MULTIPLICITY OF PERFORMANCE MEASUREMENT SYSTEMS[1]

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In modern organizations there is a strong emphasis on managing by numbers, as part of an approach to management that emphasizes 'facts' and evidence, particularly quantified facts (Locke 1996; Porter 1995; Rose 1991, Chua, 1996). This emphasis on facts, numbers and quantification is pervasive, and leads to what has been refered to as 'a numerical view of work and management' (Martinez Lucio & MacKenzie, 2004). The implications for accounting of managing by numbers have been most clearly articulated by Bob Kaplan. Among his many works, Kaplan (1983) stressed the importance of accounting collecting facts about manufacturing operations, Johnson and Kaplan (1987) and Cooper and Kaplan (1996) called for changes in cost systems to make cost information more meaningful and factual, and, most recently, Kaplan and Norton (1996, 2001, 2004) articulated the Balanced Scorecard to facilitate quantified, fact based, strategic management.

The appeal of managing by numbers has not been widely examined, yet it is a pervasive social phenomenon, and accounting is a fundamental element of this management approach. As Porter (1995) observes, why should quantification, widely regarded as associated with the successes of science, be seen as applicable to the world of management, where people are often seen as crucial in getting tasks done? Most explanations seem either technocratic or functionalist, assuming that quantification must be the best way, or is inevitable. Such explanations beg several important questions since quantification is a human invention, which gains its significance and legitimacy because it is assumed to be effective. It is a powerful faith, a belief that is often challenged by the experience of managing in a complex world. There are always significant problems in attempting to manage by numbers, most notably how to incorporate the organizational and behavioural context and to seriously consider values and

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morality (Ezzamel et al 1990; Cooper and Ezzamel 2004). Many managers recognize that important aspects of work can be measured only very imprecisely, and can lead to what Hopwood refers to as biased information and management action (1974). The problem is that managing by numbers is such a strong ideology that it affects not just managers' actions, but also their way of seeing the world. Like ideology in general, a way of acting and seeing is also a way of not seeing or acting.

Porter (1996) offers a number of case studies of how specific technologies of measurement developed and became important in Western societies. Similarly, studies that apply the governmentality approach, particularly the one that discusses rationalities, programs and technologies of governmentality (Rose and Miller, 1990) tends to focus on societal level illustrations. Other than a few notable exceptions (Preston et al, 1992; Miller and O'Leary, 1994, Oakes et al, 1998; Radcliffe, 1998; Ezzamel et al, 2004; Ezzamel and Burns, forthcoming), we know little about how specific programs and technologies interact with one another, and with how the general trends discussed by Porter and Miller and Rose, and others, get played out in specific settings. We regard 'managing by numbers' as a rationality of management, performance measurement as an associated program, and that there are multiple measurement systems that are potential, and possibly competing, management technologies for effecting the performance measurement program.

This paper examines how multiple performance measurement systems interact among themselves, and how they interact with other systems of management. Our empirical study in a European based multinational corporation is an opportunity to examine the interactions, competitions and coherencies between these measurement systems. In doing so, we have found the sedimentation metaphor (Clegg, 1979; Cooper, Brown, Greenwood & Hinings 1996; Mehrotra, Hinings, Cooper and Greenwood, 2005) to be useful. Management innovations, such as a new performance measurement system, rarely enter an organizational vacuum. A new management technology is inserted into existing organizations and management systems. It affects and is affected not just by other, previously inserted, measurement systems, but also by pre-existing traditions of management (e.g., those that rely on less formalization, family relations, intuitive understandings and experiences of managers). These pre-existing traditions of management may themselves include other measurement systems, accounting measures and statistical data. While it is typically assumed the introduction of new management technologies removes all traces of previous systems or operates on a blank organizational space, our empirical work indicates that new systems face a multiplicity of pre-existing and competing systems. Sedimentation refers to the layering, erosion, conflicts and discontinuities ('eruptions') that can arise when multiple management systems and traditions confront one another.

To make sense of the relays and assemblages that come into play as one management technology confronts other systems and ways of managing, that is, how and why measurement systems are sedimented into existing systems and traditions, we use actor network theory (ANT, also referred to as the sociology of translation - Law and Hassard 1999). ANT highlights the crucial role of human- technology interaction in building social networks of support for specific management changes. Technologies (including technologies of management) are only as robust and secure as the networks that support them (Latour 1987), and these networks may be overt (when power is visible and exercised) or unseen (when the technologies are taken for granted and institutionalised) (Latour 1986). Further, technologies, such as specific performance measures, are continually in competition with alternative technologies, such as other measures and measurement systems; struggles for ascendancy are also exercises and the effects of power.

Managing by numbers obtains part of its appeal from the value of quantification in science. ANT is a particularly appropriate approach to studying managing by numbers since the approach developed in studies of 'science in action', particularly field studies of what scientists really do. ANT was developed to explain how scientific claims, instruments and technologies are developed, used and become taken for granted (Latour 1987; Bijker et al 1987). Using the idea that science develops through a network of actors, with successful claims and technologies enrolling the support of powerful actors (who may be people, ideas or things), ANT has been applied to understanding laboratory life (Latour and Woolgar 1979), the management of science (e.g., Law's study of the impact of performance measures in science laboratories, 1994), the development of various technologies (Latour 1987, 1999), and processes of visualization and inscription (Latour, 1992). This theory, which offers a constructivist approach to social life, has also been applied to managerial technologies such as budgets and costing systems (Preston et al 1992; Bloomfield et al 1992) and the study of the spread of management ideas and knowledge (Bloomfield and Best 1992; Mouritsen 1999; Jones and Dugdale 2002; Carmona and Guiterrez 2003). The theory is central to developments in theories of power (Clegg 1989), and, by focusing on how networks become stabilized, ultimately explains how order is created in organizations and industries (Kurunmaki 1999). It can be contrasted with diffusion theories (Abrahamson 1991, 1996) since ANT stresses the way that techniques and ideas change and are adapted as their proponents seek to stabilize them and get them accepted and used.

Central to ANT is the idea that new technologies are rarely fixed. It examines how techniques of management (such as performance measurement systems) are used by managers in diverse and flexible ways. Eventually, these techniques may become fixed and taken for granted, not because they are intrinsically stable, but because the network of actors sees them as stable; this is the operation of power - stabilizing networks of support and producing shared understandings of the uses of a technique. Our interest is in how managers construct the techniques and

measures, how they implement the diverse ideas of organizational reform, and how specific systems compete for attention.

Our empirical site provides the opportunity to explore the interaction between multiple measurement systems within the context of a global organization. This provides an important further component of our study: the interaction between local and global management. Since Bartlett and Ghoshal (1998), there have been numerous studies of multinational and transnational firm management. As Berlanger and Bjorkman (1999) point out, much of this literature is little more than the wishful thinking of managers. Yet there is emerging an important body of literature that more critically examines the role of multinationals in globalizations processes, particularly local- global interactions. Most notable in terms of a careful analysis of the relations between the centre and local units is Kristensen and Zeitlin (2005), who offer a careful discussion of the role of Anglo- American multinationals in globalization. Their broad analysis of three local plants in a multinational attempting to produce a consistent and coherent strategy parallels Bartlett, Cooper and Jamal's (2005) study which examines how global projects are coordinated within a multinational professional service firm. Such detailed studies of multiple units can usefully be augmented by more micro studies of 'presencing': the process by which managers can appear to be present in organizational places where they are physically absent, either in local units (for managers from HQ) or at HQ (for managers in the local units). Goddall and Roberts (2003a and b) examine how managers can act across distance, and their study emphasizes the problematic nature and struggle to achieve organizational coherence. The idea of a global- local dialectic runs through each of these studies and can usefully be applied in our study.

The rest of the paper is structured as follows. After a brief review of our research methods, we provide a history of the multinational that we examine, particularly two UK sites. This is followed by an outline of the multiplicity of measurement systems in place in this organization at the time of our study, between 2003 and 2005. We then proceed to the core of our analysis, using the theoretical ideas introduced previously to explain the interactions between the measures. A conclusion rounds off the paper.

METHODS

This paper is based on a field study in two units of a European multinational. While our initial focus was on the spread of the Balanced Scorecard (BSC) and a managing by numbers culture across units within the firm in order to analyze how the BSC and a managing by numbers culture are impacted by national and professional traditions, we were struck by the multiplicity of

measures within these units and their mutual interaction. The two units chosen are production and sales units of one division.

Our general focus is on how management by numbers is produced and how its specific form is shaped by use and the interaction with other measures and measurement systems. We adopt a qualitative research methodology (Denzin and Lincoln, 1994), but one where theory is a crucial orientating framework that helps guide both data collection and analysis (Silverman, 1985). Accordingly we use the organizing frame of ANT, with important elements of institutional theory, the sedimentation metaphor and the notion of a global- local dialectic, to make sense of, and structure, our 46 interviews with relevant employees from different units and varying organizational levels. The precise content of the interviews varied depending on the experience and background of the subject, but interviews typically lasted about 90 minutes, were tape recorded and transcribed. QSR's N6 qualitative data analysis program was used to organize and analyze the interviews.

Our case study also examined numerous internal documents and generic descriptions of the various performance measurement systems found within the firm. For reasons of confidentiality, the firm and its internal documentation must remain anonymous. However, some of the measurement systems used in our multinational are somewhat generic, and hence we refer to them by name.

HISTORICAL BACKGROUND

Global is a major multinational corporation whose headquarters are located in a European country, employs nearly half a million employees and has a turnover of over £50 billion. The Group identify three key steps to its success: goals (increasing EVA, optimizing customer benefits, identifying right goals, deriving individual goals), measures (implementing business-specific measures, applying systematic best practice, developing staff), and consequences (monitoring and measuring success, offering incentives, applying sanctions) (Internal Document). It is now organized around several major divisions, including the Electronics Division that has nearly 70 factories dotted all over the world. We focus on two units within the Electronics Division in the UK. Electron manufactures standardized, low complexity products, employs about 400 people and has a turnover of approximately £50M. Sales markets and sells a wide range of electronics products (including, but not limited to the items produced by Electron), employs over 600 people, and has an annual sales volume of between £100M and £200M.

The manufacturing plant, Electron, began as a manufacturing facility and as a sales office. In the

1980s, Electron was a very healthy business, but as its major customer began to shop around for the cheapest supplier, Electron was left with sizeable spare capacity. The management of Electron set about to find ways to make use of its spare capacity, and develop a more viable product range. Its diversified into subcontracting, which for several years expanded to outgrow the core product. This, however, led to the intervention of Global who decided to “pull the plug and say: ‘Look you know it’s great but it’s not where we want to go as a business, we’re not a subcontractor for anybody else, you know we make product” (Electron manager). One Senior Manager suggested that “The role of the workshop was not to make money, it was to break even, sales were there to make the money”, and the break even occurred only when the plant had “a good year”.

The intervention of the parent company led to the reconfiguration of Electron as a ‘factory’, attached to a large manufacturing division with the mission to develop a “world centre of competence” in standard electronic products. Electron was to focus on high volume, low complexity products since it had available capacity and the expertise gained while working as a subcontractor. This decision was taken by Electron staff as a major positive signal “To get that factory volume was quite a big thing for us and really the story has been a roller coaster from then on.” (Electron manager). By the early 1990s, a radical renovation of the site took place. As one plant manager stated “What we have done now is completely renovate the whole building from what was in a sense a basic metal bashing activity into now a very high tech, clean environmental assembly area.” The same site also comprises a design department of 35 staff and after sales of 12 staff, all with a solid reporting line to HQ and a dotted line to the Electron General Manager, in the quest to achieve cohesion and synergies.

In the late 1990s, Electron was designated a semi-independent business and given increased scope for autonomous action for two years. During this short period, Electron turned in very good results, reaching £5M return to HQ in one year as the plant had control over not only manufacturing, but also sales, design, and marketing and it managed to function “like clockwork” (Electron manager). However, HQ decided to centralize the sales function, which took Electron “back again into the days of the factory with the design activity attached” (Electron manager). This reorganization was prompted by difficulties faced by one of the other major divisions of Global, where HQ decided to pool services for functions such as sales internationally. At the same time, HQ began to ‘manipulate’ the transfer (sales) price “then they started playing around with top-down pricing from list price down to the [Electron] factory price and we had a situation where we had some products where we made money and some products where we didn’t make any money. And the mix of that business volume was totally dependent upon that product mix as to how successful [Electron] was” (Electron manager). These consequences of reorganization, exacerbated by the continuing exchange rate problem negatively impacted the results of

Electron, prompting HQ to issue an ultimatum that unless Electron turned these figures around, it would be shut.

Managers recalled that period as one during which employees lacked any sense of ownership in the plant, and management had no strategic vision, nor even careful plans for production scheduling. One Manager (manager) stated “We were a factory where the workforce didn’t really have any real ownership. So you’d got a situation where you had people on the shopfloor who probably had no real sense of ownership to where we were going, there was no real mission statement, there was no real vision, no real strategy.” Further, while Electron’s products had willing customers, the plant over-produced in the quest of achieving productivity “We were saying, right in order to achieve certain productivity we’ve got to manufacture so many” (manager). This production plan brought two immediate costs upon the plant. First, when there was a downturn in sales, Electron was left with “a massive risk” because the design was not stable, as the design staff would at times discover a software problem with some customers, hence this would have to be corrected not only by recalling back these products from customers, but also by having to make the necessary corrections in all units of inventory left over.

Electron’s senior management recognized the seriousness of the situation, for with the difficulties mentioned above the pressure seems to have always been placed on manufacturing to do better: The pressure has always come back on the factory, ‘you’ve got to do more, you’ve got to do more, you’ve got to do more’ and we responded with that…because if we hadn’t responded we would have been shut down.. without any question whatsoever” (manager). Pressure brought about through globalization made life difficult for Electron, as the plant now had to justify its survival by being benchmarked against the cheapest producer internationally. As one manager (manager) recalls “Along came China and we were literally told two years ago ‘guys you either meet that situation, meet the cost level that China can offer or you know it could be curtains.” Further, HQ began negotiating with a Japanese company the possibility of outsourcing the AMANDA (pseudonym) project that it was going “to undertake for the future generation of [the product] that would replace our existing [product] that we have at the moment” (manager).

Electron managers began negotiations with HQ to salvage the situation; their strategy was to convince HQ that Electron’s management knew what “costs are for all our product lines” (manager) and hence they should “make money or at least break even on every product line.” This, however, required that HQ refrains from manipulating transfer prices by following a “straight pricing strategy across the whole product lines” and for HQ, rather than Electron, to take the risk of making profits or losses on product in the market. These tactics seem to have paid off, at least for the time being, as HQ called off the deal that was being negotiated with the

Japanese company, and Electron remained in operation.

A measure of the volatility of Electron's fortunes is that during the period 1996-2004 witnessed a succession of four Managing Directors "each one having different leadership styles" (EFQM Report, 2004). This has led the current MD to develop "along with the management team a system that is 'self-governing' and will be robust to senior management change. This includes all aspects of policy and strategy formulation, cascade, and review… through to succession planning as well as management attention by attendance at process and project review" (EFQM Report, 2004).

Electron's customer base has been defined as follows (Internal EFQM Document, 2003):

a) Primary customers: the sales regions and partners within Global who buy goods to distribute them worldwide, whereby 98% of product is exported to 60 countries.
b) Secondary customers: the end users, typically process organizations such as the brewing/bottling industry, or heating/ventilation engineers.

Since 1992, production expanded significantly from approximately 20,000 units to 330,000 in 2002, with a target of making one Million units per annum from 2007 onwards (Internal Document). Turnover reflects this expansion of production volume, reaching £55M in 2003 which are generated from three types of products: the standard products; add-on options required by the customers which are mainly made in house (£8M), but occasionally outsourced; and components for sister plants. Meanwhile, staff reduced from over 500 to 320. Major recent efficiency gains have been reported by our informants, for example a reduction in the materials to turnover ratio from 74% in 1999 to 52% in 2003. Such major improvements were demanded because changes in exchange rates impacted the performance of the plant adversely. One manager stated: "We've been hit very hard over the past seven or eight years in terms of the exchange rate. And the only way that we can, as a factory, balance that out is by achieving productivity levels."

Better productivity levels were sought in three areas:

a. Design to cost: making the product cheaper by "looking at different ways of designing in the same functionality. We look at things that are let's say historically in the [product] and say, 'well are they required by the customer or are they really bells and whistles?'" (Manager).
b. Manufacturing and testing processes: the product has a normal life cycle of 2-3 years, and testing equipments, which are costly, are specific to products, so new products will require new

testing equipments. One manager stated “We’re now trying to look at more commonality in test equipment to see whether we can use existing equipments on future product.”

c. Materials: previously material were sourced independently within the UK market by Electron, but now under a new HQ initiative Electron has to purchase through the Group’s worldwide purchasing ‘Central Strategic Purchasing’. So now boards are bought from South East Asia, and “despite the distance and the logistics the cost to us is far less than before and that’s a major saving as far as we’re concerned” (Manager).

These three productivity sources resulted over the years, it was claimed, in taking “fifteen, sixteen percent out of our material to turnover ratio” (manager). Electron reduced “costs even more”, and returned positive EBIT for the years 2002 – 2003 and a positive EVA for the first time in 2003.

Such major achievements were essential if Electron was to continue in operation “that’s [efficiency savings] the only way as a business we’ve been able, let’s say, to exist” (manager), because Global began to view Electron as a drain on the business. To achieve this, a major change in mindset was required, one that had to transform the previous mentality of simply breaking even to one that aspired to generate returns to Global: “That mentality started to change, as you move into a factory type of mentality then you’re there to make some sort of return within the organization” (manager). The key driver for the change in culture was likely job losses: “People were concerned that they potentially could lose their jobs” (manager). There is now consensus among staff that Electron has delivered all its targets: We’ve delivered what we said we could do, that has been received very, very well as far as [HQ] are concerned” (manager). So spectacular was the turnaround of Electron assessed to be that within Global, “they now whenever they quote anything as far as manufacturing is concerned they refer to [Electron] as being the Benchmark” (manager). One of the EFQM documents stated, “Presently (2003) [Electron] is shown to be the most cost effective location for manufacturing, and it is against this background that all employees at [Electron] strive for productivity and quality improvements]. Yet, amid this euphoria, the message from HQ for the immediate future is clear. During the congratulating visit by a senior HQ to Electron, after heaping praise on the staff for their remarkable achievement, he stated to Electron’s Managing Director: “‘Productivity is your life insurance.’ That had more of an impact on the people sitting round the room than the previous tow hours of congratulations, because he told us that you may be successful today but once I go away and if you stop being successful the situation will change. So we know we can’t sit back and relax…We’ve managed to turn it around but we’ve got to keep it going because everybody else is going to be working twice as hard to try to knock us off because of that position” (Manager).

The fragility of the future stability and survival of Electron expressed above is reflected formally in one of the EFQM documents (2003): “The ability of [Electron] to deliver annual productivity gains will decide its future… Continuous improvement driven by excellence model assessment is our way of managing our future.” This concern with survival through growth, efficiency and quality is an explicit element of Electron’s declared strategy. Electron’s formal strategy documents define its vision as one of growth by producing one million units annually. Its mission has five key components: making itself the proven choice for manufacturing through cost leadership, employee flexibility, state-of-the-art production facility (survival); being a reliable partner with customers by embracing the ‘think customer, act customer’ mentality (continuous improvement); achieving international standards regarding time-to-market and successful new product introduction and promoting high levels of flexibility under the banner ‘we will do it before they do’ (excellent quality and delivery); and maintain double digit growth in volume and productivity to ensure the future of Electron via competitive position (signaling that only Electron controls its future).

It is against this historical understanding of the context within which Electron operates that we seek to understand the underlying motives for the co-existence of multiple performance measures, and the extent to which there are instances of overlap and/or separation in the way these measures function. This is addressed in the next section.

MEASUREMENT SYSTEMS GALORE!

Recent reviews of management accounting and control have devoted considerable attention to strategic performance measurement systems, SPMS, (Otley 1999; Ittner and Larcker 2001). And there is an industry of BSC studies. Most relevant for this paper are those academic studies that focus on the implementation of SPMS (Malmi 2001; Cavalluzzo and Ittner, 2003; Wenisch 2003). Typically, these are either accounts of diffusion across nations (Malmi, 2001; Gehrke and Horvath, 2002), organizations in general (Kasurinen, 2002) or within specific firms (Wenisch, 2003). Although Wenisch (2003) refers to other measures that are superceded by the introduction of the BSC, the possibility that measurement systems compete for organizational space and managerial attention is not the focus of her study. This academic interest in SPMS is also evident in the practitioner world. Blundell et al (2004) indicate that almost all their respondents were aware of the BSC, and the majority were either using or planning to introduce it in their firms. Yet despite the insights from such systems, little attention has been paid to the multiplicity of systems that tend to operate in many organizations.

During the period of our study of Electron, accounts from the interviews and internal documents suggested that the following performance measures were all in existence at the same time:

- European Foundation for Quality Management (EFQM)
- Balanced Scorecard (BSC)
- Process House (PH)
- Lead Time (TIME)

Before we examine this multiplicity of measurement systems, it is relevant to provide an historical account of the evolvement of measures at Electron. During earlier periods in Electron's history (the 1980s and 1990s), we were told that managers "tended to focus predominantly on turnover and result (profits)…Those were really the two main drivers for the business" (manager). These were not the only measures, as more detailed measures: "hanging below that you've got lots and lots of I would say important KPIs but they were not necessarily flagged up at the top level, they were seen as part of the day job in various departments" (manager). These detailed measures were at departmental, rather than plant, level: "So a lot of things [detailed measures] tended to just funnel up to the top and at the end of it you measured the success of the business on 'did we achieve the turnover and have we achieved the profit? If not, why not?" (manager).

These accounts suggest that earlier in Electron's history, one measurement system (based on turnover and profits) was developed and used, along with more detailed measures that derived from these two measures at departmental level. This measurement system, however, was shown to have major flaws, which prompted the move towards using "a more professional approach" to measurement (manager). The weakness of this measurement system was exposed by two problems: exchange rate fluctuations and transfer pricing decided by Global, A significant decline in the value of one European currency compared to the Sterling (by more than one third) showed the financial performance of Electron in a bad light: "The exchange rate hit us hard in the UK like all the businesses that, despite our volume in pieces growing our volume in turnover wasn't growing. So consequently our profitability was getting hit very hard because of the exchange rate" (Manager).

Electron attempted to mitigate these adverse Exchange rate effects by engaging in a very aggressive cost reduction initiative, which involved a significant reduction in cost of raw materials (see earlier), design cost (by designing complexity out of product), longer production runs, and pooling purchases by ordering using the terms obtained by centralized purchasing (which made exchange rate savings as payment for these purchases were made outside the UK). Moreover, product design technology was pooled across sister factories producing the same type of product with different power ratings so that this design principle becomes "the base control units for our [product] and we will vary the power ratings according to the [product] that is

manufactured" (manager). However, to the frustration of the senior managers of Electron, these initiatives did not impact favourably on bottom line results as Global reduced the price at which Electron's products were transferred to the sales units because the latter were "really operating on a certain limited margin. So whatever gains that we were making in the manufacturing side tended to be passed on to the sales with a view of growing market share. So despite taking all of those costs out it has not boosted our profit margin from something like say break result even to something like ten million pounds profit, that has been tended to be taken away from us through reduced prices. So the pressure on manufacturing is always there, you earn it one year, you give it away at the start of the next year and you have to start again" (manager).

Global determined the transfer price for Electron's products using a top-down calculation. The process began with customer price in the filed which was then taken down to sales prices (as offered by Global sales units) and then deducted gross margin to arrive at an ex-works transfer price (meant to cover full works costs). A differential transfer pricing system existed previously, according to which high power rate products were making a profit margin of up to 40%whereas low power rate products were had a transfer price of cost minus 10%. Electron managers then attempted to negotiate with Global to improve the transfer pricing system by suggesting that Global used a bottoms-up approach whereby the transfer price was insensitive to variations in power rating but simply adds a fixed margin percentage to ex-works costs. Global countered by producing an alternative transfer pricing system produced an "equalization effect, so the overall effect to [Electron] was not a gain or a loss, the new transfer baseline virtually gave us just about a breakeven result. So that put pressure on us straight away" (manager). This pressure is brought about by the annual downward adjustment in the levels of transfer prices by the amount of cost savings and efficiency gains made by Electron. So, Electron's managers "turned around and said 'Look, we're not here to play around with transfer price because if I increase the transfer price by three hundred percent it doesn't tell me that somebody in the factory is working more efficiently or we're getting better productivity" (manager). The aim of Electron therefore was to secure a stable transfer price that does not get adjusted every year to swallow the cost and efficiency savings produced in the factory. This they have been successful in securing: "We have managed in conjunction with sales to keep transfer prices stable" (manager). This now has led the management of Electron to "Look at the costs and say 'right we've now got to impact into our cost… The transfer price has definitely now had a role, yes and also the exchange rates now beginning to drift back in our favour. So by the time you pull all of these together, we are actually proving that we are generating something in the region of about two million pounds net productivity a year, cost productivity reduction per years in those elements of design to cost, material cost and process" (manager).

A new host of measures underpinned both the cultural and mindset change mentioned earlier,

as well as convince Global that electron was the plant to which some future investment ought to be targeted: “There would have been no possible way of us achieving what we’ve done if we would have just sort of paid lip service to it and just gone blindly into the same thing, because we would have had no means of controlling and measuring where we were” (manager).

THE MULTIPLE PERFORMACE MEASURES SYSTEMS

European Foundations for Quality Management (EFQM):

This is an annual document prepared by Electron with the aim of gaining business excellence award if the plant matches/exceeds a given score. Between 1997 and 2003, Electron has carried out a self-assessment on four occasions, and the results are reported to have been used within its annual policy and strategy review (EFQM Document, 2003). The model is intended as a rating method of the total business and analysis of all processes. It is divided into two sets, each weighted 50%: enablers and results, and these scores are then allocated in precise ratios among the themes that make each set. The enablers include inspired leadership (10%); incorporation of quality values and concepts in policy and strategy (8%); releasing employees’ full potential through people management (9%); providing necessary resources, including financial, material and technologies (9%); and reviewing and revising processes (14%). The results set includes enhanced satisfaction of employees (9%); customer satisfaction (20%); better impact on society (6%); and improved business results (15%) (see Ezzamel, Lilley and Willmott, 2004). The model, in terms of its individual themes and the relative weightings of each theme, has to be taken as given by applicant firms, and the applicant has to compile its response to this model by demonstrating to external assessors how it attends to each of the themes in order to attract the highest possible scores.

Balanced Scorecard (BSC):

The BSC was introduced into Electron in 1999 as a result of an initiative to roll it out throughout the whole group (Global-wide), although our informants have suggested that the BSC has been introduced in the parent company for five-six years earlier. It is applied in Electron not only at the top level but it cascades down to the level of each department. In Electron’s EFQM annual document, The BSC is depicted as a major component that is directly linked to the plant’s strategy and feeds into the annual review, which in turn feeds into strategy, and so the cycle continues. The BSC has the familiar four quadrants: customer/market; financial; internal processes; and people/innovation. One Internal Document (2003) states that “All measurable business performance data is recorded on the Balanced Score card”. The EFQM documents (2004) states that “Some 40 individual measures exist on the Top level Business Balanced Score card. These measures are considered the key indicators for the ‘health of the business’.

Each measure has a target which reflects either agreed business goals or stretched goals to achieve improvement…. In addition, a 'target for excellence' that is considered to be a truly world class target which should be expected by companies operating within our field is also shown on the Balanced Score card for each measure."

It is claimed that actual performance is monitored against the relevant measure/target depicted on the BSC monthly at the Process Managers' Meeting and is also used as a key input to the Policy & Strategy Review. At that Review, the measures stated on the BSC are checked for relevance and changed/replaced accordingly, and new targets are agreed and set. Shop floor employees had no knowledge of the BSC at Electron.

Process House (PC):

In contrast to the EFQM, PC is an internally derived system within the Division to which Electron belongs. The annual policy and strategy review undertaken in Electron combined with the BSC generation are assumed to be "the principle mechanisms for identifying key business processes and the associated metrics to demonstrate control and progress against them" (Internal Document, 2004). Another Internal Document (2003, emphases in original) states "processes are identified in and form part of the Mission statement for the business. This is summarized in the catch phrases 'Proven choice for manufacturing' and 'Aiming for excellence'. The PC is a benchmarked best practice approach. Graphically, it is represented as a set of eight blocks. At the very top is the Division's Business Process. Immediately below that the remaining seven blocks are organized in the shape of two side blocks both designated 'Customer' (on the left: identification of customer requirements; on the right: fulfillment of customer requirements). In between these two blocks, five blocks are stacked on top of each other: Management Process; Product Life Cycle; Supply Chain; Customer Relationship; and Support Systems. Evidently, Management Processes and Supply Processes are intended as processes that would facilitate the attainment of the three processes in-between.

For each of the five processes stacked in the middle, one or more managers are designated as owner(s), and each process is spelt out into a number of specific functions that are aligned with specific measures. For example, the Management Process is jointly owned by the MD, the Commercial Manager, and the Quality Manager. Examples of its responsibilities are communication and budgeting, for which information is measured in the BSC, team brief data, and sample feedback. Supply Chain is singly owned by the Manufacturing Manager, and its responsibilities, for example, include reduction in assets tied up, delivery performance, material on time delivery and process cycle time, and its measures are drawn from the BSC. As a final example, the Support Process is jointly owned by the HRM Manager, the Purchasing Manager, the Manufacturing Engineering Manager, and the Quality Manager. Its responsibilities include

recruitment and development, health and safety, and internal audits, and these are measured through training days per employee, staff turnover, sickness, number of accidents, and number of risk assessments.

Lead Time (TIME):

TIME is an initiative aimed at increasing profitability by stimulating sales revenue and reducing costs across the whole organization. To achieve these ends, TIME relies heavily on innovation and benchmarking, so the focus is upon efficiency and productivity. Each business (such as Electron) within Global has discretion to use TIME in whatever way it deems fit to its business and market activities. As one manager said “It’s not prescriptive inasmuch as it doesn’t say that you have to do this and you have to do that. It says you have to look into these areas, but it’s up to you how you go about it.”

It is assumed to be driven from the vision statement and the goals, and it is intended to be deployed both vertically (throughout all divisions/businesses within Global) and horizontally across the organization (e.g. the initiative Think Customer, Act Customer). The TIME model has ten boxes which represent areas where “it is expected that if we invest activity in these areas we will find opportunities to increase the value of our company through taking costs out or increasing sales” (Manager). It addresses three aspects of the parent organization at a global level being a trendsetter through *innovation*; put customer first through *customer focus*, and act global by means of *global competitiveness* (Internal Document). Under each of these three key drives, a number of initiatives are defined and expected to be pursued. For example, under innovation, the initiatives are platform strategies and trendsetting technologies. Under *customer* focus, the initiatives are win customers and cross-selling. However, two main initiatives are common for all three dimensions/programs of TIME: service initiative and quality and process initiative (manager, HQ). It is the company’s brand of business improvement program, providing a vision to business excellence so that each business strives to be profitable and either the number one or number two in the market place. It is underpinned by an organization-wide Management System that seeks to facilitate its implementation.

RATIONALIZING THE EXISTENCE OF MULTIPLE MEASUREMENT SYSTEMS

How can we explain the multiplicity of the measurement systems described above at Electron and Sales? Why could so many systems exist side-by-side? There are a number of plausible reasons that may explain this phenomenon. It may be that the multiplicity of measurement systems is the natural outcome of a disjuncture between the expectations of the parent

organization and the rationalizations of its local businesses. Thus, the parent organization may impose specific measurement systems that are felt by the local business to be insufficient or even irrelevant, hence leading to the development of local measurement systems. Another possibility may be that each measurement system was developed in response to a particular set of circumstances (for example, deterioration of performance, or desire to demonstrate strength in a particular dimension of the business) that demanded some kind of intervention. Once developed, a measurement system may have continued to exist (or be used) even if the circumstances that gave rise to it in the first instance have since changed. Alternatively, it may be that no single measurement system is judged to be sufficiently all-inclusive as to be able to attend to all the dimensions of managing a contemporary business enterprise including functional and ceremonial uses; hence a more complete approach to management and performance measurement may be thought to be attainable only via the use of a multiplicity of measurement systems.

First, consider the possibility of a disjuncture between the global and local parts of the business. In our case study, this would explain why the researchers never encountered any reference to TIME, a seemingly important initiative driven through by Global, during three years of interviews at Electron, and also to the development of site-specific measurement systems such as COBRA. In response to the researchers' expressed surprise that in previous interviews they had not come across this initiative, one manager stated "oh right, so that tells you something doesn't it if no-one's mentioned it so far…Well, I think it reflects the fact that across the organization we don't talk very much about TIME, and the reason for that is we've never really actively promoted it very much. But that's changing now and it's been mandated by UK CEO, that's all business improvement activities in [Global] in the UK across all business have to be branded as [TIME]". But then, how would the local cope with future pressure to comply with central initiatives as the above informant has indicated in his reference to TIME being recently mandated by the UK CEO? Would local compliance imply a reordering of the multiple measurement systems? Or would TIME be embraced simply as an 'add-on' to other measurement systems used by Electron? This possibility links up with the notion of local identity; the local site signaling both to the parent and to other internal and external constituencies its ability to develop own measurement systems and ignore some of those promoted by the global (centre). This possibility also raises interesting questions regarding the relationship between the global and local. Thus, how are the boundaries between what is just simply encouraged and what is mandated drawn? What circumstances lead to the redrawing of such boundaries? How is local compliance monitored globally (that is how is Electron's compliance monitored by Global)? What consequences are brought upon the local as a result of its frequent lack of compliance?

Second, consider the possibility that multiple measurement systems emerge in response to

specific circumstances. This would explain, for example, why TIME was developed in Global. TIME was introduced in Global in 1996 in response to efforts to make Global more profitable, as the parent at that time "was not particularly profitable. We weren't very attractive to shareholders, and it was an issue, and there was a suggestion, let's say at that time that [Global] could actually be vulnerable to an aggressive takeover bid. And this was all talk and conjecture so you don't know how much of it is true, but that was certainly what people were saying at the time" (manager). A lady from the City (London) gave a presentation and "gave a sort of stark wake-up message that said that [Global] was you know under performing as a company and it needs to think about it" (manager). To make an immediate positive impact on Global's share price, unprofitable non-core businesses were sold off, and successful core businesses within the group were used as exemplars of best practice for other businesses to emulate. This also gave rise to "new words came round, things like EVA… So those were the new words that came around and we all had to get to know the meaning and understanding and realize the significance of them, because you know on a day to day basis people do their jobs (and) don't normally think about the share price of the company very much" (manager). But then we may ask what happens to the fate of such measurement systems once desired performance improvements are achieved. Are such systems simply temporal solutions to specific problems, in which case we should expect their use to be discontinued once better results are obtained? If their existence continues even after results have been delivered, are they completely marginalized or do they continue to exert some influence, albeit indirectly, on other measurement systems and on the way employees work? Or are such measurement systems of universal value and their adoption should be expected to continue in the foreseeable future? How are such assessments made? What parameters impact on the assessments?

The third possibility, that each measurement system is insufficient on its own but that all the systems in their totality attend to the expectations and needs of the organization requires more detailed discussion, and it is to this that the next section is devoted.

MANAGING THE MULTIPLICITY OF MEASUREMENT SYSTEMS

"Well, I think the linkage is a weakness at the moment… the links are a bit tenuous at the moment, but I am working on, my vision is to have a balanced score card that is linked directly to process house…. We have different initiatives and we want to create the most dynamic but understandable set of metrics for moving the organization forward as much as possible. And at the moment, I guess in our confusion, in fact yesterday I had a workshop with some of the first line managers with a view to trying to gauge really how much they know and understand about what we're doing top down. And it's very evident there are some gaps that we need to close."

(manager)

This quote sums up some of the problems experienced by our informants in linking together the multiple measurement systems used at Electron. This manager acknowledges the tenuous, weak link between the measurement systems, the need to mobilize them in a manner that promotes a dynamic set of measures that employees could understand, and also alludes to the gap in the cognition of first line managers in understanding where the plant is going out of the multiplicity of measurement systems used. This is particularly significant, as this manager prided himself on having a sound understanding of each of the various measurement systems introduced at Electron, and was the site representative on the parent-wide committee that oversaw the development of the BSC for the local sites. He was also tasked to develop measures related to manufacturing activities.

The simultaneous existence of a multiplicity of measurement systems need not necessarily imply that all the measurement systems are used at the same time or the same level; it is possible that some systems are simply ignored, or only engaged in as a matter of rhetoric. Our empirical evidence is suggestive of this tendency. For example, at the level of individual businesses it seems that the BSC is used by managers frequently, but other measurement systems are not used at all. But even at the same level, a measurement system is not always fully used by managers. As one manager (Sales division) claimed:

"The ones that use it [BSC] use it. Well, the interesting disconnect there is between as a business what are the key performance indicators for this business. And if I went and asked one of the general managers no doubt he would come up with X number of things, I would bet that most of them would tend to be financial, they tend to think in those terms. But then when challenged or asked to think I guess they would come up with some non-financials, it would then be interesting to see how many of those things they could come up with are actually on the balanced scorecard or are we measuring some other things on the balanced scorecard?"

At higher levels in the organization, not all the measurement systems are accorded the same weight or even used to any extent. One manager from Sales, with responsibility to promote and develop the BSC, stated:

"Our balanced scorecard doesn't really mean an awful lot to most people… at the high (divisional) level we've got a balanced scorecard but we don't ever review it. And I've been a member of the management team for four years and in that time we've never reviewed the balanced scorecard as a metric. We have the charts in our management information pack which people look at and you know take some comfort from or otherwise, but we've never actually

reviewed its content and said are we still measuring the right things. It just kind of exists… What is the point of having a metric that no-one ever uses?"

One explanation as to why the BSC in sales is not being taken seriously, or drawn upon by managers, is that it is not seen to be useful or meaningful; as one manager stated: "I think what happened over the last few years is the balanced scorecard has been maintained, it exists, it has data, but as a meaningful indicator of how well [the Division] is performing I don't think it's all that meaningful at the moment." When asked how many of the existing measurement systems are needed in the company, one manager said "I'm not sure that we need all, for example the balanced score card and EFQM, there's overlap between those two." One manager alluded more clearly to the confusion caused by what is seen widely within the sales division as two measurement systems with large overlap: "the results side of the EFQM model does really measure the effectiveness of what's on the left hand side, and that's actually all it is, and your balanced scorecard is measuring the effectiveness at the higher level of the organization, the two are the same." Another manager also said "[TIME] …has some structure to it, some toolsets, some things that you can use to help you identify opportunities for improvement. And that's where it starts overlapping a little bit with EFQM cos EFQM has got some of that sort of stuff as well." One manager in sales indicated his very strong preference for EFQM: "We don't really use [TIME]… There's a financial report that we provide data back and it's predominantly in the area of sales stimulation and cost reduction, that's the only [TIME] report that we are required to produce… We use the balanced scorecard mainly as a reporting tool… and EFQM appears to be used more than any of the others and more effectively than any of the others, and that's really because I believe it's the most effective tool."

So, with this multiplicity of measurement systems, how do managers make sense of, or prioritize the multiple systems? One possibility is to just simply focus on the system deemed most relevant, and simply pay lip service to the others. Some of the quotes mentioned earlier are suggestive of this approach. Alternatively, managers may attempt to identify and focus upon the most comprehensive system, subsuming parts of the other systems within it. One manager, sales, provides a supportive statement of this approach:

"We don't have three improvement programs, we only really have one improvement program which is EFQM. We recognize the things that we are supposed to do on the [TIME] and that includes specific areas and particularly things like sales stimulation and cost reduction, so global competitiveness would cover sales stimulation and we have initiatives in place addressing those things. But in terms of our business model and the way we try to identify ongoing opportunities for improvement we use the EFQM for that, the process of self assessment against the nine criteria and identifying things that we could do better. Where the balanced scorecard fit into it

really is that the EFQM model the key performance indicator box we don't use it entirely, but our balanced scorecard really is just used to monitor those key performance indicators and report them back to ourselves. … All we've ever used it for really is just as a reporting tool on the key performance results."

Similarly, the Process House is understood by some of the managers to be part of TIME; Process House has been explained as an attempt at finding a "consistent way of managing our processes across the whole company" as part of business improvement enshrined in TIME (manager). This manager also emphasized the lack of pressure from the parent company to align itself to Process House "there's no real pressure to say we have to align ourselves with this way of doing things."

In response to a question raised by the researchers as to whether the parent has produced a template or a chart that links together TIME, Process House, EFQM and the BSC, one manager responded: "there's never been the need to do it from [Global's] perspective, because we have [TIME] and Process House and that's the way things should be done, can be done." So we have the disjuncture of the parent having specific performance initiatives that are believed to be the way of doing things throughout the whole organization, yet the local businesses pursuing their own preferences for performance measurement systems that they see fit. This dialectic between the global and the local has been partly explained by our informants via appeals to what is seen as practical (and presumably sensible) from the perspective of the local:

"When it gets down to this level, what we've often found over the years is that things that come from [Global] sound great, read it, it all makes a lot of sense, but in practical terms it always kind of stops a few steps short of reality and then we have to fill that gap with something. And what we've filled the gap with probably over time is things like EFQM." (Manager, Sales)

Another manager (Electron) hinted at a similar problem by stating that the TIME initiative could not be adopted locally simply because it was "quite [country-specific] in [its] structure and in [its] objectives." The problem of sense-making at the local level of initiatives designed by Global was not the only concern raised by our informants. Another was the problem of translating HQ initiatives, written in another European language into English. One manager stated "We've got a [TIME] toolset, and these were meant to be tools that you used to try and tease out the improvement opportunities. But it just didn't translate very well to English, and so I looked at them and just remember coming away totally confused by what the hell they were supposed to be used for… It lost something in the translation, and I remember looking at it in the early days of me doing this job thinking well is this the tool set I need to drive the change, and I just remember looking at it thinking, I don't understand this, I don't really know what I'm supposed to be doing

with it. And from my involvement with other people in jobs like mine they all basically feel the same way." But then why did the parent not simply accede to the 'practical' assessments of the local businesses and just simply abandoned its HQ-based performance measurement initiatives? One clue gleaned from the interviews relates to the identity of the parent and power relations with its local units. Indeed, the pressure to maintain/assert own identity on the parent was seen to have led to the development of own initiatives that imitate the performance measurement systems available in the business world, but repackaging them as a special brand of the parent; according to one manager:

"When [TIME] was first introduced it was introduced as [Global's] business excellence program. And the significant word there was [Global] as all we'd done really was take EFQM out and put [TIME] in, so because [Global] is big enough and ugly enough to do its own thing it did, instead of saying, OK we've evaluated all the different tools around for improving the business and we think EFQM is the way to go, therefore, [Global] is going to buy wholeheartedly into EFQM…. I suppose it was just typical of [Global's] arrogance to 'say we don't need the EFQM, we have our own.' And I think it was in part why a lot of things we're using have come about, because I had somebody in here yesterday saying, 'explain this [TIME] and EFQM thing because we've got two'…. People get a bit hung up on it by saying 'should we do an EFQM or should we be doing [TIME]'? and really if you're doing EFQM you're doing [TIME]… So it's an ongoing storey."

TIME seems therefore to be an initiative tied to the identity of Global, as one manager, quality, said "[TIME] is a [Global] improvement initiative, and I'll make a comparison with GE if I could. GE perhaps are pushing Six Sigma as their total business improvement, [Global] I would suggest are pushing [TIME]. They're similar methodologies, they're all about not being satisfied with the norm and having structured approaches to improved business performance… I think they [HQ] wanted that [TIME] to be part of their identity, they wanted financial institutions to realize they have an improvement program."

Another explanation offered of why Global did not embrace the EFQM and instead repackaged it as TIME is, according to one manager:

"Someone once said to me 'well the reason why [Global] never pursued EFQM as a global initiative is because the fourteen companies or heads that formed the original EFQM group wasn't represented by [Global].' Nobody from [Global] and if you were to list the top fourteen European companies I think [Global] would be in there. So for some reason, why weren't they in there and may be someone was a bit offended that [Global] weren't involved and thought, well OK we'll do our own thing."

Yet another explanation offered for the lack of support of EFQM by Global was the lack of trust in EFQM's measurements. A few years earlier, we were told, two businesses within Global won EFQM awards, but then "twelve months later both ran into serious financial difficulties. And someone at a higher level had some egg on their face having promoted the fact that look how good we are, and then next thing you know on is the news from a financial point of view and had some explaining to do. So maybe it's a case of once bitten twice shy." Yet, other interpretations of this failure attributed it more to changes in the environment of the divisions rather than to any specific limitations of EFQM: "the business environment completely changed, they moved from a style of power station to a different style of power station that was driven from a legislative point of view, and their business was severely impacted by those legislative changes" (Manager, Quality).

These multiple explanations offer a glimpse of the complexity of informants attempting to justify or rationalize why certain initiatives, or performance measurement systems, can be favoured, or marginalized, or even ignored altogether. They are also suggestive of a measure of uncertainty in their minds as to why this may occur. But the dialectic between the local and global remains a major undercurrent as a means of comprehending how multiple measurement systems can co-exist if not necessarily co-function. The organizational etiquette of handling such dialectic is also intriguing. This organizational etiquette may take on a variety of forms. One form would be to marginalize or even ignore making any reference to performance measurement systems developed locally:

"I do believe that when some of the people go to [parent HQ] and they get involved in these types of discussion they keep it pretty low key, the EFQM activity in the UK, simply because in [HQ] it's not necessarily smiled upon as an improvement tool. They would rather talk about [TIME] than EFQM." (Manager)

An alternative, but related approach would be to 'talk the talk'; that is to speak the language the HQ prefers to hear:

"I think when we've had very senior heads we've made sure that we've got our [TIME] badges on, and as soft as that, I mean we're playing the game."

The multiplicity of measurement systems was considered by some informants as a healthy phenomenon, because it was considered a means of promoting and underpinning a "culture of improvement"; one Manager (Quality) stated: "we have a host of measures that sometimes conflict, sometimes overlap. I personally think that's reasonably healthy to generate the culture that I think we've got, and the culture that I think we've got is one of really wanting to improve everything that we do", as each additional measurement systems acts as "another piece of fuel

onto our improvement program…. I've been in industry for a number of years [and] you keep having to tweak and re-invent and give some framework and give some program to it. It may all be similar material but it generates motivation and enthusiasm and more people gather more knowledge."

What is emerging from these empirical details then is a situation where HQ-developed initiatives figure out very little (simply as a badge), or not at all, at local levels. But what about the levels geographically closer to the international HQ? Our interviews at the international HQ suggest that such initiatives are much more explicitly promoted at. And close to, that level. This perception is also shared by managers at local sites. In response to the question "In day-to-day activities does [TIME] figure out in your thinking explicitly?", one manager (Electron) responded:

"No, I think as I say it's a logo. If you were in the (X) factory [near international HQ], and you were asking that question you'd get a very different answer, you'd get it [that it] probably guides all of their improvement approaches, that there's [TIME] projects agreed at the beginning of the year, there's priorities set to those [TIME] projects and those team members and leaders have all gone through training programs where they want to use certain tool kits, Six Sigma being one of them."

This pattern seems to be somewhat replicated at the geographic HQs. Thus, one manager (Quality) suggested that there is greater pressure at UK HQ to report using TIME: "If you were to go and interview [Y; UK CEO] he would have more reports to generate under [TIME] than we have here." It seems from the above that what we are in the presence of a combination of centripetal and centrifugal forces working against each other. HQ-based initiatives, such as TIME, and to a lesser extent the BSC, are acting as centripetal forces seeking to draw local sites in the direction of international HQ, and these seem to be having some impact as long as the local sites are within geographical proximity to that HQ; with the force of centripetal gravity becoming weaker as the geographical distance increases. Locally-selected initiatives, such as EFQM, act as centrifugal forces increasing the distance of local sites from international HQ, and by implication enhancing local autonomy and identity. This global-local dialectic, played out through the interactions of centripetal and centrifugal forces, is naturally a dynamic process with each force waxing and waning across time and space. An interesting question in this context is how far does the centre (international HQ) allow, or tolerate the pendulum swinging towards greater centrifugal directions.

The responses we have received from our informants suggest that the parent organization has so far been fairly tolerant of centrifugal tendencies so long as the local sites excel in their performance. In such situations, HQ-wide initiatives are understood to be no more than

guidelines, with local businesses having discretion as to whether or not they wish to buy into these initiatives. However, if performance of a local business is judged to have fallen below a given threshold, the parent organization demands the local business to comply with HQ-wide initiatives. Hence, for local businesses the passport of autonomy is achieving outstanding performance. Performance achievement therefore has so far been the very material with which the boundaries of the dialectic between the global and local have been demarcated.

Our informants, however, have been indicating that this precarious balance between the centripetal and centrifugal forces is about to change decidedly in favour of the former. The parent organization has been seen to be in a process of muscle flexing, with a new drive towards achieving greater homogeneity of practice across the organization world-wide. The pressure towards conformity is beginning to tell at this stage at the level of country HQ, as suggested above. Further, more 'subtle' scenarios are now being promoted to, our informants have suggested, pave the way for a more sustained drive towards greater centripetal emphasis. Local businesses now are asked to submit periodic reports on their objectives on the TIME initiative, what it means, and what improvements have been attained (Manager, Electron). To reinforce this tendency, the company magazine publishes regular articles on TIME so that "you can see it starting to permeate" (Manager, Electron). The excellence assessment documents produced by Global demand transparency, clear responsibility, measurement, and process understanding. This seems to be pushing the local businesses towards, among other things, greater compliance across the whole organization: "we felt that we needed to push processes a little bit more for a number of reasons, one we can improve our scores on excellence assessments, two we get more people talking about processes, three we tend to push towards compliance with unwritten [Global] edicts, you know their good practices, and four the requirements of ISO9000 2000 was one where you needed transparency of processes" (Manager, Electron). Also, a new web publishing technology has been actively promoted by Global, which, "can be from one extreme a very simple flow chart to a full blown demonstration of compliance linking all the documents that we use within the business" (Manager, Electron). One day-type seminars on Six Sigma have been launched by Global where managers from local businesses are expected to attend, with the aim of enhancing compliance within the group world-wide. One Manager (Electron) suggested "It's one day seminar yes and again you can see that's also a little bit of political pressure [towards conformity]…. It would have been subtly pushing us towards that conformity, you know the e-mail that invites you doesn't say you shall go." Failure to attend these seminars by local managers, and inability to articulate a clear response when attending to show that the local site treats improvement initiatives promoted by these seminars as part of the site strategy would be taken by HQ managers as negative signs, who would ask "why are you not taking advantage of an improvement program called Six Sigma?" (Manager, Electron).

In the sales unit, similar perceptions of gradual central encroachments on the site were reported. One manager stated: “more and more, we’re getting the influence of [TIME] and things like that are coming through, yeah. Another example would be a thing called Project Spirit within this company now. Because what’s happening is that across the whole world [Global] is trying to harmonize its processes, and the way it’s structured is across North Europe, so in Northern European countries [sites] are doing this. So right now we’re engaged with the likes of Holland and Finland and Sweden and Ireland and all these other [Global] countries to agree common processes. Now you think about that, that’s just so difficult, I mean you can’t even imagine how you’d go about doing that but nevertheless we’re doing it, and the reasons are that if we get common platforms we reduce them for variations, we can save a lot of money.” This pressure for the group to become globally competitive is driven by the desire to cut costs down as indicated above. But there is also recognition that it is difficult, may be even impossible to do that on a world-wide scale, hence the world is partitioned into regions that are then targeted for conformity. One manager, sales said:

“Someone’s had the idea somewhere, they’ve got to be globally competitive, they need to reduce costs. One of the ways we can do that is to reduce our SAP costs, one of the ways to do that is to reduce the number of platforms of SAP that we operate on a number of versions, let’s harmonize all the processes across the world. Take a step back, you can’t do it on a global scale. OK, let’s break the world up into bits so we’ll do Northern Europe and Southern Europe as a start, and that’s an example of [TIME] initiative.”

This partitioning of the world by Global in the name of conformity is beginning to be seen by local businesses as making a difference in the sense that the centripetal forces are felt to be gradually closing on them. This drive towards greater conformity/harmonization is seen by the local businesses to be quite disruptive to best practices that they have developed locally fit their own needs, and extremely costly to them, even though the international HQ might be anticipating major world-wide savings; one manager, sales stated:

“It’s coming straight down the track, it’s a bit of a scary thought really because what’s going to happen is that right now, because we’ve had SAP since about 1992, so we’re talking twelve years we’ve had two or three versions of SAP in that time and we’ve become good with it, it meets our business needs… And it does what we want, and now just to make an extreme example, we have a very good SAP returns process which we think is best in class…. Now in harmonizing these processes [there] are five levels, one being the very highest one box level down to five which is a fully detailed process map of what you do and how you do it. But at some point between one and five we have to find a harmonized point where everyone can do the

same thing, and it could be that return process which is now operating really well at level five gets dragged all the way to level two because that's the only level we can harmonize at. And if that happens we're going to go through some paper business transformation issues and maybe even re-introduce some paper based systems just to fill the gap that's left between level two and level five. So then someone says 'well how does that fit with global competitiveness?' If we have to employ four more people to do the extra work this process harmonization creates that doesn't make us more competitive. But the answer is that right at the higher level in the organization this is expected to save us tens of millions of pounds, so it's worth doing at that level, we just have to live with the consequences."

Another concern raised by local businesses in the face of the new sustained drive by the parent towards world-wide compliance is the significant loss of local autonomy, and with it inevitably own independence of identity:

"Whereas before we could get in touch with the people who do the software and say we want SAP to do this, this and this, they'd go away, investigate if it was possible, come back with a proposal, we'd agree to pay the costs, they'd do the development work and a few weeks later SAP has a new report or a new screen or they need screen changing, we'd get what we want, we won't be able to do that any more cos we can't change SAP. Once we have the Spirit [the harmonizing process] what we've got is what we've got, and if we want to make a change then ten other countries have got to agree, it's a bit like the EU. So it's a worrying thought really cos you know we'll have lost a lot of the flexibility. We're in uncharted waters really." (manager, Sales)

DISCUSSION AND CONCLUSION

Our aim in this paper was to mobilize some of the theoretical strands of Actor Network Theory (ANT) with neoinstitutional theory (sedimentation; the interaction between the local and the global) to examine the incidence of diachronic multiplicity of measures within a case study of a multinational organization. Earlier, we have suggested that ANT emphasizes the human-technology interaction in the formation of social networks to underpin specific management change initiatives, the power struggle for ascendancy between competing technologies (such as multiple performance measures) and the fluidity of new technologies. Sedimentation focuses upon the layering, erosion and discontinuities that could occur because of the confrontation between multiple performance measures. The interaction between the local and global is concerned with the dialectic between the two, and emphasizes the power relations, issues of identity and the redrawing of the boundaries that transcend the local and global. Our

empirical findings highlight and further enrich these theoretical strands. The simultaneous existence of multiple measurement systems in the two sites we studies within Global, our multinational company, reinforce many of the theoretical ideas we discussed earlier.

In common with some previous research (Godall and Roberts, 2003a, 2003b; Bartlett, Cooper and Jamal, 2005; Kristensen and Zeitlin, 2005), much of our empirical evidence on the use of multiple performance measurement systems can be interpreted as an attempt within the context of the local-global dialectic. As our empirical evidence has illustrated, the parent (Global) HQ evolved measurement systems that were intended to produce coherence and consistency across the whole group world-wide. A number of arguments that could be mobilized to explain this centripetal tendency. First, economies of scale could be achieved by concentrating on the use of a single technology of measurement, both in terms of the costs of developing the system and the costs of running and maintaining it. Second, the use of the same measurement system should engender greater certainty across the whole organization, as each local site is measured and compared on the basis of the same set of measures. Third, the aggregation of results across the group should be less problematical than when each local site had discretion to use whichever system it deemed suitable, resulting in the use of a diverse, and perhaps incompatible, multiple measurement systems within Global. That way, efforts by local sites to construct a narrative/story of themselves for the distant group HQ, and indeed for other constituencies, would be expected to draw upon the same reservoir of measures, presumably with group-wide definitions.

Despite the appeal of these, and similar, explanations, and without wishing to deny their possible validity, our case study demonstrates that other arguments were also at work. Most prominent among these was the power and identity dialectic between the parent company and its local sites. As Global has been one of the most successful companies of its type, and a market leader for many of its products, there was strong evidence suggestive of a desire to legitimate its international standing by demonstrating coherence and consistency through the use of the same measurement systems within the whole group. As other major international companies, such as General Electric, had their own brand of measurement systems, so it was felt that Global should demonstrate a similar philosophy. With the same token, the rejection by Global of other measurement systems, such as EFQM, was blamed, at least partly, on the insult felt by Global for being left out of the consortium of companies that were invited to initiate and inaugurate EFQM, even though Global was at least as successful as the most successful of them. In these arguments, issues of the parent identity and branding loom large. Global felt it had to demonstrate to all that it is too big a player to be marginalized, and also too important a company not to have its brand of performance measurement systems, as demonstrated by the

development of TIME, Process House, and its adoption of the BSC.

However, developing central measurement systems is one thing, their enforcement and policing throughout a group as large, geographically dispersed, and diversified as Global is yet another. Inevitably, efforts to enforce and police central measurement systems upon local sites have to be understood within the network of power relations and dialectic between the local and the global. Here, global identity and knowledge are confronted with local identity and expertise. Distance also plays a key role in mediating this dialectic, as each local site may wish to mobilize a particular performance measurement system that allows it to construct a particular narrative/story of itself in the act of presencing (Goddall and Roberts, 2003a, 2003b). The question then is how is such a complex and contingent relationship between the global and local managed?

One contribution of our study is the finding that the dialectic between the global and the local is strongly mediated by financial results. Despite a strong desire by Global to see its favoured performance measurement systems embraced universally within the whole group, the practice so far has been one of 'turning a blind eye' to local discretion in the choice of measurement systems, as long as financial targets set by HQ were at least met by the relevant local site. However, once performance fell below set targets, the centripetal forces acted swiftly to restore order, by demanding explanations, dispatching internal auditors and internal consultants to the scene of failure, and dictating HQ wishes. These findings have parallels in previous studies. For example, Ezzamel, Willmott and Worthington (2004) reported similar findings when exploring the politics of production in a UK factory that was owned by a large, North American multinational. The drawing of the boundaries of local decision making discretion seems therefore to be strongly influenced by the ability of the local site to deliver; the more successful the local site is the greater the discretion and decision making distance from HQ.

Quite how the local sites justify their quest for discretion despite the risks involved if they underperform, and how HQ rationalizes allowing local sites to make use of diverse measurement systems as long as they meet stated targets are issues worthy of further reflection. In our case study, there were a multiplicity of possible, and sometimes competing explanations. One of the most straightforward explanations from the local's perspective is the perception that the measurement systems favoured by HQ, while good in principle, were lacking practicality and sensitivity to the local level. Invoking the terminology of ANT, this suggest that local managers as human actors found it difficult to enroll the support of the measurement systems desired by HQ. Such difficulty may have been caused by lack of familiarity with, or difficulty of understanding,

the measurement systems at local levels, or because it was felt less appropriate to local activities, or because it would not help the local site construct an appropriate narrative of it self and its activities, or ultimately for the sheer satisfaction of affirming the identity of the local in the face of centripetal pressure. This implies that at the local level, networks built around measurement systems advocated by HQ either failed to materialize or were not sufficiently robust, with local knowledge suggesting better possibilities of technologies of measurement systems along with their more powerful networks (Latour, 1987, 1999; Law and Hassard, 1999). Similarly, in the terminology of neoinstitutional theory, sedimentation of HQ favoured measurement systems was resisted, and ultimately impeded, by other technologies of measurement adopted by local sites. To the extent that the measurement systems selected by local sites were permitted, it was these systems that were used to construct a narrative in the act of presencing by the local site to HQ; yet, here there is a relevant caveat. This act of representing self at a distance by the local, using the local's own choice of measurement systems, may have been taken by HQ to be of marginal importance, given that HQ's focus would be on the targets it set for local sites.

Another important observation relates to the etiquette via which this play of identity between the local and global was performed. This etiquette was a ritual of 'face saving' for the global; in face-to-face meetings the local acts as if it did embrace the measurement systems advocated by the global. Thus, when HQ directors visited local sites, reports based on the measurement systems favoured by HQ were produced, the terminology underpinning such systems exercised through management speak. For the local, this was seen to be a small price that had to be paid to secure the discretion gained; and for the global it was a ritual that reaffirmed its power, albeit token power in this respect, over the local. These scenarios were played out periodically between global and its two local units where we conducted our research; but once HQ managers went back from local sites, practices at local sites returned to their previous status, where local preferences dominated.

An outcome of this play out was that the organizational space of local units was the site of mutual existence of these multiple performance measurement systems. Even though measurement systems favoured by HQ were marginalized, or ignored altogether, at the local level, they nonetheless competed for attention and space. One consequence of this was an element of confusion and uncertainty in the minds of many local managers, including those who were involved in unrolling these performance measurement systems. To the extent that different measurement systems had areas of overlap and also difference, which was the case in the systems we examined in our case study, local managers became rather confused as to which system was meant to do what. In ANT terms, these multiple measurement systems were fluid

rather than fixed. Their lack of fixity arose from two arguments. First, each system that local managers had to enroll, there were the familiar diversity of in the ways that managers used the system. For example, in the case of the BSC some managers used it purely as a reporting tool whereas others attempted to use it to motivate decision making, and still others used it mainly to tell a story to inform others (including HQ) about what they are doing. Second, the multiplicity of measures with some overlap created an additional element of fluidity as some managers were uncertain as to which measurement systems to enroll and which to ignore. The sedimentation process (Clegg, 1979; Cooper, Brown, Greenwood and Hinnings, 1996) therefore reflected more of repetition, potential conflict between the multiple measures, and layering rather than obvious erosion. For while preferred local measures were accorded prominence at the local levels, HQ initiatives still occupied part of the organizational terrain. Their presence contributed to the creation of less stabilized networks of support and to greater uncertainty and contingency in the production of shared understandings of the multiple performance measurement systems.

Overall, our findings are illustrative of the ethos of ‘managing by numbers’ that emphasize ‘facts’ and evidence, and quantification at the expense of qualification as a means of governing the modern organization (Ezzamel, Hoskin and Macve, 1990; Rose, 1991; Porter, 1995; Locke, 1996). ‘Managing by numbers’ offers a mode of management that emphasizes intended rationality of decisions and actions, that treats performance measurement as an associated program, and multiple performance measurement systems as potential, or even competing, management technologies intended to effect the performance measurement programs. While the centripetal tendency commands an understanding that a unique, and coherent, set of measurement systems should be universally embraced by local sites as the driving force towards effecting performance measurement by emphasizing ‘universal’ facts and evidence, the centrifugal pull implies managing performance measurement through the generation of local truths and facts.

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