Stability and change in management accounting over time – a century or so of evidence from Guinness.

Quinn, M. (2014). Stability and change in management accounting over time – a century or so of evidence from Guinness. *Management Accounting Research*, *25*(1), 76-92. https://doi.org/10.1016/j.mar.2013.06.001

Published in:
Management Accounting Research

Document Version:
Peer reviewed version

Stability and change in management accounting over time – a century or so of evidence from Guinness.

Stability and change in management accounting practices over time – a century or so of evidence from Guinness.

Abstract

In recent years, much has been written on the nature of management accounting change, and indeed stability. Many researchers have used concepts such as rules and routines to interpret this change and/or stability. Recent research has provided an increasingly clear picture of what rules and routines are, as well as contributing to our understanding of the processes of change and stability in management accounting.

Management accounting research has mainly presented rules and routines as related phenomena, but some conceptual work has suggested they are separable and can (and possibly should) be considered independently when studying processes of change/stability within management accounting. However, empirical support for such work has been scarce to date. This paper uses data from the archival records of the Guinness company in an effort to establish whether rules and routines, at least in management accounting research, are best considered separable concepts or not. The archival records are artefacts of rules and routines and thus can be used to trace the interactions of rules and routines over time. Support for the notion that rules and routines should be considered separately is presented. The findings also portray the stable, but changing, nature of management accounting routines over time; a point worthy of further research.

Keywords: Management accounting change; rules; routines

1. Introduction

Burns and Scapens wrote "whether management accounting has not changed, has changed, or should change have all been discussed" (2000, p.3). Since their seminal work, much research has been undertaken on refining the meaning of these phenomena, and to a lesser extent on teasing out the interactions of rules and routines as presented by Burns and Scapens (2000) (see for example, Quinn, 2011; Lukka, 2007; Ribeiro and Scapens, 2006; Spraakman, 2006; Hassan, 2005; Siti-Nabiha and Scapens, 2005; Dillard et al., 2004; Soin et al., 2002). These concepts, rules and routines, were used by Burns and Scapens (2000) to understand the processes of management accounting change (and stability) over time. They presented what is now a largely accepted conceptual framework, which details how the interactions of rules and routines can explain how management accounting remains relatively stable over time, or can change (Burns and Scapens, 2000, p. 10).

One of the key tenets of the work of Burns and Scapens (2000) is that there is a *process* (encoding, enacting, reproduction of rules and routines) by which management accounting may evolve, change, stabilise and re-evolve over time. This process, in a holistic sense, is well accepted, but in recent times some key concepts underlying the process set out by Burns and Scapens (2000) have been explored in more detail. Quinn (2011, p. 338) addressed "some issues of definitional clarity" around the concept of management accounting routines in particular, but by association, rules as set out by Burns and Scapens (2000). Briefly here, Quinn (2011) draws on the work of Feldman and Pentland (2003) to view management accounting routines as having two dimensions; namely, ostensive and performative. Quinn (2011, p. 344) also proposes rules are formal and written or represented in some physical way, and are in fact artefacts of routines. More detail on rules, routines and artefacts is given later, but a proposal by Quinn (2011) is that ontological clarity on the nature of rules and routines will assist management accounting researchers to gain a more in-depth understanding of how rules and routines interact. This understanding of the interactions of rules and routines is potentially important as Quinn (2011) suggests management accounting routines, or rules, may be more prevalent in certain types of organization.

However, the work of Quinn (2011) could be criticised for being conceptual - no empirical data is given to support the assertions on the interactions of management accounting rules and routines. Briefly, a key differentiation between Burns and Scapens (2000) and Quinn (2011) is that the former presented rules and routines as bound together in the process of management accounting change, whereas Quinn (2011) portrays them as separable and distinct concepts, and proposes that rules *need not* exist. This study seeks some empirical grounding (or otherwise) for these two key assertions of Quinn (2011). This study uses archival records - namely the archives of the St. James's Gate Brewery of the Guinness company - to study management accounting rules and routines over an extended timeframe and explore Quinn's (2011) propositions. While more detail on the methods used is given in the next section, it was envisaged at the outset of this research that archival records would be suited for two reasons: 1) more records were formally written in the past, thus increasing the likelihood of written rules being present, and 2) the extended research timeframe achievable through archival research provides greater scope for studying the interactions of management accounting rules and routines over time and how these interactions promote stability or bring about change.

The remainder of the paper is structured as follows. The next section, Section Two, briefly reviews some of the organizational, institutional economics and management accounting literature to date, focusing mainly on the concepts of, and interactions of, rules and routines. Then, Section Three sets out the methods used to obtain and analyse the archival data, as well as briefly exploring the potential benefits of studying change over longer timeframes. Section Four introduces the archival data from Guinness and outlines a story of the relative stability of management accounting in one area of the company over an extended timeframe. It also provides several examples of management accounting change, the factors which were potentially driving change, and describes the interactions of rules and routines over time for each example given. Section Five completes the paper, with some concluding remarks, limitations of the research and suggestions for future research.

2. Studying change in rules and routines terms

As hinted in the introduction, the study of change is a complex task. As this study and the work of Quinn (2011) draws on the work of Burns and Scapens (2000) - in particular the interaction of rules and routines - this section begins by describing their work. Then, some more recent research on the nature of rules and routines, and some recent literature on their interactions, is explored. From this literature, the nature of rules and routines and their interactions as adopted here is set out. The nature of artefacts is also introduced, as these are an important concept in the study of routines - Section Three will provide more detail on the nature of artefacts as relevant to this research. As mentioned in the introduction, the objective of this study is to empirically tease out propositions on rules and routines put forward by Quinn (2011). The conceptual framework of Burns and Scapens (2000) was drawn upon, and is largely supported by Quinn (2011). Thus, as well as outlining the work of Burns and Scapens (2000), the remainder of this section sets out a more refined meaning of routines and rules and ultimately their interactions as presented by Quinn (2011).

A starting assumption of Burns and Scapens (2000) is that the changing (or stable) nature of management accounting can be interpreted using institutional phenomena such as rules and routines. Burns and Scapens defined routines as “the way things are done” (2000, p. 5), which can be contrasted with their definition of rules, “the ways things should be done” (2000, p. 6). They also recognise a link between institutions (which they define as “the taken-for-granted assumptions which inform and shape the actions of individual actors”, 2000, p. 8) and actors, proposing that institutions define relations between social groups and group members. They present the two realms of institution and action within their framework and these realms represent an “on-going cumulative process of change through time” (2000, p. 9). Burns and Scapens’ framework starts at the point of encoding “institutional principles into rules and routines” (2000, p. 10). This is typically influenced by existing rules and routines as these incorporate existing institutional values. The rules (incorporating existing routines) are then enacted by actors, and over time, repeated behaviour forms routines and/or generates new routines which may eventually become institutionalised, i.e. the accepted way of doing things. Over time too, new institutions may evolve which will be interpreted in terms of existing rules and routines; or, in other words there is a potential for change to occur to management accounting from within an organization. The picture painted by Burns and Scapens (2000) is one of slow, longer-term, evolutionary change as rules and routines interact in a continuous process over an extended period of time and may bring about new institutions.

In recent years, the concept of organizational routines – a key component of Burns and Scapens (2000) – has received much attention in the literature. Pentland et al. (2010, p. 917) note we are “still struggling with how to conceptualise, observe and compare one of our most basic kinds of phenomena: organizational routines”. The term “organizational routine" was introduced to organizational studies by Stene, who described a routine as follows:

> [An] organization routine is that part of any organization's activities which has become habitual because of repetition and which is followed regularly without specific directions or detailed supervision by any member of the organization (1940, p. 1129).

The above definition highlights in particular the recurrent nature of routines. It also suggests that once activities become routinized in an organization, they may become taken-for-granted and unquestioned. This has been echoed in much of literature to date, with organizational routines associated more with stability of organizational practices (such as management accounting) than change. Pentland (2011, pp. 280 - 281) brings together much previous research to define organizational routines as comprising four essential components, as follows:

1. Routines are repetitive.
2. A recognisable pattern of action occurs. Each performance of a routine may vary from the previous performance, but a general recognisable pattern is discernible.
3. Actions are interdependent, indicating several inter-related "steps" in the performance of a routine.
4. Multiple actors are involved.

Taking these four components, routines are presented as a crucial element of organizational life and a key building block for stable organizational practices over time (c.f. Burns and Scapens, 2000). This definition is also more refined than that provided by Burns and Scapens (2000) and is by and large encompassed within the work of Quinn (2011), as detailed below.

Although routines as conveyed in the above definition are typically associated with stability, they are also a source of change as suggested by Burns and Scapens (2000). Burns and Scapens (2000) did not detail how this might happen, but subsequent work has provided some insights and refinements to the conceptualization of routines in particular (but also rules), which is useful in understanding how change to routines can be brought about. In particular, work by Feldman and Pentland (2003) and Pentland and Feldman (2008, 2005) has highlighted how interactions within components of routines themselves can bring about change, but also encompass stability. Feldman and Pentland note organizational routines as comprising two aspects or dimensions, namely: (1) the ostensive routine; and, (2) the performative routine (2003, p. 101). According to Feldman and Pentland (2003, p. 101), the ostensive routine "may have a significant tacit component" which moulds the perception of what the routine is, "may be codified as a standard procedure" and "may exist as a taken-for-granted norm". Pentland and Feldman (2008, p. 286) describe the ostensive routine as "abstract, cognitive regularities and expectations that enable participants to guide, account for and refer to specific performances of a routine" which "incorporates the subjective understandings of diverse participants" (Feldman and Pentland, 2003, p. 101). The performative routine is "the specific action(s) taken by people […] when engaged in an organizational routine" (Feldman and Pentland, 2003, p. 102) "at specific times, in specific places" (Pentland and Feldman, 2008, p. 286). Thus, briefly here, the work of Feldman and Pentland (2003) (and their subsequent works) provides a conceptualization of routines which *always* have potential for change (at each performance) but yet retain an underlying relatively stable understanding of what the routine is about in the minds of actors (i.e. the ostensive routine). Additionally, Pentland and Feldman (2005) portray rules as artefacts of routines, which enable and constrain the acting out of routines. They note "the most obvious examples […] are formal rules or standard operating procedures" (2005, p. 797). This suggests rules are a separable phenomenon to routines, with the latter preceding the former. They also note that artefacts are not necessarily the same as the ostensive routine, rather "an effort to codify" it (2005, p.797).

In the management accounting literature, Quinn (2011), proposed that the Burns and Scapens (2000) framework can be refined to include cases where formalised written rules exist versus cases where no formal written rules exist (see Figure 1)[1]. In the latter case, the ostensive routine can 'replace' rules in the rules/routines interactions over time as depicted by Burns and Scapens (2000). Where (written) rules do exist, typically in larger and more formal organizations, then the ostensive routine typically precedes rules, although this may not always be so (e.g. legislation) – in other words, rules are typically artefacts of routines (c.f. Pentland & Feldman, 2005), particularly in a management accounting context (Quinn, 2011, pp. 344-345). In both cases, the performative routine equates to what Burns and Scapens (2000) described as routines i.e. the actual acting out of routines. Few management accounting studies (but see van der Steen, 2011) have addressed this detailed interaction of the ostensive and performative routines in an empirical sense, and fewer still have addressed the role of rules in these interactions. However, despite limited studies in management accounting of performative/ostensive routines, ~~from others~~ studies in the organizational literature (see for example, Pentland, 2011; Becker 2008, 2005, 2004; Lazaric, 2008; Pentland and Feldman 2008, 2005; Schultz, 2008, Birnholtz et al., 2007; Feldman and Pentland, 2003)~~, and~~ combined with the generally accepted framework ~~proposed by~~of Burns and Scapens (2000) as refined by Quinn (2011), suggest ~~it is evident~~ that the processes of change and/or stability of management accounting over time~~,~~ can be usefully conceptualised ~~and understood using concepts such as~~in rule~~s~~ and routine~~s~~ terms. Figure 1 depicts the work of Quinn (2011).

[insert figure 1 about here]

The work of Quinn (2011) as depicted in Figure 1 is quite similar to the original proposals of Burns and Scapens (2000), and supports their overall process of change/stability. There are two key refinements however. First, according to Quinn (2011, pp. 346-347) rules are artefacts of routines. Quinn (2011, p. 344) specifically defines rules as “a physical representation of a routine, which are formalised in a documented fashion and *may* serve to guide action”[2]. That is, rules, if present, may interact with ostensive routines. If management accounting rules exist, then it is possible that the ostensive routine (depicted by “OR” in Figure 1) is formalised as a documented rule, with both portraying similar attributes, i.e. as documented and in the minds and understanding of actors. However, it is also possible that the ostensive routine is at variance with rules or that rules are not present (Pentland and Feldman, 2008). Thus, the interaction between rules and the ostensive routine is tentative – hence the dotted lines in Figure 1. Second, Quinn (2011) equates performative routines to what Burns and Scapens (2000) referred to as routines – in Figure 1 the enactment of a performative routine is depicted by line B, with repeated performance of the routine shown by line C. The performative routine is acted out against a background of rules (if present) and/or an understanding of what is expected (i.e. the ostensive routine), as depicted by line B. There is also a possibility that a performance of a routine can bring about change (Feldman and Pentland, 2003) as depicted by a wavy line C. Finally, similar to Burns and Scapens’ (2000) original work, over time the interactions of the ostensive and performative routine may result in institutionalised management accounting practices i.e. the performance of the routines is disassociated from historical context, take on a normative quality and may shape new routines – hence the two sets of interactions in

Figure 1. To summarise Quinn (2011), we could say a key difference is that this work 'unbundles' rules and routines as separable concepts. However, at the same time this unbundling does not undermine the processes of change as originally envisaged by Burns and Scapens (2000). Given that Quinn (2011) conceives rules as a written statement of how things should be done (i.e. as artefacts), and such written matter can be found in documents such as manuals, board minutes and other organizational documentation, Section Three outlines how such documents are utilised in this study.

In summary, the literature presented here raises several issues for those who study change and stability in management accounting through the lens of routines and rules. First, our conceptualisation of routines in particular has been augmented since the work of Burns and Scapens (2000). This more recent literature prompted Quinn (2011) to seek some clarity on what rules and routines now imply in the context of Burns and Scapens' original work. Second, the literature suggests that the role of rules may be less prevalent than was perhaps originally envisaged by Burns and Scapens (2000) i.e. that rules may not necessarily exist, and if they do, are best construed as artefacts (of routines) which help shape the acting out of routines. Third, the literature suggests rules and routines are separable concepts ontologically and empirically, as conveyed by Quinn (2011) based on the work of Feldman and Pentland (2003) and Pentland and Feldman (2008, 2005). These two latter points, namely the existence rules (as artefacts) and rules/routines as separable concepts, are the particular focus of this research as previously noted in the introduction.

3. Research Methods

Having set out the main theoretical underpinnings, the research methods are now presented. First, a case for studying management accounting change over an extended timeframe is made. Then, the actual methods used to explore and analyse the archival records are detailed.

3.1 Studying change over an extended timeframe

As noted in the introduction, studying change over an extended period of time may assist teasing out interactions of rules and routines over time. In the organizational literature, Dawson (2003, 1994) and Pettigrew (1997, 1990, 1987) have been key researchers in what Dawson (2003. p. 8) terms "a processual approach to understanding change". Both

Dawson and Pettigrew undertook several longitudinal studies of organizational change which "require[d] a lot of patience and plenty of time" (Dawson, 2003, p. 121). The issue of time is a pressing one for most academics due to constant pressures to disseminate research findings. Dawson (2003, p. 122) argues that the result of the increasing pressure to publish academic research is shorter case studies of organizational change which may not capture the "complex and muddied waters of organizational life". In essence, what scholars like Dawson and Pettigrew are saying is that to study processes of change, a researcher needs adequate time to capture how change evolves. Similarly, to study and fully comprehend the process of management accounting change, and/or the processes which keep those same practices stable, may require a timeframe longer than what is typically feasible for most researchers. Perhaps this is why many studies which have used and/or developed concepts from Burns and Scapens (2000) tend to be either conceptual (see for example, Quinn, 2011; Dillard et al., 2004) or based on shorter case studies of two to five years (see for example, van der Steen, 2009; Lukka, 2007; Soin et al., 2002) . This is not to say that such research is deficient in any way, and indeed it has enlightened our knowledge considerably. However, fewer studies utilising the work of Burns and Scapens (2000) or utilising concepts such as rules and routines have focused on the process of change over a longer timeframe.

If we accept the argument of Dawson (2003) that longer case studies will yield a better understanding of the processes of change (and by association, stability), then studies of management accounting rules and routines over a longer timeframe may enlighten or reinforce the work of Burns and Scapens (2000) and work derived from it. In general, studies of change over prolonged periods of time are not only inhibited by the academic need to publish, but also by our own mortality. However, in the case of routines in particular there is a further limitation. That is, routines imply action (see Section 2) and as researchers our time to observe such action is not only limited by our own available time, but also issues of access to case sites for prolonged periods. One potential solution in overcoming the issue of a prolonged study of change and/or stability in management accounting is archival research to examine documents from organizations.

The research presented here uses archival data from the Guinness Brewery at St. James's Gate, Dublin, to examine a relatively simplistic set of management accounting tasks over a century or so. Although the present research may lend itself to being termed a historical study of management accounting, it is the extended time frame of analysis permitted by archival research which is most relevant. There are published archival studies of management accounting using a historical context in journals not having a specific focus on accounting history (see for example, Jackson et al., 2012; Amat et al., 1994). In particular some new accounting history studies draw on a variety of disciplines to explore accounting history (Funnell, 1996; Miller et al., 1991)[3]. Indeed, some historical studies have adopted institutional approaches (see for example, Gomes et al., 2008; Romeo and Rigsby, 2008; Riccaboni et al., 2006). While new institutional sociology is more common in such historical studies, some (like this study) do examine the more micro-level institutional phenomena within organizations such as rules, routines and power (see for example, Riccaboni et al., 2006; Spraakman, 2006). Although the work presented here draws on historical records, it should be construed as work using an extended historical context, rather than a piece of management accounting history research. Some recounting of history is inevitable to establish context. A study similar to the present research has been conducted by Spraakman (2006). His study of the Hudson's Bay Company adopted the Burns & Scapens (2000) framework and concentrated on how institutions prompted stability of existing accounting practices. The study did not delve into the interactions of rules and routines and accepted these two concepts as originally described by Burns and Scapens (2000). In contrast, this study focuses specifically on the building blocks of institutionalised management accounting practices, i.e. rule and routines, and their interactions as set out earlier. Thus, in summary, while this study may contribute in some small way to accounting history research, and the use of institutionally-based concepts in a historical context[4], it should be construed as primarily a study of management accounting change.

3.2 Exploring the Cooperage accounts at Guinness

As revealed by the literature and concepts portrayed thus far, studying the processes of change can be both time-consuming and relatively complex. As noted, one potential way to overcome the time issue is to use archival sources. To date, historic archival sources have not been extensively used to study management accounting change using concepts such as rules and routines. As noted earlier, one exception is Spraakman (2006). In his work, Spraakman (2006) examined the archival records of the Hudson's Bay Company over a period in excess of 300 years to determine if institutions prevented management accounting change – or put another way, promoted stability in management accounting practices. Spraakman (2006), adopting the Burns and Scapens (2000) framework, focused on institutions that prevented or enabled change rather than on the interactions of rules and routines over time.

This study examines the records in and around the Cooperage of the Guinness St. James's Gate Brewery, Dublin over a century or so from the early 1870's. Before giving more detail on the Cooperage specifically, the general nature of the archives, how they were utilised and how the records were analysed is outlined. The archival records extend from 1759 to date, with a 30 year hold on document release. While the records extend from the signing of the famous 9,000 year lease for the St. James's Gate Brewery site in 1759, more complete and detailed records are available from 1886 when Guinness was incorporated as a public company. According to Scott (1990), the quality of archival documents can be assessed according to four criteria, as below – each is addressed relative to the present research.

> *Authenticity* – is the evidence genuine and of unquestionable origin. For this research, the documents were examined on site at the corporate archive and can be verified as being true and verifiable records of the Guinness company.
> *Credibility* – is the evidence free from error. The archival records examined were of two types, 1) accounting ledgers and, 2) minutes from Board meetings/reports prepared for presentation to the Board. Such records are likely to be highly credible as a documentary source.
> *Representativeness* –is the evidence typical of its kind. While the research presented here is from a single case, the ledgers and documents examined are typical of the type of records one would presume any large company (even today) to retain. There is also a continuum in the style and type of records kept over the timeframe studied.
> *Meaning* – is the evidence clear and comprehensible. The vast majority of documents examined were prepared using a type writer, and less so hand-written. All board minutes in particular were typed. Thus, the clarity of the documentary evidence is excellent.

Surprisingly, despite the comprehensive and extensive archival records, it would seem that no prior research has been undertaken on management accounting or accounting in general using archival records at Guinness. The archive retains many volumes of records which are reflective of what Scott (1990, pp. 81-82) terms recurrent, regular and special administrative routines[5]. Recurrent administrative records are those that are a necessary part of the daily operations of an organization. Regular records that are those that are regularly produced, but not an essential element of daily operations e.g. annual statutory accounts. Finally, special records refer to those which are reflective of ad-hoc situations and requests. Recurrent and special records were the primary document type used for this study.

Archival research is typically conducted along two lines, 1) following an organizational process or aspect over time or, 2) examining the effects of (mainly external) events on organizations over time. For example, Ó hÓgartaigh and Ó hÓgartaigh (2004) recount how Irish archival data could be used to study the effects on accounting of events such as the Irish 1963 Companies Act or the increased professionalization of the accounting profession at the turn of the 20th century. Although the Guinness archives extend across many business areas and a considerable time frame, following an initial search of the archive catalogue using the search term 'accounting change', the Cooperage returned many matches. After an initial examination of the Cooperage records based on this search, its management accounting records were chosen for the purposes of this study. Thus, the research presented here focuses on a single aspect of the Guinness organization over time. The archival records studied include Cooperage ledgers (which records movements of casks), accounting ledgers associated with the department, various reports prepared by the department for the Board of Directors, and Board minutes. Records were obtained and analysed over numerous visits in a three month period, and photographed digitally – allowing extensive off-site analysis to be performed. As will be detailed in the next section, the underlying processes in accounting for returnable casks/kegs[6] have not changed over time - certainly from about 1870 to the present day. In other words, there would appear to be a relatively stable set of management accounting rules and routines over time. These accounting procedures have endured many external and internal events over the past 120 years or so – for example, two world wars, the Great Depression, decimalization (1971), computerization of accounting records (up to and including Enterprise Resource Planning systems at Guinness) and brewing technology changes.

Although archival records may be suited to locating (written) rules as defined by Quinn (2011), an important issue for the present research was how to utilise the records to study not just rules, but the interactions of rules and routines over time. Johansson and Siverbo (2009) argue that routines cannot be observed. This argument is partially true if we accept the work of Feldman and Pentland (2003) and Quinn (2011). The performative routine, being the acting out of routines at specific instances in time and space can be observed (see for example, Pentland et al., 2010), whereas ~~as~~ the more cognitive ostensive routine cannot (see Figure 1). In the case of archival research as proposed here, Johansson and Siverbo's (2009) argument holds true as we cannot observe the ostensive or performative routine, as the latter's associated actions have passed in time. Instead, as Johansson and Siverbo (2009) note, what we can observe is artefacts. As noted by researchers such as D'Adderio (2011) and Pentland and Feldman (2008, 2005), artefacts are an essential component of routines. Artefacts are the "physical manifestation of the organizational routine" (Pentland and Feldman, 2008, p. 289). As noted by Pentland and Feldman (2005, p. 796) artefacts are a "particularly prominent means of collecting data about routines" and "can serve as a proxy" for both the ostensive and performative routines. Although artefacts are reflective of routines, they may also be "the formal written rules which represent that routine" (Pentland and Feldman, 2008, p. 289). Thus, artefacts can represent both rules and routines. However, as noted earlier in Section Two, a key attribute of routines is action whereas rules can exist without action, or action can occur without reference to rules (Quinn, 2011). With this distinction of rules and routines in mind, we can thus use artefacts to determine both phenomena. Some examples might be useful at this point. Rule books, standard operating procedures, checklists and application forms are some examples of artefacts which act as proxies for the ostensive routine - that is, they are rules as defined by Quinn (2011), as they are a physical representation of the underlying ostensive routine. We can say these artefacts represent rules as no action need occur. Items which keep track of, or show the output of, work processes can be proxies for performative routines e.g. reports, work logs. We can say these artefacts represent performative routines as action has occurred, with possible (but not essential) reference to rules. Thus, to underpin the research objectives as set out earlier, it is possible to adopt artefacts as proxies for both rules and routines. Based on this, the methods used to analyse the Cooperage management accounting records were as follows:

- An artefact that states, in writing or an equivalent physical medium, how something should be done is regarded as a rule. This rule is considered, without further evidence, to equate to the ostensive routine. Such an artefact can be considered a rule, as it does not (necessarily) provide evidence of action.
- An artefact which shows substantial evidence of a change to standard procedures as set out by rules is deemed a proxy for change to the ostensive routine, but *only* if the original rule (artefact) has not been altered to reflect a new way of doing things. Thus, for example, a rule book may instruct staff to do a task in certain way. While the rule book does not change, reports or work records provide evidence of the task being performed in a different way to that set out in the rule book.
- An artefact which reflects the acting out of ostensive routines is deemed a proxy for performative routines. This may mean evidence of action complying with rules and/or evidence of an underlying ostensive routine in the absence of rules, or evidence of a new emerging ostensive routine which deviates from rules. The key characteristic of such an artefact is action has taken place, thus examples might be ledgers or reports.

These methods reflect the interactions of the ostensive/performative routines (and rules if present) in artefact terms. Thus, for example, if we assume an artefact reflecting a rule is found, then this artefact (perhaps a standard operating procedure for the Cooperage) may be similar to the ostensive routine (the abstract cognitive guide for performing the routine), and we may find another artefact which is reflective of the performative routine (the actual acting out). Of course as depicted in Figure 1, and in the methods above, rules may not exist, and in such a case an artefact may represent both the ostensive and performative routine.

Two points on the above methods require some clarification. First, *substantial* evidence of change away from what rules specify implies a change in the underlying assumed actions. Thus for example, a change in the presentation or layout of a report is not considered substantial, but a change to underlying calculation methods used in the same report is considered substantial. Second, a single artefact may provide evidence of both rules and routines, as mentioned previously.

There are limitations to this research method, which will be mentioned later. Briefly here, the major limitation of using archival research as suggested here is that we cannot be absolutely certain of the underlying actions behind rules, ostensive/performative routines and the associated management accounting practices. However, archival records in the pre-computerization era do provide us with more meticulous and documented accounts of what happened in organizations.

4. Management accounting at the Guinness Cooperage

This section serves two purposes. First, it outlines the general form of management accounting at the Cooperage based on archival documents such as ledgers, meeting minutes, board minutes, board memorandums, departmental accounts and departmental reports. These documents can be considered artefacts as outlined in the previous section, as they are evidence of either underlying performative routines where action has occurred or represent rules/ostensive routines (see Section 3.2). Thus, as the story of management accounting at the Cooperage overtime is revealed, the interaction between rules and routines is also discussed.

4.1 An outline of management accounting routines for returnables over time

Today at Guinness, as at many other breweries, returnable crates, kegs and bottles are regarded as a non-current asset. For example, according to the 2011 Annual Report of Diageo plc.[7,8] , the value of "Returnable Crates and Bottles" is £105 million (p. 143) and these have estimated useful lives as follows "casks and containers – 15 to 50 years; and returnable bottles and crates – 5 to 10 years" (p. 118). The figure of £105 million represents less than 1% of the total assets or 4% of the profit of Diageo plc. but yet the figure of itself does represent a material amount. This, combined with an extended useful life, can be readily fit into modern day financial reporting standards and the classification as a non-current asset. However, no such reporting standards existed in the late 1800's. At the time of incorporation as a public company, Guinness was governed by the Joint Stock Companies Act 1856 (UK), which required directors to operate the double entry system of accounting, and among other things, keep a record of "stock in trade of the company" (s.69) and produce a balance sheet which distinguished movable and immovable property (s.72). Any deterioration in the value of property should be also stated. An appendix to the 1856 Act defines "movable" property as "Stock in Trade" and "Plant". According to the

Guinness balance sheet as at 30th June 1887, the value of casks was £154,484. This represented approximately 2% of total assets or 27% of profit at that time. While detailed expenses data is not disclosed by the published financial statements of that time, it seems reasonable to assert that the cost of casks represented a substantial overall cost for the company. According to an internal report from 1896, the cost of manufacturing casks on-site at the St. James's Gate Brewery was as shown in Table 1[9].

Cask type (dry capacity)	*Cost in Shillings*
Butt (108 gallons)	43.6
Hogshead (54 gallons)	22.8
Barrel (36 gallons)	17.6
Kilderkin (16.75 gallons)	12.1
Firkin (8.5 gallons)	8.1

(Note: 1 imperial gallon = 4.56 litres approx. 1 Shilling = 5 new pence)

Table 1 – cost of cask manufacture in 1896.

Of the cask types mentioned in Table 1, the kilderkin was the most commonly used size in the late nineteenth century, but sales of stout were typically referred to in hogshead terms. The earliest accessible Cooperage cask ledger showing a stock of casks dates from the period 1867- 1872, where 57,858 kilderkins were in stock, alongside 9,941 barrels and 17,909 hogsheads. The tradesmen, or coopers, employed to manufacture the casks numbered 152 in 1886, which increased to 294 by 1913 (Dennison and MacDonagh, 1998, p. 115). This represented approximately 12% of the total workforce as of 1913[10]. Taking into account the brief evidence thus far - the stock value of casks, the proportion of cost they seem to represent and the number of coopers – it is not surprising that the Cooperage merited adequate internal controls, record keeping and even recognition in external financial statements. Or, in other words, management accounting was a feature of the various processes around casks and the Cooperage at Guinness.

Based on a detailed "cooperage cask ledger" dating from 1867 to 1872, the basic business process involving casks can be outlined as follows:

- New casks were made on-site at the St. James's Gate Brewery site by coopers. The company purchased and held sufficient supplies of timber accordingly.
- Full casks were shipped to customers.
- Empty casks were returned and washed for re-use, and in some cases, repaired.

This process is more or less followed to the present day (see later). The cooperage cask ledger (as referred to above) summarises the quantity of casks made and empties returned by cask type – the latter recorded daily, the former on an approximate weekly basis. The recording of dispatched and returned empty casks was enabled by the presence of a unique number on each cask; a system which began on January 1st 1871. According to an internal report for the company secretary entitled "Matters of importance in the history of the Cask Department" dated 13th June 1913, from January 1st 1875 a cipher system was introduced which allowed a customers' name, address and the cask number to be combined in a cipher code for ease of use. The resulting cipher code shortened the amount of writing in the cask ledgers and simplified the recording of returned casks. In addition to the need for management accounting around casks as already mentioned, another purpose of accurately tracking the details of casks sent to each customer was to protect the company's investment in the casks. Thus, a record of the casks sent to and returned by customers was held with a view to recouping the cask cost in the event of damage, loss or misuse[11]. The 1913 report mentioned above indicates that detailed "cask index books" and "trade account covers" were retained, which recorded each cask movement in and out of the brewery and the details of casks held by customers respectively. "Boys"[12] were employed by the Cooperage as "numbertakers" to record the cask numbers as they were delivered and returned. The archival records studied contain several examples of the "cooperage cask ledger" and similar ledgers recording daily cask movements until 1957. By this time, the wooden cask was being phased out and replaced by metal kegs and by 1963 the St. James's Gate Brewery had placed its last wooden cask in storage racks[13].

In addition to the detailed accounting for cask movements, the Cooperage also retained detailed departmental sub-ledgers which recorded costs associated with the production of casks. These costs included labour, timber, sundry materials such as hoops, repair costs and cleansing costs. From 1886 to 1896, these cost figures were presented on the balance sheet at full cost, according to the "Matters of importance in the history of the Cask

Department" report from 1913. From 1897 to 1905, the casks were depreciated, but the depreciation was not shown separately on the balance sheet. From 1906, the depreciation was shown separately on the face of the balance sheet. From June 30th 1909, the Audit Office (essentially, the financial accounting function) at the brewery passed responsibility for the calculation of cask depreciation and associated reporting to the Cooperage. From this same time, the Cooperage now prepared quarterly, half-yearly and annual reports on various cost matters including depreciation, cost of making new casks, repair costs, and the cost of cleaning casks. These reports were as the heading on each page suggests "Departmental Accounts"; and they were presented to, reviewed by, and endorsed by the Board. They were also a source of information for the main "Red Ledger[14]". These departmental accounts abound with detail – for example the quarterly accounts summary to June 1909 provides approximately 20 pages of detail.

In summary thus far, by about 1910 the Cooperage had detailed records of not only cask movements, but also of all costs associated with the manufacture and maintenance of casks. The latter were used to prepare detailed quarterly departmental accounts. All records mentioned thus far are (at least) artefacts of performative routines, as they reflect actions of staff in the Cooperage and other departments and these records meet the four essential characteristics of routines defined by Pentland (2011) as set out in Section 2 – see Table 2.

Routine criterion	*Basis for conclusion*
Repetitive	• Cask movements recorded from at least 1867 • Departmental accounts prepared from 1908/1909 financial year
Multiple actors	• Numbertakers • Cooperage staff • Audit Department staff • Board of Directors
Recognisable pattern	• Similar ledgers and reports kept each period (daily, quarterly etc.)
Interdependent	• Daily records of numbertakers summarised to cooperage cask ledger • Cask ledger in turn used as basis of cask inventory, depreciation calculations and other cost reports

Table 2 – defining management accounting routines in the Cooperage, circa 1910.

Table 2 presents a scenario in or around the financial year end of June 30th 1910, whereby there are clear indicators of management accounting routines[15] as evidenced through multiple and repetitive artefacts i.e. reports, ledgers, board minutes (Pentland and

Feldman, 2008, 2005; Feldman and Pentland, 2003). We could speculate that some of these routines may be encoded as rules (Quinn, 2011; Burns and Scapens, 2000) and the artefacts may also be reflecting rules - more detail on this is given below. However, Table 2 also reflects a detailed set of records, which can be used as proxy artefacts of ostensive routines, as all performative routines are guided by ostensive routines (Feldman and Pentland, 2003). Thus, at the point in time reflected in Table 2, it is possible to explore the interactions of rules and routines as envisaged by Quinn (2011) as the archival records reflect both ostensive and performative routines through artefacts. Rules may be present too, and we will now explore this possibility, but rules are not essential in the process of management accounting change as described by Quinn (2011).

4.2 Change to rules and routines - from internal and external sources

Burns and Scapens (2000) and Quinn (2011) argue that the on-going interactions of rules (if present) and the (ostensive/performative) routines can bring about management accounting change, which is the focus of this section. These same interactions can also promote stability, which is explored in the next section. Burns and Scapens (2000) outline two ways change can occur in taken-for-granted management accounting practices, and these are supported by Quinn (2011). First, the existing way of doing things can be "re-opened" (Burns and Scapens, p. 10) and, second, through external changes "such as advances in technology, or a take-over crisis" (*ibid,* p. 10).

As mentioned, the archival analysis conducted here focuses on the departmental records, accounts and reports of the Cooperage. While the St. James's Gate Brewery dates back to 1759, the earliest Cooperage records found date from 1867 – the cooperage cask ledger mentioned previously. While it is uncertain if such a ledger existed for the 108 years from~~since~~ 1759, the recording of daily movements of casks in and out of the brewery, and using such information for further reporting, is at this earliest date of 1867 a management accounting routine (see Table 2). Thus, the work presented here starts out with the assumption that management accounting routines existed before (written) rules, as suggested by Quinn (2011). This assumption is based on the fact that no artefacts could be found which matched the definition of a rule as set out earlier i.e. no standard procedure or similar document outlining how cask movements were to be recorded or reported on could be found in the archival records. This is not to say that management accounting routines will always precede rules (Quinn, 2011), but it at least provides a starting point for the analysis of the interactions of rules and routines. Some examples of management accounting change follows, traced through the interactions of rules and routines from about this time (1867) through to about 1968. In essence, the analysis follows the development and expansion of the Guinness company during this timeframe, which provides explanations for change to accounting within and around the Cooperage, and thus new rules and routines.

The first example of change in the Cooperage management accounting records concerned the depreciation of casks. A report from the Cooperage to C.D. La Touche (Assistant Managing Director), prior to the 1897 external audit, comments on recommendations of the auditors[16] from June 1895. The recommendation to La Touche was that a new "cask renewal account" be opened in the company's ledgers. This account would be debited with casks broken down[17] and credited with depreciation. Additionally, it was recommended that depreciation be calculated on value of casks at start of year (July 1st), with no depreciation charge on casks made in the current year. A copy of an Audit Office memorandum dated 7th August 1899 explains that the casks renewal account was indeed retained from 1896. Additionally, a pro-forma statement of how the new ledger accounts should be drawn up as from 1st January 1897 was present in the Cooperage's correspondence records. These artefacts (the Audit Office Memorandum and the pro-forma statement) portray the creation of a new rule, and also of an ostensive routine as they create a perception of what the routine is (Feldman & Pentland, 2003). The actual application of this new rule through to at least 1910 (as per Table 2) can be evidenced in the Cooperage records. This is the performative routine, which in this example closely followed the rule as set out by the external auditor. Given no evidence of substantial change in the artefacts (depreciation reports within the Cooperage records), the ostensive routine thus was reflective of the rule. In this example, the interactions of rules and routines follows a new rule, new routines (ostensive and performative) sequence, with the change being brought about by external factors (i.e. auditors).

A second example of change comes during the financial year ended June 30th 1909, when the Audit Office passed full responsibility for the calculation of cask depreciation and other reports to the Cooperage. This formal transfer of duties, as from June 30th 1909, is (later) recorded in a report entitled "Matters of Importance in the History of the Cask Department" which was sent by the Cooperage to the Company Secretary on June 13th

1913. During this first year of reporting by the Cooperage (1909), several documents detailing changes to depreciation methods and the organization of ledger accounts for the Cooperage were noted. For example, the Cooperage (departmental) accounts report for the quarter to 30th June 1909 documents changes in the useful lives of casks, which in turn affected the depreciation charge for the year. It is not clear why the Cooperage was charged with presenting its own departmental accounts from 1909. It may be due to increasing sales volumes and the associated work load this implied for the Audit Office – turnover increased by approximately one-third in the period 1900-1910 (Dennison & MacDonagh, 1998, p. 37). The expected nature and form of these departmental accounts was not evidenced in any documents reviewed, thus the Cooperage became effectively more independent in its accounting tasks. However, using the 30th June 1909 quarter as an example, the detail provided covers all elements of cost for running the Cooperage and the report extends to about 20 pages. Included in the detail are costs of manufacture, depreciation, repairs to casks, cleansing of casks – with each cost compared to prior quarters/year to date – as well as detailed notes and explanations for items of significance. Being responsible for its own departmental accounts entailed a formal line of reporting to the Board of Directors, which was evidenced in the form of Board Endorsements and/or Board Orders[18]. These were formal written ratification for various reports, courses of action and proposals brought by the Cooperage to the Board of Directors for approval. The archival records show that during the period 1909-1918, the Board of Directors received at least bi-annual Cooperage accounts and approved them by means of a Board Endorsement. For example, a Board Endorsement dated 3rd September 1913 accepts the Cooperage's explanation for a decrease in the cask depreciation for the 1913 financial year. The explanation given was "we are now passing through a period of heavy making and breaking down"; this implied lower depreciation as new casks were not depreciated in the first year and old casks (being "broke down") were fully depreciated. A later similar Board Endorsement dated 19th January 1915 authorises the depreciation charge for the financial year as calculated by the Cooperage. Several volumes of Cooperage records reflect this continued line and style of reporting to the Board until the early 1930's. The essence of the Cooperage accounts during this time remained quite constant, with some minor changes to the presentation and nature of content noted. This example shows two interactions of rules and routines as evidenced from these artefacts. First, the Cooperage continued to calculate depreciation on casks, which we have established previously as being formalised as a rule. Here, the Cooperage suggested and implemented changes to the depreciation methods from time to time, which the Board in turn formally recognised – thus an old rule/ostensive routine, new ostensive/performative routine[19] (Cooperage made the change and sought Board approval), new rule (formal Board Approval) interaction occurs. Once the Board approved any changes suggested, these were enacted and thus the ostensive and performative routines were reflected as rules. Second, the additional contents of the Cooperage departmental accounts reflect endogenous (i.e. internal) change. The detailed costs and explanations given in the accounts reflect the more autonomous role of the Cooperage from 1909. However, no evidence of rules was found during this time period (but see next example) as to the expected content of any accounts from the Cooperage. We can only assume that the expertise of those working within the Cooperage implied the creation of what ultimately became a routine of quarterly Cooperage accounts. In other words, the ostensive routine existed in their minds. And, as no evidence of substantial change was found at this time based on the artefacts, the ostensive and performative routines are deemed similar. Thus, the interaction of rules and routines ~~here is~~in this example follows an ostensive routine (a cognitive perhaps professionally grounded understanding of what to do), ~~then~~ (new) performative routine (repeatedly preparing the Cooperage accounts) sequence.

A third example of change was noted in the inter-war period, which according to Dennison & MacDonagh (1998, pp. 160 - 163) posed several issues for Guinness. First, a decline in sales was experienced in the period 1920-1927. The decline was brought about by 1) a relatively weak economy in post-war United Kingdom, 2) the relatively short life of the stout[20]. The latter issue was of great import as it prevented the expansion of export sales. Dennison & MacDonagh (1998) write:

> In 1921 there were many complaints, particularly from London, of bitterness and acidity. It was decided that the brewery had been holding too large stocks, that too long was elapsing between racking and shipment from Dublin, that the passage to London was taking too long, and that the cooling apparatus on ships was defective (p.163)
>
> […] in December 1922, McMullen [Brewer in charge of research] concluded that effective control was required to find out precisely which organisms were collected by the beer and their effects on its stability […] and use a sterile fermentation plant (pp. 163-164)

It cannot be determined with certainty if the declining sales and beer stability problems mentioned above prompted change within the Cooperage, but in 1924 Edward Peake[21] initiated changes in the way the Cooperage accounts were maintained. A memorandum from Peake dated 16th September 1924 to the Chief Accountant, Walter Philips, proposed as follows:

> I propose the cooperage account entitled "Cleansing Casks" in the Red Ledger [is] divided in our Cooperage books into several headings.

The Red Ledger was in modern terms the general ledger. The request above was made by Peake so that the Cooperage accounts could provide more detail on the cleansing of casks e.g. the memorandum above mentions that the cost of cleansing casks not only included the actual cleansing costs, but also "those for receiving, piling, unpiling and other work done in the Cooperage Yard". At the same time, Peake proposed to reduce the number of accounts for the Cooperage in the Red Ledger. A reduction from eight accounts to a single account (named Cooperage Department) in the Red Ledger was proposed by Peake in a second memo one day later. In essence, Peake proposed a control account in the general ledger for Cooperage costs, with the departmental accounts in the Cooperage retaining the detail. On 27th September 1924, an internal memorandum from the Cooperage to W.V. Cox (Manager, Cooperage, Victoria Quay[22]) notes the Board approved the changes as suggested. While eight accounts for the various Cooperage costs were to be maintained in the Cooperage departmental ledger, the memorandum states that a summary account (named Red Ledger account) will also be retained in the departmental ledger and that this will be checked quarterly with the Red Ledger balance. The changes commenced as from 1st January 1925, and a memorandum from Walter Phillips (Chief Accountant) dated 2nd January 1925 formally notes the change. Interestingly, this memorandum had been initialled by four persons and noted as returned, presumably indicating receipt of the document. In this example, the proposed changes were formalised first as a rule (the memorandum from Phillips). However, no Red Ledgers for this time were available to inspect during the time of this research, and thus it is not possible to verify how the rules were followed from January 1925, i.e. did the routines closely follow rules or not. A memorandum from the Cooperage to the Secretary dated 21st February 1928 suggests that the departmental accounts may not have been retained exactly as per the rules set in January 1925. In this memorandum, W.V. Cox remarks on the sale of old casks:

> […] we have been in the habit of asking for "old materials" to be credited with these sales, but it would now appear from your memorandum that the correct credit is "Cooperage Dept, Red Ledger.

It is not possible to fully ascertain how, from January 1925 to February 1928, an incorrectly labelled ledger posting may have occurred, but this does portray an example of rules not followed – that is, the ostensive and performative routines have been at variance to the rules, at least for the "old materials". However, if we assume the changes of January 1925 as set out in rules were applied in every other way, then the interaction of rules and routines in this ~~case~~ example follows a~~is~~ new rule/ostensive routine, ~~then~~ (new) performative routine~~s~~ sequence.

Fourth, the lead up to the opening of the Park Royal (London) Brewery in 1936 was a further source of change in the accounting records at Guinness, both within and without the Cooperage. According to Dennison and MacDonagh (1998), the idea of a brewery in the United Kingdom was first muted around 1913. The declining sales and stout life problems already mentioned, coupled with the 'Economic War'[23] between the United Kingdom and the fledging Irish Free State prompted a re-think of a United Kingdom brewery. The Park Royal Brewery opened in 1936 and reached full production about one year later (Dennison and MacDonagh, 1998, pp. 248-252). Based on several documents from the Cooperage, a number of changes to the internal accounting and reporting occurred at the St. James's Gate Brewery with a view to simplifying the accounting organization and replicating this simplified method of accounting in the Park Royal Brewery. An office memorandum dated 19th November 1934, issued following a meeting between Walter Phillips (Chief Accountant) and the Cooperage provides detail of the general thrust of the required changes:

> Mr. Phillips explained that it was proposed to try to simplify the accounts in Dublin and said that the accounts in Park Royal would be on the same lines as the simplified Dublin accounts. It is proposed to simplify the accounts by:
>
> 1. Reducing as far as possible the number of Departmental Accounts
> 2. Opening central accounts for certain items such as Beer and Scrip Allowances and Health etc., Insurance.
> 3. Not charging out certain Engineer and other Department charges, as is done at present. The suggestion is that each Department will bear the cost of the work that it does e.g. if the Engineers' Department do certain work for in the Cooperage, the cost of that work will be borne by the Engineers' Department.

A further comment on the same memorandum notes that some loss of information may occur as a result of the proposed changes.

> Mr. Phillips also pointed out that the Board were quite aware that if this scheme is adopted, figures showing costs which were available in the past will probably in the future not be obtainable. In such cases the Board will be quite prepared to accept an estimated figure.

Although the discussions surrounding these changes occurred around November 1934, the Board requested that changes be back-dated to the start of the financial year, i.e. 1st July 1934 and items (2) and (3) above were implemented and back dated to 1st July 1934. On 21st November 1934, J.G. Mann (Manager, Cooperage) outlined some proposals for the Cooperage accounts in a memorandum to Walter Philips (Chief Accountant), as well as some effects of the above mentioned proposals. Mann proposed to consolidate two of the eight ledger accounts (from 1925) in the departmental ledgers into one i.e. leaving seven accounts. Mann also estimated that the cost of making a firkin would decrease from 33/0 (£1.65 in decimal notation) to 31/6 (£1.58) due to the ceasing of inter-departmental charges from the Engineers' Department. The end result of these proposals was a re-drafting of the September 1934 quarterly accounts for the Cooperage (dated 4th January, 1935). And, in February 1935, the Audit Office issued a two page detailed memorandum to confirm what internal charges should be absorbed (or not) by departments. In terms of the interactions of rules and routines, in this example rules (in the form of the proposed/agreed changes, and the Audit Office memo) preceded routines – the latter being based on the redrafted quarterly accounts and subsequent quarterly accounts. The source of the change bringing about the new rule was external to the Cooperage, but yet internal to the organization – although arguably the ultimate source of change may have been the declining sales and the stout life issues referred to previously.

Example #	*Brief Description*	*Rules, routine interactions*	*Source of change*
1	Depreciation policy	New rule, new ostensive/performative routines.	External
2	Departmental accounts	A. Depreciation changes Old rule (Example #1) and ostensive routine, new ostensive/performative routine, new rule. B. Quarterly accounts Ostensive routine, (new) performative routine.	Internal
3	New ledger accounts	New rule, new routines –some evidence of routines varying from rules.	Internal
4	Simplification pre London brewery	New rule, new routines (ostensive and performative)	Internal, but driven by external business environment

Table 3 – summary of management accounting changes at the Cooperage to c. 1936.

4.3 Stability over time

As outlined thus far, there were several noted changes to management accounting at the Cooperage up to the mid- 1930's, which are summarized in Table 3 in terms of rules/routines interactions and the sources of change. However, the greatest change to the department (at least operationally) and the greatest change to the brewery was yet to come - a move from wooden to metal casks, or kegs. Files from the Cooperage show that kegs were being considered as early as October 1931, when representatives from Dansk Aluminium Industri AS visited the St. James's Gate Brewery. Later, on 8th November 1934, a memorandum from the Cooperage outlines a visit to the 1934 Brewers Exhibition in London. It was "from a cooperage point of view, a most disappointing exhibition", according to J. G. Mann (Manager, Cooperage). The reason for the disappointment was the obvious benefits of metal kegs as listed in the memorandum. Six clear advantages are listed with each 11 gallon keg priced at £2/10/0 (~~£2.~~50 shillings). In the Cooperage records examined after this date, this November 1934 memorandum prompted a chronology of reports and memorandums on the cost of metal kegs versus wooden casks. At this time, the cost or making wooden casks internally was as shown in Table 4:

Cask type	*Cost in Shillings (1896)*	*Cost in Shillings (1934)*
Butt (108 gallons)	43.6	173.4
Hogshead (54 gallons)	22.8	102.1
Barrel (36 gallons)	17.6	76.5
Kilderkin (half barrel)	12.1	48.5
Firkin (quarter barrel)	8.1	32.6

(Source: 1896 as Table 1, 1934 internal report "Manufacture of Casks (with the aid of machines)", September 1934)

Table 4 – cost of cask manufacture in 1934.

Although it was the late 1950's before metal kegs were more commonly used at the St. James's Gate Brewery – and the necessary plant changes had been made - even in 1934 it would seem that the metal keg was a viable option from a cost perspective. An 11 gallon metal keg could be purchased for 5~~3~~0 shillings, whereas a 9 gallon firkin cost 32.6~~3~~ shillings (as above). Although more expensive, metal kegs could be stored and transported more easily compared to casks. They also had a substantially longer useful life and lower repair cost than casks, and ~~This is not to mention savings from the reduction in staff numbers in the Cooperage, as well as~~ assisted overcoming previously mentioned sterility issues in the brewing process. Various trials of metal kegs at both the St. James's Gate Brewery and Park Royal Brewery continued until the second half of 1951. Cooperage cask ledgers showed movements of metal kegs alongside wooden casks from July 1951 at St. James's Gate, implying their use in daily trade. By March 1957, the last accessible cask ledger denoted approximately one-third of all casks were by now metal. In 1959, Draught Guinness as it is known today was first introduced and modifications to a sterile plant were in progress. By 1964, all that remained of the traditional cooperage was the sales of furniture derived from the now unused wooden casks. A detailed report dated 13th January 1965 entitled "Report on Cask Re-Equipment" gives the final case for kegs. The report outlines a capital expenditure programme for the years 1965 to 1968 to replace all casks with kegs and install an automatic racking system. The total outlay was £1.89m. Based on three possible investment options, the annual cost savings ranged from £253,000 to £339,000. Interestingly, this report was signed off by D.F. Strachan, Brewer in charge of the 'Container Department' – a signal that the Cooperage was a replica of the past.

While the introduction of casks certainly heralded an end for the Cooperage, as noted from the literature in Section Two, management accounting change and stability can go hand-in-hand. The archival analysis described in the previous section, combined with the timeframe of the changeover to metal kegs covers almost a century. Although examples of change are shown in Table 3, some elements of accounting for casks/kegs remained relatively stable throughout this whole period. In a former life as a trainee accountant in the early 1990's, the present author had the unenviable job of conducting a monthly stock-take at two public houses. From this experience, it is known that the invoices from breweries include a record of the quantity of kegs delivered as well as a kegs balance. In other words, breweries such as Guinness still maintained a detailed account of the quantity of kegs sent to and received from customers at that time. Although this research did not entail conducting interviews, for verification of fact, a query was posed through the Guinness archivist to determine the current processes around accounting for kegs. The replies were as follows, from a member of the logistics and sales department respectively:

> Today kegs are tracked on [our ERP[24]] using a mass balancing system. So we record which outlet we deliver kegs to and then when empties are collected we input them […] again as a return. But unlike the time of the wooden cask, we don't use the individual serial number on our stainless steel keg for our records (*Logistics Department).*
>
> Each keg still has an individual tracking number. This is imprinted as part of the physical keg. This tracking number is not recorded as it leaves the brewery or as it is delivered due to the sheer volume of kegs leaving on a daily basis – particularly as many are sent to other depots for further distribution. If a publican has an issue with a keg, be it taste or physical, this number is then tagged and tracked as part of the return, so that the lab may analyse and it can be taken out of the general keg population for repair if necessary. After the move to stainless the need for tracking kegs become less of an issue, as they are cheaper to repair and produce *(Sales Department).*

The responses above confirm that, in essence, at least part of the routines around accounting for cask/kegs have remained stable for more than a century since the incorporation of Guinness. That is, although the physical method of recording has changed from a handwritten ledger to a complex ERP system, the quantity of casks/kegs per customer has *always* been part of accounting in the Cooperage/Container/Logistics Department. As noted in the comment from the Sales Department, the decreased value of kegs was the primary reason for discontinuing the detailed tracking of kegs, at least from the point of view of recouping any cost of lost or damaged kegs from customers. Yet, the ability to track an individual keg remains and is useful in other non-accounting business areas. Taken with the earlier description of the cask ledger, the comments from the current Sales and Logistics staff depict relatively stable routines in accounting for returnables which date back at least a century. These routines were encompassed eventually by the present day information systems of the company i.e. they are rules, represented by programme code. Thus, it could be argued that the interactions of rules and routines in this final part of the story is; routines (as shown by the cask ledgers), rules (in the present day ERP or an earlier information system) and routines (present day accounting for returnables). Given that the returnables are now managed by an information system (with rules embedded as programme code), the ostensive and performative routines are likely to be similar.

5. Concluding remarks

The previous section described examples of change and stability in management accounting at the Guinness Cooperage, as conveyed through the interactions of rules and routines. At the outset, the aims of this study were to provide some empirical grounding for the key proposals of Quinn (2011) – namely that rules and routines can be unbundled and that rules need not exist. The unbundling is in particular contrast to Burns and Scapens (2000), who treat rules and routines as a combined unit of analysis in their framework - indeed they note their positioning of rules and routines in their framework as somewhat arbitrary (2000, p.10). If we reflect on the management accounting rules and routines of the Guinness Cooperage as shown in Table 3, we can see that in most cases written rules (as defined by Quinn, 2011) were formed to bring about change in the existing management accounting practices at the Cooperage – namely examples 1, 2A, 3 and 4. We can also see from the examples presented in Table 3 that sources of change to rules and/or routines can be both internal and external to the organization (Burns and Scapens, 2000).

Reflecting on the research objectives set out earlier, let us first consider Quinn's (2011) proposal that rules need not exist. In Table 3, example 2B (quarterly Cooperage accounts) supports this element of Quinn (2011) – that is, that rules are not necessarily *always* part of the process of management accounting change as originally set out by Burns and Scapens (2000) (see also Figure 1). In example 2B, a substantial change to management accounting occurred in that the Cooperage assumed responsibility for the preparation of departmental accounts. As noted, this responsibility "passed" from the Audit Office, but despite many volumes of detailed Cooperage records spanning from 1867, there is no evidence that the Audit Office actually prepared departmental accounts for the Cooperage in years prior to 1909. Nor was any written evidence of the expected or required content of the Cooperage departmental accounts found i.e. there was no rule as at 1909 for the Cooperage department to follow. Thus, without a rule, staff at the Cooperage used their ostensive understanding to prepare departmental accounts according to their needs and the needs of the Board. As this task was repeated many times, we can term it a routine (see also Section 2 and Table 3) and the ostensive routine guided the performative routine. Thus, as noted by Quinn (2011, pp. 345-346), rules are not necessarily part of the process of management accounting change (as in example 2B) and when rules are not present, the ostensive routine is drawn upon to guide actors (Pentland and Feldman, 2008, 2005; Feldman and Pentland, 2003). However, all other examples set out in Table 3 contradict Quinn's (2011) notion that rules need not exist. Indeed, example 1, 3 and 4 not only seem to portray change based on rules, but *new* rules. Thus, based on the evidence presented here, and the case on which Quinn's (2011) work is based (see Quinn, 2010), it would seem that rules *or* routines may be respectively more important in the processes of change in different organisations, and potentially should be considered separately by researchers.

This leads on to the second research objective, which is to explore whether or not rules and routines can be unbundled as suggested by Quinn (2011), i.e. that the concepts are best considered ontologically and empirically separate. Section 2 has, in effect, made this assumption in the methods used to determine how rules and routines can be interpreted from artefacts. The data conveyed in Table 3 suggests there is more than one 'starting point' in the interactions of rules and routines which eventually bring about management accounting practices. That is, rules and routines are separable and distinct concepts, and at a point in time are ontologically distinct. While this seems to contradict Burns and Scapens (2000) and support Quinn (2011), it is possible that over time, rules and routines will become similar and indistinguishable, and for empirical research purposes can be bundled as envisioned by Burns and Scapens (2000). However, unbundling rules and routines may carry some import for empirical management accounting research. Due to the archival nature of the present research, it is not possible to determine with absolute certainty that the starting points of rules/routines shown in Table 3 are correct. Despite this, it is proposed that understanding the starting point in rule and routine interactions will assist the interpretation of processes of management accounting change (and stability) as originally set out by Burns and Scapens (2000). For example, the simplification of the Cooperage accounts in advance of the opening of the London brewery began with a new rule. This rule carried with it the power of the Board and was as such more likely to be implemented and eventually become a routine. Similarly, if a routine has been enacted and stable for quite some time, it is more likely to remain stable over time as it becomes taken-for-granted – as in the case of the controlling of cask/kegs – and eventually encompassed by rules. An obvious question for future research is what are the factors which cause rules or routines to be relatively more important in organisations, and thus in their processes of change. For example, the Guinness company may be historically considered a more formalised organisation, at least in an Irish context, thus implying the organisation functioned along clear lines of authority and power structures and would be more likely to be rules-based.

In addition to the examples of change to management accounting at the Cooperage cited in Section Four, the story of stability of management accounting practices around returnable casks/kegs is worthy of further mention. The management accounting associated with controlling casks/kegs – recording movements and inventory – has not in essence changed from the 1870's to the present day. It could be argued that this routine *has* changed in that, for example, 1) it is now computerised, not in handwritten ledgers and, 2) the level of detail has been reduced from tracing each cask by customer to tracing in a pooled fashion (see Section 4.3). It could also be argued that this routine *has not* changed and been quite stable over time. Using the four defining characteristics of a routine as outlined by Pentland (2011) (see Section Two), the routine meets these characteristics whether we consider it to have changed *or* remained stable over time. It can be argued that the patterns of action underlying the routine (see also Pentland et al., 2010) have changed over time, but to be a routine, only a *general* pattern is required. Thus, here it is proposed that management accounting routines around controlling cask/kegs have *not* changed in a century or more, as the general pattern described by the Sales and Logistics staff today is similar to those in the past. To relate this argument to the work of both Quinn (2011) and Burns and Scapens (2000), their work does not address the degree to which rules and routines may be become institutionalised i.e. how taken-for-granted they are. Arguably, without the extended timeframe permitted by the archival analysis here, this steadfastness of routines may have gone unnoticed. Based on the evidence at Guinness, it would appear that some management accounting routines within the Cooperage are more ‘sticky’ over time, or potentially closer to the institutional realm as denoted by Quinn (2011) and Burns and Scapens (2000). Although the actions undertaken by actors (performative routine) for the controlling/recording of casks/kegs has varied over time i.e. moved along the action realm of Quinn (2011)/Burns & Scapens’ (2000) framework over time, arguably the ostensive routine remained in a ‘time warp’ along the institutional realm i.e. it did not change over time. To put this another way, there is both stability and change in the same routines over time. It could also be argued that the ostensive routines for controlling cask/kegs at Guinness (i.e. an understanding of what should be done) have not changed, but the performative routines have (i.e. how we do it). Recent work by Vromen (2011) suggests routines can be construed as multi-level mechanisms. Briefly here, this strand of research suggests routines can be construed as both a whole and constituent parts (Vromen, 2011, p.183). Thus, for example the ‘whole’ controlling of casks/kegs has remained stable over time, but the ‘parts’ of the routine (i.e. the various patterns of action) may have changed over time (see also Pentland et al., 2012, 2010). The issue of management accounting routines in particular being both stable and changing over time is one which is not fully addressed here, or by Burns and Scapens (2000)[25] or Quinn (2011), and is worthy of further research.

There are a number of limitations to the research presented here. First, the work is based on the records of a single organization and thus findings here may not be generalizable. In particular, more studies of the interactions of management accounting rules and routines are needed to support or challenge the findings presented here. In particular, research in understanding why rules or routines in management accounting take on more importance in organisations would be welcome. Recent literature on routines in particular as mentioned here will aid researchers identify routines more easily. Rules, on the other hand, have received less attention in the literature. Second, as noted by Johansson and Siverbo “institutions and routines cannot be observed, only the artefacts” (2009, p. 150). While every effort has been made here to extract the rules and routines from the artefacts (see Section Three), this research is not a definitive substitute for actual observations of behaviour or questioning organizational members. The interpretations of the artefacts presented here cannot be absolutely certain without input from actors who performed the routines. Third, although the archival records have been excellently catalogued, well maintained and meticulously examined, it is not possible to be absolutely certain that *all* elements in the processes of change depicted here have been recorded over time. Fourth, it could be argued that archival research does not sit well with researching phenomena such as rules and routines as they are better studied through observation and direct enquiry. However, as noted by D'Adderio (2011), artefacts are a central component of routines and are often utilised in the study of routines (see also, Pentland and Feldman, 2008). Finally, although the data from the Guinness Cooperage provides a rich story of management accounting change over an extended time period, the period adopted is reflective of a time when many records were hand-written or typed. While it is interesting that – see example 2B, Table 3 – formal (and written) rules were not always present at the Cooperage, in today's business environment many management accounting tasks are captured, processed and stored by information technology as opposed to written or typed by hand. This research does not address the impacts of technology on rules and routines in any way. For example, Volkoff et al. (2007, p. 839) propose the concept of material routines which are "organizational routines embedded in the ES [Enterprise System] in the form of system-executed transactions - sets of explicitly defined steps that require specific data inputs to automatically generate specific outcomes". Following the logic of Quinn (2011), these material routines would in fact be rules (see also, Oliveira and Quinn, 2012). More research in a contemporary environment may be fruitful in teasing out how technology encapsulates and/or interacts with management accounting rules and routines, and ultimately affects the processes of change/stability in management accounting practices as set out by Burns and Scapens (2000) and Quinn (2011).

To sum up, this paper has provided some evidence in support of the work of Quinn (2011), but also contradicts some of his findings. It has been shown that rules are not necessarily a component of management accounting change/stability; whereas routines appear pervasive in this same process. However, rules also proved to be the starting point of what eventually became routines at Guinness. Thus, rules and routines are separable concepts, and both separately may help us interpret management accounting change. By unbundling rules and routines, and considering the latter in more micro-components as set out by Feldman and Pentland (2003) (see also, van der Steen, 2011), it may be easier for researchers provide a richer and more detailed understanding of the processes of management accounting change than originally envisaged by Burns and Scapens (2000). Understanding too, through future research, why rules and/or routines may be relatively more important in the processes of management accounting change may further underpin the overall picture of change painted by Burns and Scapens (2000). However, one potentially interesting factor is not present in the current research, nor in Quinn (2011) or Burns and Scapens (2000) - namely, information technology. Research on the interactions of rules and routines within and without technology is likely to prove very fruitful and add to the present and extant research on understanding management accounting change and stability which adopts concepts such as rules and routines.

References

Amat, J., Carmona, S., Roberts, H. 1994, "Context and change in management accounting systems: a Spanish case study", *Management Accounting Research*, vol. 5, pp. 107-122.

Becker, M. (ed.) 2008, Handbook of Organizational Routines, Edward Elgar, Cheltenham.

Becker, M. 2005, "The concept of routines: some clarifications", *Cambridge Journal of Economics,* vol. 29, no. 2, pp. 249-262.

Becker, M. 2004, "Organizational Routines: a review of the literature", *Industrial and Corporate Change,* vol. 13, no. 4, pp. 643-677.

Birnholtz, J., Cohen, M., Hoch, S. 2007, "Organizational Character: on the regeneration of Camp Poplar Grove, *Organization Science,* vol. 18, no. 2, pp. 315-332.

Burns, J. & Scapens, R. 2000, "Conceptualising management accounting change: an institutional framework", *Management Accounting Research,* vol. 11, no. 1, pp. 3-25.

Chandar, N., Collier, D., Miranti, P. 2012, "Graph standardization and management accounting at AT&T during the 1920s", *Accounting History*, vol. 17, no. 1, pp. 35-62.

D'Adderio, L. 2011, "Artifacts at the centre of routines: performing the material turn in routines theory", *Journal of Institutional Economics,* vol.7, no. 2, pp. 197-230.

Dawson, P. 2003, *Reshaping Change: A Processual Perspective,* Routledge, London.

Dawson, P. 1994, *Organizational Change - A Processual Approach,* P Chapman Publishing, United Kingdom.

Dennison, S., MacDonagh, O. 1998, *Guinness 1886-1939 – from incorporation to the Second World War*, Cork University Press, Ireland.

Dillard, J., Rigsby, J. & Goodman, C. 2004, "The making and remaking of organization context - duality and the institutionalization process", *Accounting, Auditing and Accountability Journal,* vol. 17, no. 4, pp. 506-542.

Feldman, M. & Pentland, B. 2003, "Reconceptualising organizational routines as a sources of flexibility and change", *Administrative Science Quarterly,* vol. 48, pp. 94-118.

Funnell, W. 1996, " Preserving history in accounting: seeking common ground between "new" and "old" accounting history", *Accounting, Auditing & Accountability Journal*, vol. 9, no. 4, pp. 38 – 64.

Gomes, D., Carnegie, G., Rodrigues, L.2008, "Accounting change in central government: The adoption of double entry bookkeeping at the Portuguese Royal Treasury (1761)", *Accounting, Auditing & Accountability Journal*, vol. 21, no. 8, pp. 1144 – 1184.

Hassan, M.K. 2005, "Management accounting and organizational change: an institutional perspective", *Journal of Accounting and Organizational Change,* vol. 1, no. 2, pp. 125-140.

Jackson, W., Paterson, A., Pong, C., Scarparo, S. 2012, " 'How easy can the barley brie': Drinking culture and accounting failure at the end of the nineteenth century in Britain", *Accounting, Auditing & Accountability Journal*, vol. 25, no. 4, pp. 635 – 658.

Johansson, T., Siverbo, S. 2009, "Why is research on management accounting change not explicitly evolutionary? Taking the next step in the conceptualization of management accounting change", *Management Accounting Research,* vol. 20, no. 2, pp. 146-162.

Lazaric, N. 2008, "Routines and routinization: an exploration of some micro-cognitive foundations", in M.Becker (Ed.), Handbook of organizational routines, pp. 205–227, Edward Elgar, Cheltenham.

Lukka, K. 2007, "Management accounting change and stability: loosely coupled rules and routines in action", *Management Accounting Research,* vol. 18, pp. 76-101.

Miller, P., Hopper, T., Laughlin, R. 1991, "The new accounting history: an introduction", *Accounting, Organizations and Society*, vol. 16, no 5/6, pp. 395-403.

Noguchi, M., Boyns, T. 2012, "The development of budgets and their use for purposes of control in Japanese aviation, 1928-1945: The role of the state", *Accounting, Auditing & Accountability Journal*, vol. 25, no. 3, pp. 416 – 451.

Ó hÓgartaigh C., Ó hÓgartaigh M. 2004, "Accounting and Corporate Governance Archives in Ireland", *Irish Accounting Review*, vol. 11, no. 1, 19-32.

Oliveira, J., Quinn, M. 2012, "Re-thinking and re-balancing rules and routines: a framework on institutionalization processes in management accounting", *10th Interdisciplinary Perspectives on Accounting Conference,* July 11-13, Cardiff, UK

O'Regan, P. 2010, "'A dense mass of petty accountability': Accounting in the service of cultural imperialism during the Irish Famine, 1846–1847" *Accounting, Organizations and Society,* vol. 35, pp. 416-430.

Pentland, B. 2011, "The foundation is solid, if you know where to look: comment on Felin and Foss", *Journal of Institutional Economics*, vol. 7, no. 2, pp. 279 -293.

Pentland, B., Feldman, M. 2008, "Issues in field studies of organizational routines" in *Handbook of Organizational Routines*, ed. M. Becker, pp. 281-300.

Pentland, B., Feldman, M. 2005, "Organizational routines as a unit of analysis", *Industrial and Corporate Change,* vol. 14, no. 5, pp. 793-815.

Pentland, B, Feldman, M, Becker, M, Liu, P. 2012, "Dynamics of organizational routines: a generative model", *Journal of Management Studies,* vol. 49, no. 8, pp. 1484-1508

Pentland, B., Haerem, T., Hillison, D. 2010, "Comparing organizational routines as recurrent patterns of action", *Organization Studies,* vol. 31, no. 7, pp. 917-940.

Pettigrew, A. 1997, "What is processual analysis?", *Scandinavian Journal of Management,* vol. 13, no. 4, pp. 337-348.

Pettigrew, A. 1990, "Longitudinal field research on change: theory and practice", *Organization Science,* vol. 1, no. 3, pp. 267-292.

Pettigrew, A. 1987, "Context and action in the transformation of the firm", *Journal of Management Studies,* vol. 24, no. 6, pp. 649-670.

Quinn, M. 2011, “Routines in Management Accounting research: further exploration”, *Journal of Accounting and Organizational Change*, vol. 7, no. 4, pp. 337-357.

Quinn, M. 2010, *Continuity and change in management accounting - evidence from the corrugated container sector*, unpublished thesis, University of Dundee, Dundee.

Ribeiro, J. & Scapens, R. 2006, “Institutional theories in management accounting change: Contributions, issues and paths for development”, *Qualitative Research in Accounting & Management,* vol. 3, no. 2, pp. 94-111.

Riccaboni, A., Giovannoni, E., Giorgi, A., Moscadelli S. 2006 “Accounting and power: evidence from the fourteenth century”, *Accounting History,* vol. 11, no. 1, pp. 41-62.

Robertson, J., Funnell, W. 2012, “The Dutch East-India Company and accounting for social capital at the dawn of modern capitalism 1602–1623”, *Accounting, Organizations and Society,* vol. 37, pp. 342-360.

Romeo, G. Rigsby, J. 2008, “Disseminating professionalism: the influence of Selden Hopkins on the USA accounting profession” *Accounting History*, vol. 13, no. 4, pp. 415-450.

Schulz, M. 2008. “Staying on track: a voyage to the internal mechanisms of routine reproduction” in M.Becker (Ed.), *Handbook of Organizational routines,* pp. 228–255, Edward Elgar, Cheltenham.

Scott, J. 1990, *A matter of record – documentary sources in social research*, Polity Press, Cambridge.

Stene, E. 1940, “An approach to the science of administration”, *American Political Science Review*, vol. 34, no. 6, pp. 1124 – 1137.

Siti-Nabiha, A.K. & Scapens, R. 2005, “Stability and change: an institutionalist study of management accounting change”, *Accounting, Auditing and Accountability Journal,* vol. 18, no. 1, pp. 44-73.

Soin, K., Seal, W. & Cullen, J. 2002, “ABC and organizational change: an institutional perspective”, *Management Accounting Research,* vol. 13, no.2, pp. 249-271.

Spraakman, G. 2006, “The impact of institutions on management accounting changes at the Hudson’s Bay Company”, *Journal of Accounting and Organizational Change,* vol. 2, no. 2, pp. 101-122.

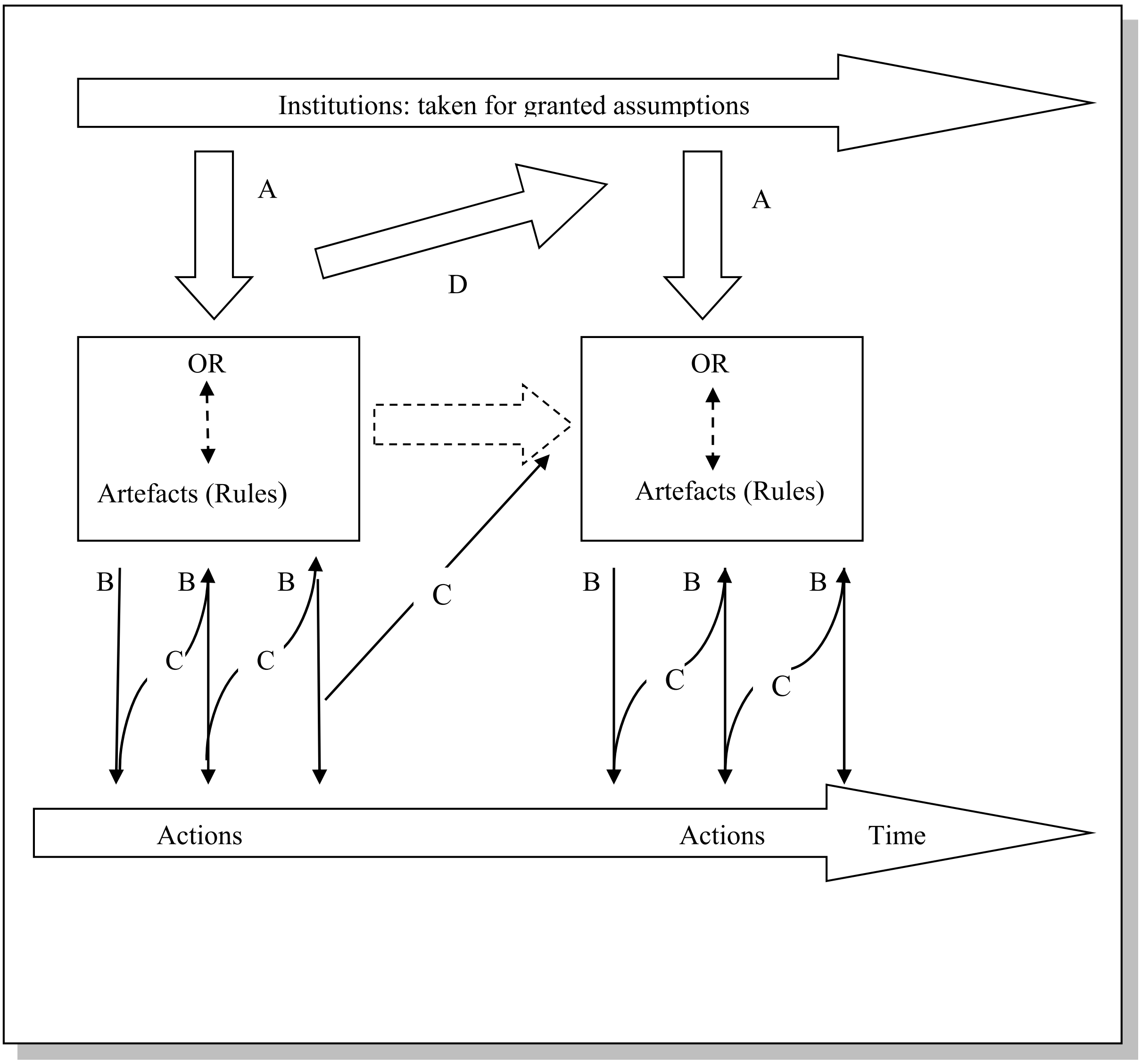
van der Steen, M. 2011, “The emergence and change of management accounting routines” *Accounting, Auditing and Accountability Journal*, vol.24, no. 4, pp. 502-547.

van der Steen, M. 2009, “Inertia and management accounting change”, *Accounting, Auditing & Accountability Journal*, vol. 22, no. 5, pp. 736-61.

Volkoff, O., Strong, D. M., Elmes, M. B. 2007, Technological Embeddedness and Organizational Change, *Organization Science*, vol. 18, no. 5, pp. 832-848.

Vromen, J. 2011, “Routines as multilevel mechanisms”, *Journal of Institutional Economics*, vol. 7, no. 2, pp. 175-196.

Figures



A = encoding
B = enacting of performative routine
C = repetition of performative routine in time and space
D = institutionalization

Figure 1 -The institutionalization of management accounting practices Quinn (2011)

---

[1] Burns and Scapens did not state that rules *must* be written, although they do convey rules as being "formal" and "set out in procedures manuals" (2000, p.7)
[2] Quinn (2011) although conceptual in nature, is derived from a case study (see Quinn, 2010). In the case, management accounting was not formalised in a written way, thus prompting a re-visit of the interactions of rules and routines at a conceptual level.
[3] Some more recent examples of such studies include Chandar et al., (2012), Noguchi and, Boyns, (2012), Robertson and Funnell (2012), Jackson et al. (2012), O'Regan (2010). These studies are a representative example and there are many more such studies to be found in the general accounting and specific accounting history journals.
[4] Fewer archival studies have been done in management accounting using rules and routines and/or similar concepts, but see Riccaboni et al., 2006 and Spraakman 2006.
[5] "Routines" should be understood in the normal sense of the word here.
[6] The term "cask" is typically associated with wooden beer barrels, whereas kegs refer to sterile metal barrels.

[7] Available at http://www.diageo.com/en-row/investor/Pages/financialreports.aspx [accessed 16 September, 2011]
[8] Diageo plc. was formed in 1997 when Guinness plc. and Grand Metropolitan plc. merged
[9] This report was the earliest accessible report which provided this information
[10] Additionally, for each fully skilled cooper, two labourers were employed. Thus the total employee numbers in the cooperage was closer to 900.
[11] Cooperage records also show that numbering system was also used in resolved quality issues.
[12] This term refers to male employees in the 14 to 17 year age range.
[13] See http://www.guinness-storehouse.com/en/History.aspx#y1963 [accessed 21 September, 2011]
[14] Based on evidence from Board minutes and the Cooperage ledgers, the Red Ledger seems to have been the equivalent of a nominal ledger in modern terms. Several instances of figures "agreeing with the Red Ledger" were noted. However, no examples of the Red Ledger remain.
[15] This date is not necessarily an important date in the company's history, nor is it the starting point for this research. It is however a useful point in time to confirm the existence of management accounting routines.
[16] Turquand, Young & Co, London.
[17] Broken down casks may have been re-used, in part, to repair other casks.
[18] A Board Endorsement implies the Board of Directors approved a particular document or report by initialling or signing it. A Board Order was a written communication of a decision taken by the Board of Directors.
[19] It could be argued, quite correctly, that there is no new routine as repetition is not present at this point in time e.g. the Cooperage calculated depreciation a new way once and presented this to the Board for approval. However, as the Board subsequently approved changes and these were repeated it is deemed a routine.
[20] The short life of stout at this time was a direct result of the reduction in the ~~gravity~~ alcohol content of the beer imposed by government during World War I. Due to barley restrictions during the war, the UK government decreed that beers should be brewed to a reduced ~~gravity (reduced~~ alcohol content~~)~~ and this had a direct impact on the shelf life of the beer.
[21] Edward Gordon Peake joined the company in 1899 as brewer. In the 1920's, he was manager of the Central Office, Victoria Quay, Dublin which was the main distribution point at that time.
[22] Victoria Quay refers to a quay alongside the River Liffey, which was close to, but separate from the main St. James's Gate buildings.
[23] The Anglo-Irish trade war began in 1932 when the then government of the Irish Free State embarked on a protectionist policy, introducing tariffs on a wide range of imports. The UK government responded with like tariffs, which increased the cost of Guinness imports.
[24] The ERP name has been removed for confidentiality.
[25] Their work does note several times that change and stability are part of the same process.