent *transformative* character of any social reproduction. Specifically, Giddens (1984) emphasizes three tenets, namely (i) describing the agent as knowledgeable, (ii) accounting for the agent's motivation, and (iii) explicitly acknowledging the dialectic of control.

Discussion and directions for future research

Although Giddens' (1984) own writings imply that it is hard to be 'over critical' regarding the use of certain methodologies, our analysis of the MA literature suggests several areas worthy of further reflection. To begin with, while it may well be argued that researchers do not need to specify all facets of their empirical material, it is striking that so many omit to include detailed information on their interviews or observations made (marked by the character 'x' in Table 12). And importantly, this becomes even more striking when considering how researchers describe

how the empirical material is analyzed. In fact, very few papers give an account of how data were analyzed (e.g. Capps, *et al.*, 1989; Dirsmith *et al.*, 1997; Seal *et al.*, 2004), and only a fraction of these explicitly discusses the appropriate fit between the type of analysis undertaken and type of data needed.

We argue that this is potentially problematic for the research area as a whole since different types of data have very different strengths and limitations. For example, the dominating forms—interviews and archival material—are indispensable when we seek to retrospectively study structuration processes (see e.g. Lawrenson, 1992) stretching over long time-spans (e.g. Jack, 2005). However, such methods may be far from ideal when studying ongoing structuration. The premise is that all reproduction of social practices is *situated within certain time-space boundaries* (see Giddens, 1984, for a discussion of this). Indeed, interviews as such are, of course, also situated in a specific time-space, but the information that the researcher tries to attain typically refers to events and issues situated in other time-space contexts. And, as suggested by Collier (2001), such recapitulations always run the risk of providing agents' espoused theories rather than theories in use. Or as Giddens (1984, p. 4) himself observes "the reasons actors offer discursively for what they do may diverge from the rationalization of action as actually involved in the stream of conduct of those actors."

This dilemma was in fact observed in many of the early studies like Roberts and Scapens (1985), Capps *et al.* (1989) and Boland (1993). As Capps *et al.* (1989, p. 229) argued, "Giddens' approach emphasizes the need to observe actions rather than relying upon descriptions by involved parties." Based on this, we therefore propose that future studies should rely more on direct observations of actual MA practices (i.e. activities situated in time and space), in particular if one seeks to understand agents' strategic conduct (cf. Giddens, 1984). However, as argued by Englund and Gerdin (2008) such an emphasis does not exclude other sources of data. On the contrary, "while participative observation is crucial for the identification of recurrent management accounting action, the recurrent (inter-) actions themselves often reveal very little about the non-situated and virtual principles that guide this action. […] Accordingly, we also need to use various types of non-observational sources of data such as interviews, training manuals and minutes in order to seek actors' *interpretations/explanations* of their interactions" (2008, pp. 1131-1132, emphasis in original).

Furthermore, drawing upon Barley and Tolbert (1997), we suggest that multiple sources of data are crucial for determining whether an observed change in patterns of interaction implies structural change, or simply is the result of actors interpreting and applying a particular unchanged (MA) structure to a new situation or context. Again and importantly, however, interviews and documents are not only valuable for corroborating evidence from other sources such as direct observations (cf. Yin 1994), but may also provide *additional* insights into the structuration process as such.

5. Conclusions and directions for the future

The purpose of this study is, in a critical (but sympathetic) way, to review the extant structuration-oriented MA literature and, based on this, suggest avenues for future research. A first overall conclusion is that *the use of ST is not a passing interest*. On the contrary, there has been a continuous and, in recent years, growing flow of studies. It would thus seem that ST still offers important theoretical concepts and assumptions that advance our knowledge about MA as organizational and social practice. And, indeed, our review clearly shows that the literature has generated many novel and important insights, such as how the interplay between structures of signification, domination and legitimation may both hinder (Macintosh & Scapens, 1991; Oubrahim & Scapens, 1989; Uddin & Tsamenyi, 2005) and foster MA change (e.g. Busco *et al.*, 2006; Collier, 2001; Alam *et al.*, 2004).

However, a more critical reading suggests that the literature as a whole can be characterized as comprising a number of quite small and diffuse streams of research that, 25 years after the landmark study of Roberts and Scapens (1985), consists of (too) many studies that more or less passively adopt one or more of Giddens' core ideas (although notable exceptions exist). We also find that while most studies cite the previous ST-oriented MA literature, in particular the introductory work by Macintosh, Roberts, Boland and Scapens, remarkably few scholars explicitly build on and discuss their contributions in relation to this literature, thus undermining the potential for cumulative inquiry and knowledge attainment. As suggested above, there are several good reasons why this is the case in some studies (e.g. some 'smash and grab' use of ST where authors primarily seek to contribute to other fields, see also Table 5 above). Nevertheless, a second overall conclusion from the review is that *the literature lacks communication*, not only between the discussion circles identified (see Table 7), but also within them.

It can certainly be discussed whether a coherent and cumulative knowledge development is desirable or even possible in a research tradition where the principal author argues that "all reproduction of [social practice, including research] is historical and contingent" (Giddens, 1981, p. 27, see also Giddens, 1990a). However, we propose that MA researchers should, more than is typically the case today, explicitly build on and clearly elaborate their contribution in relation to the extant MA literature. As we see it, this would reduce the continuous stream of papers that primarily seek to demonstrate that 'ST can be applied' (cf. the 'general application' group identified above). More importantly, in order to take the next major step forward in ST-oriented MA research, *we must to take full(er) advantage of previous work*.

Our third overall conclusion from the review is that *MA has been conceptualized in many different ways in the literature* (cf. Table 8 above). In itself, this is not problematic. On the contrary, we think that there are highly interesting, yet largely unexplored dynamics between MA as social structure, practice and artefact. However, a few remarks are worthwhile making. The first relates to the conceptualization of MA as a uniform/monolithic structure. Again, while such a conceptualization constitutes a powerful means of understanding MA endurance and change, not least when contrasted with non-MA structures such as a 'medical language' (Lawrence *et al.*, 1997) or an 'engineering logic' (Gurd, 2008; Macintosh & Scapens, 1991), a promising agenda for future research is to follow the lead of Seal *et al.* (2004) and others (e.g. Ahrens & Chapman, 2002) and systematically explore the potential of viewing MA structures as inherently *heterogeneous*, i.e. as consisting of several possibly competing structural elements.

We argue that such a refocus would be highly beneficial insofar as it would put the finger on structural conflicts, and/or ambiguity, and the implications thereof. Such a perspective would also increase our focus on understanding MA practice variation (as opposed to homogeneity) within a given social space or across time. It would also put further focus on political agency, i.e. on the processes in which knowledgeable actors skilfully exploit or (re)negotiate multiple sets of rules and resources. And finally, it would force us to 'step down' in terms of abstraction level. That is, instead of depicting 'MA structures' at a general level—e.g. as representing a 'profit-focused signification system' (e.g. Lawrence *et al.*, 1997)—a focus on heterogeneity will direct our attention towards identifying and exploring discrepancies between and within 'local variants' (Barley & Tolbert, 1997) of such more general rules. Such a focus on 'context-specific adaptations' would also explicitly address the questions of when, how and why individuals' or groups' MA structures come to diverge from those of other organizational members although, indeed, the opposite development is of equal interest.

As second remark regarding how MA has been conceptualized relates to the (lack of) focus on MA artefacts as such. Indeed, quite a few researches have looked at the interplay between MA as a social structure and MA as an information system, or even viewed MA solely as a technical artefact. Referring to the discussion above, however, there is no *systematic* investigation of *how* different MA systems are (become) implicated in organizational (re)action. Accordingly, while

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Scapens and Roberts' (1993) early critique that studies on organizational change usually suffered from a focus on content of the change to neglect of its context and process was essentially well-founded, we propose that future research should broaden the focus to also include the particular *contents* of the MA systems and/or practices studied, an argument that is consistent with others' recent claims (Hopwood, 2009a).

Again, however, such research agenda means neither that particular MA systems embody a number of 'objective' and 'fixed' structural characteristics, nor does it imply that there are universal empirical patterns 'out there' waiting to be revealed. However, we do suggest that different systems, as any physical environment and artefact, provide social spaces which may both constrain and enable human action in different ways (cf. Orlikowski, 2007). And we need more systematic knowledge about how various categories of actors interpret and reinterpret different MA systems across time. Relating to the above criticism of the literature, however, such endeavour would require more research ongoing connectedness than is typically the case presently.

A fourth overall conclusion from the review is that considerable attention has been devoted to *understanding different aspects of social continuity and/or change*. As suggested by main focus areas 1 and 2 in Table 9 above, for instance, one stream of the literature has focused primarily on understanding how MA may contribute to continuity/change in/of 'non-MA' structures and practices, while another has focused on the opposite relationship. Furthermore, Tables 10 and 11 identify and categorize the sources of continuity and change, respectively, which have been theorized in the literature.

At least three remarks are worthwhile making regarding how the ST literature as a whole has dealt with the issue of social continuity and change. First, while our emergent taxonomy in Table 9 largely confirms the established idea that (non-)MA structures may both inhibit and facilitate social change more generally, it also identifies previously unnoticed 'roles', including mediating and translating roles. A promising avenue for the future is thus to rely less on a distinction between stabilizing and destabilizing 'roles' of (non-)MA structures and instead 'step down' and systematically detail the various ways in which these may come about. Again, however, as ST presumes that actors can always do otherwise, any taxonomy of 'roles' must remain an open set.

Second, while the taxonomies in Tables 10 and 11 show very high diversity in terms of that many different sources of continuity/change have been examined over the years, most studies focus on single sources. An important research task for the future is thus to systematically explore how, when and why they may interplay over time. As suggested above, one promising way of doing this would be to build on and extend Giddens' own ideas on this matter, not least when it comes to sources of social change (cf. Lawrence *et al.*, 1997). Hopefully, such an approach would reduce the number of studies which depict changing conditions for system reproduction (e.g. financial downturns and changes in ownership) as critical *per se*. Again, from a ST perspective, 'jolts' must be constructed as critical by knowledgeable agents for social change to occur. And as suggested above, our knowledge about how different types of MA information may contribute to shape actors' perception of certain issues and events is limited.

Third, and as noted above, there is somewhat of an unbalance in the literature insofar as many sources of social change are largely underexplored. In particular, this applies to more endogenously oriented sources of change (but see e.g. Ahrens & Chapman, 2002), including the role of unintended consequences of intended actions, human reflexivity, and exploitation of structural contractions. In other words, more of a focus on the daily reproduction of MA practices (including a focus on human agency) would allow us to more fully understand "the essentially transformational character of all human action, even in its most utterly routinized form" (Giddens, 1984, p. 117).

This remark also leads us to our fifth overall conclusion, namely, that the literature seen as a whole generally lacks in-depth discussions about *how* to study structuration processes (but see e.g. Capps *et al.*, 1989; Seal *et al.*, 2004). In particular, very few pick up Giddens' key idea about methodological bracketing and explicitly discuss its implications for data collection and analysis (but see e.g. Englund & Gerdin, 2008; Macintosh & Scapens, 1996). Arguably, this may explain the prominence of interviews and case-specific documents as primary sources of data despite that it has been questioned whether such data can 'capture' structuration processes as such (see e.g. Capps *et al.*, 1989; Collier, 2001; Englund & Gerdin, 2008). An important task in future research is thus to pinpoint key differences between an institutional analysis and one focused on strategic conduct, and explicitly discuss the appropriate fit between the type of analysis performed and type of data needed. Hopefully, such an explicit recognition will not only increase the number of studies that use systematic observations as a principal source (and interviews and documents as important complements), but will also increase our knowledge about the inherent indeterminacy of daily reproduction of MA practices (cf. the discussion above about the lack of focus on endogenous sources of MA change/continuity).

A sixth and final overall conclusion from our review relates to *what has not yet been addressed in the MA literature*. A first interesting discovery is that the social systems studied in individual papers are very different. Drawing upon Whittington's (1992) typology, for example, we find studies of communal systems (Laughlin, 1990), profit-driven systems (e.g. Dirsmith *et al.*, 1997; Seal *et al.*, 2004) and political systems (e.g. Lawrence *et al.*, 1997; Seal, 2003). Interestingly, however, while one of Giddens' principal ideas is that the particular social context/conditions are crucial for understanding social systems, we find very little explicit attention in the MA literature to the distinguishing character(s) of the different systems studied. Likewise, it is rarely discussed how and in what respects insights about MA practices gained from studying one type of social system can be related to studies of others. Accordingly, we propose that future research should more explicitly focus on the structural logics of different social systems and, in particular, explore to what extent and in what respects MA practices differ between these.

A second interesting observation from an ST perspective is that surprisingly little work has been focused on MA's role for the constitution of societies (but see Jayasinghe & Thomas, 2009). Instead, main attention has been on understanding MA as social practice within organizations (Ahrens & Chapman, 2002; Scapens & Roberts, 1993) and, more recently, between organizations (Seal *et al.*, 2004). While such foci have proved highly relevant and require further investigation, we propose that future research should also address the question of how MA may be implicated in societal change. Importantly, however, also such a broad-sweeping analysis "has to in principle be rounded out by a concentration upon the duality of structure" (Giddens, 1984, p. 288).

Finally, echoing the discussion above, there have been few (if any) attempts to advance Giddens' ST as such or to develop more MA specific adaptations. Indeed, this may be considered an overly ambitious research task, but other literatures (including those on IS and organization science) have made significant contributions. Also, the MA discipline as such has proud traditions to defend insofar as the pioneering works of Boland, Macintosh, Roberts and Scapens have been acknowledged by (and also reprinted in) the more general sociological literature on Giddens (Bryant & Jary, 1997, 2001). So the question is not whether, but when and how, MA scholars will take the next step to develop ST.

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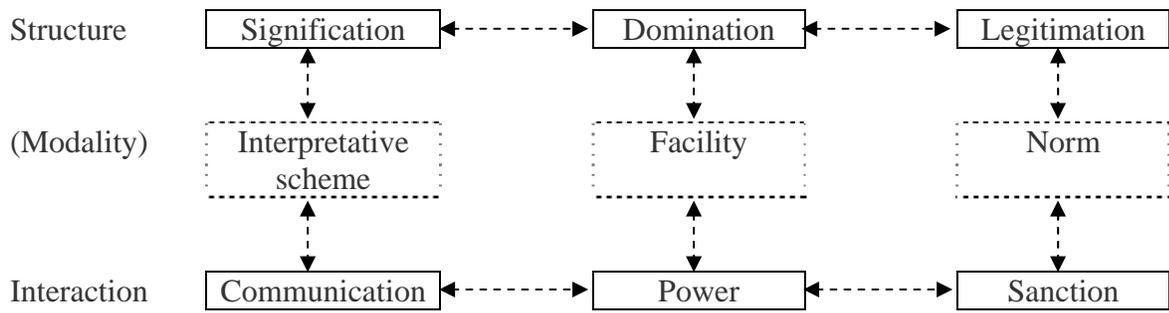
Fig. 1. The dimensions of the duality of structure (Giddens, 1984, p. 29).

Table 1 Key elements of structuration theory

Central notions	Key aspects
i. Structure and system	*Structures* and *systems* are treated as distinctive concepts. Social systems are constituted of situated practices, while structures are virtual and out of time and space existing only as they are recursively involved in the (re)production of systems.
ii. Structure as rules and resources	Structures may be analyzed as sets of *rules* and *resources*, organized as reproduced properties of social systems.
iii. Duality of structure	Structuration processes are recursive in that *the duality of structure* suggests that structure works as both the medium for, and outcome of, social systems. The duality of structure thus connects the reproduction of systems across time-space with the production of situated interactions.
iv. Knowledgeable actors	Agents are treated as knowledgeable, who know a great deal about the workings of social systems by virtue of their participation in such systems. The stocks of knowledge which actors draw upon in the (re)production of interaction are embedded in actors' unconscious motives, their practical consciousness of how to go on, and in their discursive consciousness of such practices.
v. Power as an integral element of social life	Human actions are logically connected to their transformative capacity, whereby actors may make a difference. Consequently, apart from their meaningful and normative content, social interactions always involve power.
vi. Structuration	*Structuration* refers to the 'ongoingness' (*durée*) of social systems, involving both continuity and change. To study structuration is to study the *conditions* governing their (re)production.

Table 2 Emerging themes in the review of ST-oriented research

Theme	Description of the emerging theme	Further explored through	Treated in section
i. *Use of Giddens' works*	The ways in which researchers draw upon Giddens' works to contribute to MA research are highly varying.	Quantitative and qualitative citation analyses, covering the use of key concepts (from ST) and references to Giddens' works, in each paper.	4 A
ii. *Use of previous MA research*	The ways in which researchers draw upon, and try to contribute to, previous ST-based MA research are highly varying.	Quantitative and qualitative citation analyses among the papers included in this review.	4 B
iii. *Conceptualization of MA*	MA as the central phenomenon under study is conceptualized in several ways.	Qualitative analysis of the MA 'phenomena' focused in each study, and how they are conceptualized.	4 C
iv. *Modelling of MA*	MA is modelled in varying ways within the general frame of reference provided by ST.	Qualitative analysis of how MA is modelled based on the general idea of the duality of structure.	4 D
v. *Continuity and change in MA practices*	Continuity and change within MA practices have been described and explained in various ways.	Qualitative analysis of how each paper describes *how* and *why* MA practices are continuous or changed over time.	4 E
vi. *Methodological issues*	Varying methodological approaches have been used to study MA practices, of which some may be seen as problematic from a ST perspective.	Quantitative and qualitative analysis of the research design and how data were collected and analysed in each paper.	4 F

Table 3 Overview of published Structuration-oriented MA research

Authors	Year	Published in	Type of paper
Roberts & Scapens	1985	*Accounting, Organizations and Society*	Conceptual
Ouibrahim & Scapens	1989	*Accounting, Auditing and Accountability Journal*	Empirical
Capps et al	1989	*Critical Perspectives in Management Control*	Empirical
Macintosh & Scapens	1990	*Accounting, Organizations and Society*	Conceptual
Laughlin	1990	*Financial Accountability and Management*	Empirical
Roberts	1990	*Accounting, Organizations and Society*	Empirical
Macintosh & Scapens	1991	*Journal of Management Accounting Research*	Empirical
Lawrenson	1992	*Critical Perspectives on Accounting*	Empirical
Boland	1993	*Accounting, Organizations and Society*	Conceptual
Scapens & Roberts	1993	*Management Accounting Research*	Empirical
Macintosh	1994	*Management Accounting and Control Systems*	Empirical
Macintosh	1995	*Critical Perspectives on Accounting*	Conceptual
Mouritsen & Skaerbaek	1995	*The Institutional Construction of Organizations*	Empirical
Scapens & Macintosh	1996	*Accounting, Organizations and Society*	Conceptual
Boland	1996	*Accounting, Organizations and Society*	Conceptual
Kirk & Mouritsen	1996	*Accountability, Power, Ethos and the Technology of Managing*	Empirical
Dirsmith et al	1997	*Accounting, Organizations and Society*	Empirical
Lawrence et al	1997	*Accounting, Auditing & Accountability Journal*	Empirical
Lawrence & Doolin	1997	*International Journal of Public Sector Management*	Empirical
Parker & Gould	1999	*Accounting Forum*	Conceptual
Dillard	2000	*Accounting Forum*	Conceptual
Jones & Dugdale	2001	*Critical Perspectives on Accounting*	Conceptual
Granlund	2001	*Management Accounting Research*	Empirical
Collier	2001	*Management Accounting Research*	Empirical
Ahrens & Chapman	2002	*Management Accounting Research*	Empirical
Cowton & Dopson	2002	*Management Accounting Research*	Empirical
Baxter & Chua	2003	*Accounting, Organizations and Society*	Literature review
Scheytt et al	2003	*European Accounting Review*	Empirical
Granlund	2003	*Accounting, Auditing & Accountability Journal*	Empirical
Seal	2003	*Financial Accountability and Management*	Empirical
Saravanamuthu & Tinker	2003	*Accounting, Organizations and Society*	Empirical
Caglio	2003	*European Accounting Review*	Empirical
Dillard et al	2004	*Accounting, Auditing & Accountability Journal*	Conceptual
Alam et al	2004	*Critical Perspectives on Accounting*	Empirical
Seal et al	2004	*Accounting, Organizations and Society*	Empirical
Barrett, Cooper & Jamal	2005	*Accounting, Organizations and Society*	Empirical
Jack	2005	*Management Accounting Research*	Empirical
Hassan	2005	*Journal of Accounting & Organizational Change*	Empirical
Uddin & Tsamenyi	2005	*Accounting, Auditing & Accountability Journal*	Empirical
Conrad	2005	*Critical Perspectives on Accounting*	Empirical
Scapens	2006	*The British Accounting Review*	Literature review
Baxter & Chua	2006	*Contemporary Issues in Management accounting*	Literature review
Ahrens & Chapman	2006	*Handbook of Management Accounting Research, vol. 1*	Literature review
Busco et al	2006	*Management Accounting Research*	Empirical
Joseph	2006	*International Journal of Accounting Information Systems*	Empirical
Hyvönen et al	2006	*Qualitative Research in Accounting and Management*	Empirical
Jack & Kholeif	2007	*Qualitative Research in Org. and Mgt: An Intern. J.*	Conceptual
Jack	2007	*Critical Perspectives on Accounting*	Empirical
Englund & Gerdin	2008	*Critical Perspectives on Accounting*	Literature review
Jack & Kholeif	2008	*Accounting Forum*	Conceptual
Moilanen	2008	*Management Accounting Research*	Empirical
Free	2008	*Accounting, organizations and society*	Empirical
Gurd	2008	*Critical Perspectives on Accounting*	Empirical
Chung & Parker	2008	*Business Strategy and the Environment*	Conceptual
Busco	2009	*Journal of Management and Governance*	Literature review
Coad & Herbert	2009	*Management Accounting Research*	Conceptual
Jayasinghe & Thomas	2009	*Accounting, Auditing & Accountability Journal*	Empirical
Hassan	2010	*Int. J. Behavioural Accounting and Finance*	Empirical
Meira et al	2010	*Journal of Accounting & Organizational Change*	Literature review
Faÿ et al	2010	*Information and Organization*	Empirical

Table 4 ST-concept(s) cited by individual papers in MA research

Reference	Year	Social structure	Social system	Duality of structure	Knowledgeable agency	Power	Routines/ Routinization	Ontological security	General change	System reprod.	System contrad.	Reflexive appropr.	Resource access	Critical situations	Unintended consequences	Modernity	Disembed/ Reembed	Reflexivity	Risk/ Trust	Abstract systems
Corresponding item in Table 1		i - ii		iii	iv	v			vi											
General category		Core notion					Continuity		Change											
Roberts & Scapens	1985	1	1	1																
Ouibrahim & Scapens	1989	1																		
Capps et al	1989	1	1	1							1									
Macintosh & Scapens	1990	1	1	1	1		1		1						1					
Laughlin	1990	1																		
Roberts	1990	1	1	1																
Macintosh & Scapens	1991	1		1	1	1	1		1					1						
Lawrenson	1992			1																
Boland	1993	1		1	1															
Scapens & Roberts	1993	1				1														
Macintosh	1994	1	1	1	1	1	1		1					1						
Macintosh	1995	1		1	1	1			1		1									
Mouritsen & Skaerbaek	1995	1	1	1	1	1	1		1					1		1		1		
Scapens & Macintosh	1996	1	1	1	1		1													
Boland	1996			1	1															
Kirk & Mouritsen	1996	1				1														
Dirsmith et al	1997			1	1	1			1											
Lawrence et al	1997	1	1	1	1					1	1	1	1	1						
Lawrence & Doolin	1997	1	1		1					1	1			1						
Parker & Gould	1999	1										1	1	1						
Dillard	2000	1		1	1				1											
Jones & Dugdale	2001	1	1	1	1			1								1	1	1	1	1
Granlund	2001			1	1		1	1	1						1					
Collier	2001				1															
Ahrens & Chapman	2002	1	1	1					1											
Cowton & Dopson	2002		1	1	1	1														
Baxter & Chua	2003	1			1		1		1						1					
Scheytt et al	2003	1	1	1	1				1											
Granlund	2003	1		1	1										1					
Seal	2003	1		1	1	1	1		1							1		1	1	1
Saravanamuthu & Tinker	2003				1													1		
Caglio	2003	1		1					1											
Dillard et al	2004	1		1	1		1		1					1						
Alam et al	2004									1										
Seal et al	2004	1	1	1	1	1			1							1	1	1	1	1
Barrett et al	2005				1				1							1	1	1	1	1
Jack	2005	1	1	1	1										1					
Hassan	2005									1	1									
Uddin & Tsamenyi	2005				1				1					1						
Conrad	2005	1	1	1	1	1	1	1	1					1	1					
Scapens	2006	1	1																	
Baxter & Chua	2006	1		1	1				1					1						
Ahrens & Chapman	2006	1		1		1														
Busco et al	2006						1	1	1	1				1		1		1	1	1
Joseph	2006	1		1	1		1	1	1					1						
Hyvönen et al	2006																1		1	1
Jack & Kholeif	2007	1		1	1															
Jack	2007	1				1														
Englund & Gerdin	2008	1	1	1	1				1											
Jack & Kholeif	2008	1		1	1	1									1					
Moilanen	2008	1	1	1	1	1			1							1	1		1	1
Free	2008	1		1	1			1											1	1
Gurd	2008	1		1	1		1		1					1						
Chung & Parker	2008	1		1	1				1											
Busco	2009	1	1	1	1	1	1		1					1		1	1		1	1
Coad & Herbert	2009	1	1	1	1	1			1											
Jayasinghe & Thomas	2009	1	1	1	1	1														
Hassan	2010	1	1	1	1	1	1	1	1			1		1		1		1		
Meira et al	2010	1		1	1												1		1	1
Faÿ et al	2010															1	1	1	1	1
Total		46	22	42	37	24	16	7	27	4	7	3	2	14	8	10	8	9	11	11

Table 5 Uses of structuration theory in management accounting research

Uses		Key aspects of studies	Selected references
i.	*General application*	Uncritical application of core ST ideas in order to enhance our understanding of MA as social practice. Main objective is to contribute to extant structuration-oriented MA literature.	Caglio (2003; Conrad (2003); Hassan (2010); Joseph (2006); Macintosh & Scapens (1991)
ii.	*Selective application*	Also (uncritically) draw upon core ST ideas and contribute to the extant structuration-oriented MA literature, but analyses focus on specific concepts such as 'dialectic of control', 'modernity' and 'expert systems'.	Barrett et al (2005); Hassan (2005); Jack (2005); Seal et al. (2004); Uddin & Tsamenyi (2005);
iii.	*'Smash and grab'*	Also (uncritically) draw upon specific ST concepts, but the objective is to contribute to other literatures than the structuration-oriented MA literature.	Free (2008); Laughlin (1990); Saravanamuthu & Tinker (2003)
iv.	*Theory combination*	ST is (uncritically) combined with other theories in order to enhance our understanding of MA as social practice.	Collier (2001); Cowton & Dopson (2002); Dirsmith et al. (1997); Gurd (2007)
v.	*Critical engagement*	Sympathetic, but critical application of ST. Analyses seek to identify ST's limitations and/or extend original ideas.	Coad & Herbert (2009); Jack & Kholeif (2007, 2008)

Table 6 Citation(s) of previous ST-oriented MA research by individual papers

	Reference No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	Total
1 Roberts & Scapens	1985																																																													0
2 Capps et al	1989	1																																																												1
3 Ouibrahim & Scapens	1989	1	1																																																											2
4 Laughlin	1990	1																																																												1
5 Macintosh & Scapens	1990	1	1																																																											2
6 Roberts	1990	1																																																												1
7 Macintosh & Scapens	1991	1				1																																																								2
8 Lawrenson	1992																																																													0
9 Boland	1993					1																																																								1
10 Scapens & Roberts	1993	1				1	1																																																							3
11 Macintosh	1994	1				1		1																																																						3
12 Macintosh	1995					1		1				1																																																		3
13 Mouritsen & Skaerbaek	1995																																																													0
14 Boland	1996					1										1																																													2
15 Scapens & Macintosh	1996	1				1	1	1		1																																																				5
16 Kirk & Mouritsen	1996	1				1																																																								2
17 Dirsmith et al	1997	1				1		1																																																						3
18 Lawrence & Doolin	1997	1				1																																																								2
19 Lawrence et al	1997	1				1																																																								2
20 Parker & Gould	1999	1		1																		1																																								3
21 Dillard	2000	1				1		1			1					1					1	1																																								6
22 Collier	2001													1								1																																								2
23 Granlund	2001					1				1	1						1	1																																											5
24 Jones & Dugdale	2001					1				1		1				1	1	1																																											6
25 Ahrens & Chapman	2002	1					1																																																							2
26 Cowton & Dopson	2002	1		1	1	1				1		1				1	1																																												7
27 Baxter & Chua	2003	1				1			1			1				1	1																																												5
28 Caglio	2003					1	1																																																							2
29 Granlund	2003	1				1	1	1		1		1				1	1										1																																		9
30 Saravanamuthu & Tinker	2003	1				1													1																																									3
31 Scheytt et al	2003	1				1		1				1																																																	4
32 Seal	2003																																																													0
33 Alam et al	2004		1																																																											1
34 Dillard et al	2004	1				1		1			1	1	1			1				1																																									8
35 Seal et al	2004																							1																																					1
36 Barrett et al	2005														1																																														1
37 Conrad	2005	1				1		1				1																																																	4
38 Hassan	2005																									1																																				1
39 Jack	2005					1		1																1	1		1				1																														6
40 Uddin & Tsamenyi	2005	1	1		1		1				1						1					1	1														1		1		1																			10
41 Ahrens & Chapman	2006	1				1	1					1				1	1						1	1												1		1																						10
42 Baxter & Chua	2006	1					1								1								1	1											1																										6
43 Busco et al	2006					1					1																															1	1																		4
44 Hyvönen et al	2006										1												1	1				1	1																																5
45 Joseph	2006					1		1			1																																																		3
46 Scapens	2006	1				1					1					1							1			1																									1									7
47 Jack	2007																							1				1												1																				3
48 Jack & Kholeif	2007	1				1									1									1	1			1				1		1		1																								9
49 Englund & Gerdin	2008	1				1				1	1				1	1		1		1			1	1		1							1		1																								15
50 Free	2008																							1												1	1																							3
51 Gurd	2008					1		1				1												1												1																								5
52 Jack & Kholeif	2008		1		1	1		1															1				1	1					1																		1	1							12
53 Moilanen	2008					1		1					1	1								1	1			1									1	1				1	1																		12
54 Chung & Parker	2008	1				1	1																																																						3
55 Busco	2009	1				1																														1																									4
56 Coad & Herbert	2009	1				1	1				1												1		1							1	1			1																1							11
57 Jayasinghe & Thomas	2009	1	1			1			1			1				1					1				1			1		1	1				1					1																			13
58 Hassan	2010		1			1		1	1	1					1	1				1			1		1			1						1	1	1							1															16
59 Meira et al	2010																						1										1				1															1							4
60 Faÿ et al	2010	1									1																	1																																3
Total		33	5	2	2	36	10	17	0	9	10	14	1	0	12	14	2	7	0	4	0	0	3	8	3	9	0	6	5	3	1	0	5	0	3	7	5	9	1	7	2	0	0	5	1	0	0	1	1	0	0	2	1	0	0	0	0	0	0	0	0	262

Table 7 Within-network discussion circles

Topics/pioneering papers	Key aspects of topics	Participants in discussion circles
i. Characterizations of structures Roberts & Scapens (1985)	Elaborate on MA as structure through illuminating the different characters that accounting structures may have.	Ouibrahim & Scapens (1989); Scapens & Roberts (1993); Jayasinghe & Thomas (2009)
ii. Changes in structural dimensions Macintosh and Scapens (1990, 1991)	Focus on understanding how and why structures may change, often involving change from a 'non-MA structure' to an 'MA structure'.	Lawrence et al. (1997); Lawrence & Doolin (1997); Parker & Gould (1999); Gurd (2008)
iii. MA and continuity/ resistance Scapens & Roberts (1993)	Focus on understanding how and why MA practices are reproduced and/or new MA practices are resisted.	Granlund (2001); Jack (2005); Hyvönen et al. (2006)
iv. Systems of accountability Roberts & Scapens (1985)	Elaboration of how accounting is or becomes implicated in various forms of accountability.	Roberts (1990); Ahrens & Chapman (2002, 2006)
v. MA as abstract/expert systems Jones & Dugdale (2001)	Draws upon Giddens' more recent work, with a particular focus on how MA may work as an expert system.	Seal et al. (2004); Jack & Kholeif (2007); Moilanen (2008)
vi. Critical analysis of MA literature Boland (1993)	Critical discussion of how ST more generally, or specific ST concepts, have been applied in MA research.	Scapens & Macintosh (1996); Boland (1996); Cowton & Dopson (2002); Gerdin & Englund (2008)

Table 8 Conceptualizations of management accounting

Conceptualizations of MA	Key aspects of studies	Selected references
i. MA as structure	Management accounting is referred to as structuring properties of social systems (in terms of structures of signification, legitimation, and/or domination).	Jack (2005); Lawrence & Doolin (1997); Lawrence et al. (1997); Macintosh & Scapens (1991); Scheytt et al. (2003)
ii. MA as artefact	Management accounting is referred to as a formal system, including computerized systems, reports, formal rules, and/or specific techniques (e.g. an ABC system).	Barrett et al. (2005)[a]; Cowton & Dopson (2002)[a]; Granlund (2001)[a]; Hyvönen et al. (2006)[a]; Laughlin (1990)
iii. MA as interplay between structures and artefacts	Management accounting is interchangeably referred to as structuring properties and formal system.	Ahrens & Chapman (2002); Alam et al. (2004); Busco et al. (2006); Caglio (2003); Capps et al. (1989); Conrad (2005); Dirsmith et al. (1997); Granlund (2003); Gurd (2008); Moilanen (2008); Roberts (1990); Roberts & Scapens (1993); Seal (2003); Uddin & Tsamenyi (2005)

[a] Note that these studies do not explicitly draw upon Giddens' notions of structure, system or duality of structure.

Table 9 Modelling of MA in the empirically oriented literature

Main focus area	Key aspects applied/elaborated in MA research	Selected references
1. *The role of MA in shaping non-MA structures and social systems*		
i. Reproduction	MA may contribute to the reproduction of non-MA structures.	Alam et al. (2004); Capps et al. (1989); Jayasinghe & Thomas (2009)
ii. Critical reflection	MA may contribute to critical reflection and questioning of a prevailing order.	Collier (2001); Hassan (2005); Macintosh & Scapens (1991); Seal et al. (2004)
iii. Mediating	MA may work as an important mediator between conflicting social structures.	Ahrens & Chapman (2002); Capps et al. (1989); Macintosh (1995); Moilanen (2008); Saravanamuthu & Tinker (2003)
2. *The role of non-MA structures in shaping MA structures and practices*		
i. Initiating	The (re)production of non-MA structures may work as initiators of new forms of MA practices.	Gurd (2008); Jack (2007); Lawrence & Doolin (1997); Lawrence et al. (1997); Lawrenson (1992)
ii. Translating	The reproduction of non-MA structures may work as translators in the interpretation of (new) MA structures and practices.	Macintosh & Scapens (1991); Scapens & Roberts (1993); Uddin & Tsamenyi (2005)
iii. Repressing	The reproduction of non-MA practices may work to repress (new) MA practices.	Cowton & Dopson (2002); Granlund (2001); Hassan (2010); Lawrence & Doolin (1997); Ouibrahim & Scapens (1989)

Table 10 Sources of continuity as applied/elaborated in the empirically oriented MA literature

Source of continuity	Key aspects applied/elaborated in MA research	Selected references
1. *Ontological security*	MA practices may persist because the reproduction of existing routines enhances people's feeling of ontological security.	Busco et al. (2006); Conrad (2005); Granlund (2001); Hassan (2010); Jayasinghe & Thomas (2009)
2. *Taken-for-grantedness*	MA practices may be highly persistent when implicated in the structuring of day-to-day organizational practices in a largely taken-for-granted manner.	Ahrens & Chapman (2002); Jack (2005); Laughlin (1990); Seal (2003)
3. *Lack of knowledge*	MA practices may persist due to a lack of innovative MA expertise among actors in a focal social system.	Jack (2005)
4. *Structural clashes*	Deliberate attempts for MA change may be resisted due to clashes between existing and 'introduced' structures.	Hassan (2005); Lawrence & Doolin (1997); Ouibrahim & Scapens (1989); Scapens & Roberts (1993)
5. *Resource asymmetry*	Deliberate attempts for MA change may be resisted due to asymmetrical access to resources among agents pushing for, or opposing, change	Dirsmith et al. (1997); Jayasinghe & Thomas (2009); Macintosh & Scapens (1991); Ouibrahim & Scapens (1989); Scapens & Roberts (1993)

Table 11 Sources of change as applied/elaborated in the empirically oriented MA literature

Source of change	Key aspects applied/elaborated in MA research	Selected references
1. Changes in the conditions governing system reproduction.	MA practices may change due to changes in the conditions governing the reproduction of such practices.	Busco et al. (2006); Granlund (2001); Macintosh & Scapens (1991)
i. Financial crises		Alam et al. (2004); Cowton & Dopson (2002); Jack (2007); Lawrence & Doolin (1997); Lawrence et al. (1997); Macintosh & Scapens (1991); Roberts (1990); Seal et al. (2004)
ii. Changes in ownership		Busco et al. (2006); Caglio (2003); Conrad (2005); Granlund (2003); Hyvönen et al. (2006); Seal et al. (2004)
iii. Changes in general social conditions		Dirsmith et al. (1997); Jack (2005, 2007); Lawrenson (1992); Seal (2003); Seal et al. (2004)
2. Reflexivity	MA practices may change due to actors' reflexive understanding of, and tendency to remain critical towards, the conditions underlying such practices.	Collier (2001); Gurd (2008); Lawrence et al. (1997); Seal et al. (2004); Uddin & Tsamenyi (2005)
3. Structural contradictions	MA practices may tend towards change due to their own internal inconsistency or contravening principles	Alam et al. (2004); see also Capps et al. (1989); Lawrence & Doolin (1997); Seal et al. (2004)
4. Unintended change as part of daily accounting practices	MA practices may undergo unintended change due to the inherent indeterminacy of such practices	Ahrens & Chapman (2002); Lawrence et al. (1997)
5. Disembedding/re-embedding mechanisms	MA practices may change as such practices are lifted out of their local contexts—through e.g. formal accounting systems—and being re-embedded across indefinite spans of time and space.	Barrett et al (2005); Hyvönen et al. (2006); Seal et al. (2004)

Table 12 Main methodologies applied in the empirically oriented MA literature[a]

Methodological aspect		Data collection												Data analysis	
General category		Dialogue			Documents					Observations					
Methodology		Interviews	Informal conversations	Interviewee feedback	Case specific Documents	Public material	Press/ Newspapers	Historical material	Secondary data	Meetings	Training sessions	Work activities		Institutional	Strategic conduct
Reference															
Ouibrahim & Scapens	1989	120		x	x									1	
Capps et al	1989	x			x					x		x			1
Laughlin	1990					x			(x)					1	
Roberts	1990														1
Macintosh & Scapens	1991								x					1	
Lawrenson	1992							x						1	
Scapens & Roberts	1993														1
Mouritsen & Skaerbaek	1995	x			x	x		x						1	
Kirk & Mouritsen	1996	x													1
Dirsmith et al	1997	180	x	x	x		x			x					1
Lawrence et al	1997	x	x	x	x					x				1	
Lawrence & Doolin	1997	12	x				x							1	
Granlund	2001	38	20		x							x		1	
Collier	2001	52			x	x				x		x		1	
Ahrens & Chapman	2002	x	x	x	x					x	x	x			1
Cowton & Dopson	2002	x		x	x	x	x			x					1
Scheytt et al	2003														
Granlund	2003	38	20		x			x				x		1	
Seal	2003	x												1	
Saravanamuthu & Tinker	2003	x	x		x							x			1
Caglio	2003	x	x		x									1	
Alam et al	2004	18		x	x	x								1	
Seal et al	2004	x	x	x	x		x					x			1
Barrett et al	2005	38	x		x					2	2	5			1
Jack	2005	x						x						1	
Hassan	2005	x			x	x						x		1	
Uddin & Tsamenyi	2005	x	x		x	x	x							1	
Conrad	2005	38			x	x	x							1	
Busco et al	2006	90+	x							x	x	x		1	
Joseph	2006								x					1	
Hyvönen et al	2006	13	x		x									1	
Jack	2007	20			x	x	x	x						1	
Moilanen	2008	12			x			x							1
Free	2008	65+			x	x	x	x		5					1
Gurd	2008	x	x		x					x				1	
Jayasinghe & Thomas	2009	28			x	x						x			1
Hassan	2010	27			x	x						x		1	
Faÿ et al	2010	35	x											1	
Total No.		31	15	7	25	12	8	7	3	10	3	12		24	13

[a] The papers by Roberts (1990) and Scapens and Roberts (1993) do not include any descriptions of research methods, even though their findings sections indicate that multiple data sources were used.