Exploring inter-departmental barriers between production and quality

SUCKLEY, Louise <http://orcid.org/0000-0003-2577-3731>, PRICE, Ilfryn and SHARPE, Jason

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Dr. Louise J. Suckley[1]

Sheffield Business School, Sheffield Hallam University, Stoddart Building, Howard Street, Sheffield, S1 1WB, UK email: l.suckley@shu.ac.uk tel: +44 (0) 114 2253081 fax: +44 (0) 114 2254038

Dr Suckley is a Research Consultant with Sheffield Business School currently working on enhancing innovation within organizations through the physical workplace. Her doctorate focused on public sector organizational behaviour.

Professor Ilfryn Price

Sheffield Business School, Sheffield Hallam University Stoddart Building, Howard Street, Sheffield S1 1WB

Professor Price is one of the UK's longest standing professors of Facilities Management and co-editor of an imminent book on Managing Organizational Ecologies: Space, Management and Organization. He collaborated closely with Peter Scott-Morgan's development of the Unwritten Rules methodology.

Jason Sharpe

Principal Researcher & Manager at Medico

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[1] Corresponding author

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Abstract

Purpose: To demonstrate the value of adopting an organizational ecological perspective to explore behavioural barriers in a UK Operations & Production Management (OPM) setting.

Design/ methodology/ approach: An ethnographic case study approach was adopted with a narrative ecological stance to deconstruct the perceived realities and the origins of the inter-departmental barriers applying Scott-Morgan's (1994) unwritten rules methodology.

Findings: Despite an improvement in the physical proximity of the production and quality control departments, the qualitative approach revealed that latent, socially constructed drivers around management, interaction and communication re-inforced inter-departmental barriers. Conflicting enablers were ultimately responsible derived from the organizational structure, which impacted the firm's production resources.

Research limitations/ implications: As a case study approach, the specificity of the findings to this OPM setting should be explored further.

Practical implications: Demonstrate the use of theoretical frameworks in a production and manufacturing organization to provide insights for maximising process effectiveness. Using the organizational ecological perspective to uncover the socially constructed unwritten rules of the OPM setting beneficially impacted on operational effectiveness.

Originality/ value: The paper contributes to organization ethnography literature by providing a detailed empirical analysis of manufacturing and services behaviour using an organizational ecology perspective. The example demonstrates 'qualitative' research can have real world impact in an advanced operational context. It also contributes to an ecological or complex adaptive systems, view of organizations and, inter alia, their supply chains.

Article classification: Research paper

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1 Introduction

Ethnographic studies rarely reach the sub discipline of Operations and Production Management (OPM) (Barratt *et al*, 2011) where an analytical research paradigm prevails (Chase, 1980; Meredith *et al*, 1989; Swamidass, 1991; Gupta *et al*., 2006). Alternatively qualitative case study research may have been too 'relative' for a pragmatic discipline (Meredith *et al*, 1989; Voss *et al*., 2002; Donaldson, 2005). Here we describe an in-depth ethnographic case study approach, a methodology considered to be the most appropriate for studying the specific context of a phenomena (Voss, *et al*, 2002; Siggelkow, 2007) which successfully evidenced inter-departmental barriers in an OPM context. The study resulted in managerial action and throughput improvement. Its qualitative approach demonstrates a contribution of ethnography to the somewhat sparse, but emerging (Taylor and Taylor, 2009) body of knowledge of this nature in the OPM field. Our context, 'Medico' supplies medical device products and services via numerous service centres throughout the UK. It is simultaneously a high technology manufacturer and a service business. Not unexpectedly they deploy lean approaches, advanced technology and engineering. Equally, given the products, quality control (QC) is critical.

Ethnography, as conceived and taught within current paradigms of organizational studies, is seen as qualitative, passive and subject to contrarian rather than constructive responses from other organizational scholars (Brannan, Rowe and Worthington, 2012). The ethnographer, through immersion in a setting aims at a rich interpretation of a particular, socially constructed context, hence ethnography has come to be perceived as both inductive and relative. Our approach here is somewhat different, it is broadly ethnographic, but is not obeying all the conventions of mainstream ethnography. Following Price and Shaw (1998), Weeks and Galunic (2003) or Price (2009) we see organizations as ecologies or Complex Evolving Systems (Mitleton-Kelly, 2003). Inductive, but realist, ethnography can, in this view, uncover real 'unwritten-rules-of-the game' (Scott-Morgan, 1994) in a manner that enables diagnosis (Ellison and Owen, 2010; Ellison and Flowers, 2012) and sometimes change and improvement. The research described here provided an opportunity to evaluate that proposition, and its utility within an advanced OPM environment, when evaluating a Facilities Management (FM) change in Medico.
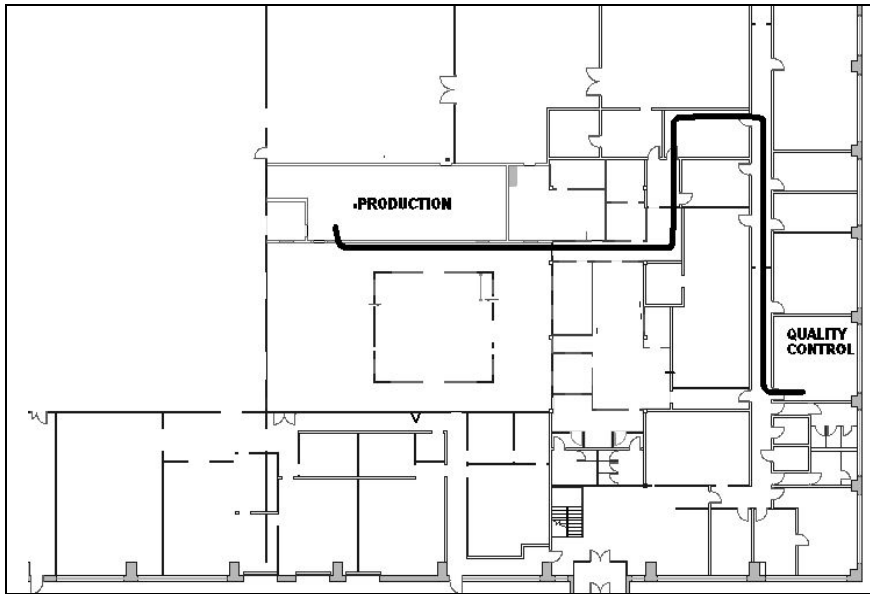
On the supply side Medico is, by some margin, the largest provider of its products in the UK. In 2008 the firm invested a substantial sum modernising their UK manufacturing facility, both in the working environment and the manufacturing processes. They deliberately sought to locate QC and production closer together to improve process efficiency, coordination and reduce the physical barriers between the two teams, a rationale supported by a number of studies (De Snoo *et al*, 2011, Pagnell, 2004, Vandevelde and Van Dierdonk, 2003) including Gilbraith (2002, p. 50) who suggests that:

"Proximity of employees is an important factor in fostering productive relationships. There is good evidence that reducing distance and physical barriers between people increases the amount of communication between them."
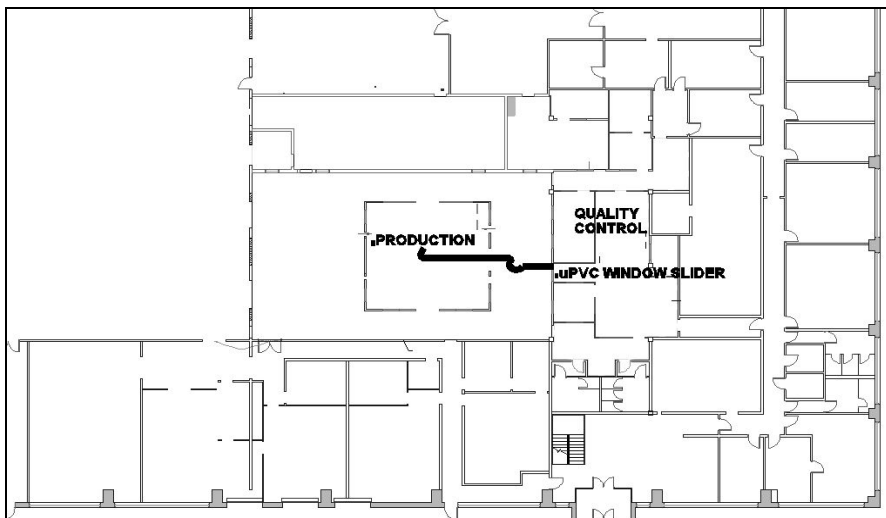
The before and after floor plans (Figures 1a. and 1b.) demonstrate the considerable change in the proximity of the two departments. Previously production staff had to take samples through to the QC, using the path shown, around 10 times a day, each journey taking 10 minutes. By relocating QC to its current location (Figure 1b.) and adding an access window to connect QC with the production process efficiency was improved substantially. However the access window did maintain a physical barrier between the two teams (an insistence of Good Manufacturing Practices where physical separation is required between process and analysis) and could be regarded as a way for QC to oversee Production.

Figure 1. Medico Floor Plan showing route taken by Production and Quality Control before re-location (a) and after re-location (b)

a)

b)

Despite this re-location the principal researcher, who at the time had responsibility for both engineering and facilities management (FM) within the manufacturing facility, was concerned with levels of throughput and suspected that much deeper cultural issues between the two departments were creating behavioural barriers and so was not addressed by the improved physical proximity. He believed that, as Price *et al*. (2009, p. 15) argued

"A relocation or refurbishment project can be an opportunity to interrupt existing memetic equilibrium and encourage the development of a new one. All too often however, the old patterns resurface. Rather as some forests have learnt to thrive and regenerate after fires so old organization ecologies tend to resurface".

Here we report the investigation into the existence of these behavioural barriers between the two departments identifying the underlying causes and reinforcements. We demonstrate how the results were blended with operations planning to enhance capacity/throughput. The remainder of the paper is structured as follows. Section 2 discusses the theoretical framework of the study. Section 3 explains the research methodology that was used. Section 4 presents the research findings. Section 5 discusses the main results. Section 6 discusses the recommendations made to the Vice-President of the firm based on the results and the actions taken. Section 7 concludes the paper and considers the areas for future research.

2   Theoretical framework

2.1   Organizational ecologies

The quotation from Price *et al.* above derives from a paper suggesting that facilities managers should appreciate socially constructed phenomena as a reality of the organizations with which they engaged. It drew on two organizational theories. First was Becker's longstanding use of the metaphor 'organizational ecology' to explain organizations as essentially complex systems characterized by the interdependence of social and physical systems (Becker, 2007). Changes in any one aspect of the system reverberate throughout the system (p. 46).

Becker was using complex in the sense of 'complicated' rather than the more recent 'complex adaptive system' (Price, 2004). A more literal ecological perspective of conceptual selection in such systems traces its roots to, especially, Hull's (1988) study of conceptual groups enabled, but also limited, by conventional wisdoms (Waddington, 1976) memes (Price, 1995; Price & Shaw, 1998) or 'modes of thought' (Weeks and Galunic, 2003). Price (2012) and Breslin (2012) explore parallels and also contrast conceptual selection and more conventional theories of population ecology in firms. In this organizational or narrative ecology perspective, language or discourse shaping perceived second order realities, is

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considered as an ontologically real phenomenon much as it was in the early days of organisational ethnography (Van Maanen, 1979). The narratives of various groups serve a function analogous to DNA in an ecosystem. Following Weeks and Galunic the organization is visualised as an ecology of 'modes of thought' rather than a single 'organism' or entity.

2.2   Organizational Rules: Written and Unwritten

Scott-Morgan's *Unwritten Rules Of the Game* (1994) suggested that analysing ethnographic data for common motivators (values or modes of thought), enablers (people who granted or withheld motivators) and triggers (events that did likewise) would reveal unwritten rules as routines of organizational behaviour. Those routines can be considered the means by which 'modes of thought' (sensu Weeks and Galunic op cit.) are replicated. We adopted Scott-Morgan's methodology.

An organization's formal written rules are expressed explicitly via policies and procedures (Johnson *et al* 2006, p.54) however according to Scott-Morgan unwritten rules also emerge to provide the user with an alternative method to comply with the organization's expectations in practice. Assessing the approach, McGovern (1995) concluded that the method was flexible, in that, along with assisting change management programmes, it could also be used in appraisal form to assess the health of an organization. With that in mind there is an assumption that individuals' perceptual realities and associated conversations also effect day to day operations through the interaction of people. McGovern (1997, p. 56) even went on to question the value of written rules and policies in an organization:

> "if organizations (are) really creatures of their own unwritten rules...should the written rules (policies and procedures, etc.) be viewed as little more than symbolic statements by self-indulging groups of managers? Why then do organizations continue to have them?"

[Discourse Analysis section moved to here] Arguably what Scott-Morgan's method is revealing are shared constructed realities developed by individuals through language and associated conversations that take place. Within organizational ecology, organizations are systems of 'conversations' in the broad sense explored by Ford (1999). The 'modes of thoughts' outlined by Weeks and Galunic (op cit) are equivalent to Ford's socially or linguistically constructed realities (Price, 2012). Ford argues that first order realities require a

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set of linguistic agreements, understandings and vocabulary for their existence (p.482) and can be considered to be the formal rules and procedures in an organization. An individual's interpretation of reality relies on what they know or what they believe to be fact and gives rise to their second order reality. Hence the consequence of their reaction depends on how they interpret the first order reality conversation (p. 483). Background conversations are considered by both transcribers and to an extent receivers (unless knowing otherwise) as realities (Ford *et al*. 2002, p.109).

Ford *et al* go on to suggest resistance to change relies on conversations that support three, generic, resistance inducing background realities; complacency, resignation, and cynicism (ibid, p.110). All resultant conversations rely on historical examples of success and failure. The degree of change whether incremental or revolutionary (Johnson *et al*. 2006) is of little consequence. The result should complement the expectation; the often underappreciated influence is the human being.

2.3 Understanding Medico

Weeks and Galunic (2003) suggest that firms can be seen as ecologies made up of populations of individuals who carry particular 'modes of thought' or 'memes' using the latter term to refer "collectively to cultural modes of thought ideas, beliefs, assumptions, values, interpretative schema, and know-how" (p 1309) that "when they are enacted as language and behaviour and other forms of expression create the macro-level patterns of culture". For Weeks and Galunic modes of thought are not replicated through the interaction of organizations per se, but in the thought processes of individuals. The formal organization, or firm, is an outcome rather than an instrument of cultural evolution (p. 1315) and 'silos' or groups are the 'species' that interact in the ecosystem[2]. Modes of thoughts are essentially social constructivist in nature (Berger and Luckmann, 1966) hence the post-modern, constructivist or linguistic trends in organizational studies can be seen, if Weeks and Galunic

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[2] The perspective can naturally extend to supply chains as complex systems (Choi *et al*, 2001), and is explored by Ellison and Flowers (2012)

are correct, as an ontologically real perspective on such phenomena (Price, 2012). Was this happening in the problem being studied? To find out we needed to identify then understand how to manage any unwritten rules in Medico. The research, which addressed an operational concern, was simultaneously an opportunity to empirically test Weeks and Galunics' theoretical proposition.

It is also important to understand the strict compliance required in Medico, governed by the International Organization for Standardisation (ISO). Within production ISO: 13485 for Medical Devices is key and specifies the need for a quality management system to demonstrate the organization's ability to provide medical devices that consistently meet customer and regulatory requirements. Demonstration in turn depends on reliability and proven results via policies and procedures. Setting an operational benchmark that is repeatable is paramount to maintain accreditation, so operationally it could be considered that this creates a division of labour or departmentation (Hatch and Cunliffe, 2006, p.103).

Despite the introduction of the locational solution operational effectiveness continued at the same level. The principal researcher suspected an underlying unwritten inter-departmental barrier. It was necessary therefore to seek a perspective outside of the OPM mainstream to uncover how any such non-physical barriers were being maintained.

3   Methodology

3.1   Research approach

Ethnography can be any full or partial description of a group as a means of identifying common threads, whether these be religion, social relationships or management style (Goulding, 2005, p.299). Immersion into the social world that is being studied is instrumental to the success of ethnographic research. It has been claimed that this type of study requires an extended research period to allow the researcher to become fully immersed in his or her surroundings (Saunders *et al*, 2009, p.149). However the principal researcher passed the last four years as Medico's Facilities Manager so was already au fait with the operational area. Additionally Scott-Morgan, with his pragmatic stance, argues against necessary immersion.

He suggests a combination of internal and external researchers can actually assist the speedy elucidation of a particular set of unwritten rules[3]. The principal researcher nevertheless was able to bring his rich knowledge and experience of the organization to the research, but to guard against any undue bias he captured the data explicitly and corroborated interpretations with a second researcher that was experienced in using Scott-Morgan's framework and a third researcher independent of the methodology. In one sense the project did depart from conventional, theory-neutral, ethnography. However we suggest that mainstream qualitative research has not embraced either Scott-Morgan's or Ford's work, or the ecological perspective outlined above (McGovern, 1997; Price and Shaw, 1998; Ellison and Owen 2010).

Fortunately authorisation for this study was not difficult to obtain. The gatekeeper (Saunders *et al*. 2009, p.170) was Medico's UK Vice President (VP). Once the ethicality of the study was outlined to the VP, access and authorisation was granted. Participants were advised by email of confidentiality; something repeated verbally to each participant. Data was collected in the form of recorded interviews and informal discussions. Individuals selected for interviews interacted with the principal researcher as part of their role. Although Scott-Morgan's (1994) work suggests a selection of middle management gives the best results we selected a blend of individuals from senior management through to operational staff. Indeed it is worth reflecting that 'middle management' has become less common since the early 1990s. The work concentrated primarily on the production and quality departments as this was where the barriers were perceived to persist in second order realities despite the change in the first order reality of the co-location and improved proximity. Interviews were undertaken with a complete cross section of operations staff, from the most senior management to the machine operative, were interviewed.

The interview approach followed Scott-Morgan's advice of seeking to make the exercise one in which the interviewee could feel relaxed and be encouraged to reflect and talk freely. Questions were designed to make the participant feel comfortable through the interview process but, moreover, disclose their true feelings. Although the primary objective

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[3] One of the authors worked with Scott-Morgan as, then, an internal researcher.

was to gather rich data for the purposes of understanding the rules and problems people felt as part of their working day questions also alluded to the individual's motivators, enablers and triggers. Interviews were undertaken in two stages. The first interviews covered broader motivators of working for Medico and impressions of the organizational and departmental cultures. The second were undertaken to validate the initial results found around motivators, enablers and triggers focusing particularly on departmental interactions, management relations and communication.

3.2   Coding

Scott-Morgan suggests coding interview statements as expressions of:

- Unwritten rules: "The kind of advice you would give a good friend who had joined your organization and wanted to know what he/she had to do to survive [the way we do things here]" (McGovern, 1995, p.16).
- Side effects: Statements that suggest impacts on an organization arising from people following the rules. These need not be deleterious.
- Motivators: The common motivators of groups within the organization.
- Enablers: Those in a position to grant or withhold individuals achieving their motivators.
- Triggers: The events through which individuals influence enablers.

He went on to argue that unwritten rules could be understood as logical combinations of particular Motivators, Enablers and Triggers while side effects could be seen as tendencies influenced by the Unwritten Rules. These assumptions are not made as simple statements of cause and effect but rather as ways into the dynamics of organizational systems. One of the current authors collaborated with Scott-Morgan on a number of studies (Price, 1995; Price and Shaw, 1998). McGovern (1995) independently validated the method as repeatable while more recently Barnaby (2007) also tested it.

Similar rules can have different explanations as for example 'don't bring bad news to the top of the business' which has been reported in environments where the motivators were all about impressing senior managers, and ones where there was a strong sense of perceived loyalty to an innovative company. Surfacing them does require some patience and empathy by the interviewers as for example then asking whether the rules appear logical in relation to the motivators, enablers and triggers.

For example, when one individual was asked what inspired him to work at the organization the response related to the limited external employment opportunities. However as the conversation progressed the following statement enforced a different view:

"I feel like I am making a difference. How many other companies can you work for unless you are a doctor [or something] and save lives. The organization [in my opinion] is like an emergency service".

The first remark, about opportunities, is relatively conventional. The subsequent statement seems to profess an intrinsic motivating factor that is enabled via working for the organization; viz. 'we save lives'.

To guard against individual quirks such statements are only carried into the analysis if they are verified by at least 25% of an interview population; a rule-of-thumb that proved workable in several early tests of the method.

4 Research Findings

4.1 Motivators Enablers Triggers (MET)

Using Scott-Morgan's MET framework (Scott-Morgan, 1994; Barnaby, 2007), the key motivating factors uncovered for both production and quality staff were:

- Challenges or making a difference

  "Challenges…having almost impossible situations and overcoming barriers. I get bored if challenges are not there"

- Money, family and career

  "Family, protect them as much as possible"; "Get some money to invest out of work"; "opportunity for progressing further in career with Medico…it's a good stepping stone for that purpose"

- Stability and commitment

  "I hate getting behind and not being able to keep up and plan for future"

- Change and teamwork

"Frustrating when change doesn't happen. Most people talk the talk but don't walk the walk"

It was found that in most cases the Enabling factors were management along with targets and objectives. As such the obvious Triggers relate to impressing management and achieving the targets and objectives associated to individual or departmental roles.

4.2   Unwritten rules for production and QC

There were five key 'unwritten' rules identified in the production and QC departments which resulted in problems in behaviour, especially inter-departmental barriers.

Rule 1: Remain market leader

"The fact that it is a very stable company with it being a market leader. From a production point of view we don't have any competitors in the market place, which results in a stable working environment"

"We are the best and this is how we do it"

Medico has the luxury of leading the market in which they operate and an unwritten rule amongst the senior management was to maintain this position. The operational participants made little or no reference to the importance of market share directly even though stability which leading the market naturally provides was, for them, an important factor. In order to maintain this stability, the culture at the company was also described by an operations participant as being risk averse.

"Risk averse in one sense, in the sense of belts and braces to make sure we don't make mistakes [asks himself is it risk averse?]. We do take risks in business decisions, risk averse in the sense that there is a strong reputation which is important, reputation of the name of the company. Protection of that name in the market place comes above everything else."

An unwritten rule in the form of: "don't do anything to blemish the brand name" is established here. The subsequent wanted and unwanted side effects are as follows. Firstly policies and procedures in most cases are abided by. This ensures that the product is received

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by the customer as specified and therefore reduces instances of customer complaint. Since Medico is highly regulated the maintenance of operational activities and the Quality Management System (QMS) which supports them, is paramount. The unwanted effect of arrogance within the market place could cost the organization dearly if not managed correctly.

Rule 2: QMS/ Control - ensure that the quality systems are followed and understood.

"[During Audits] we have to make sure everything is perfect when being observed, but once that's done standards do drop a slight bit. But when I say standards drop it's for reasons of practicality. When an attempt is made to follow the QMS explicitly production volumes cannot be maintained"

"my actions have a direct impact on the patient. The Laboratory acts as a safeguard between the production operation and the patient. This is possibly not valued by other departments who may think my job is easy. There is a lot of pressure to get things right, mistakes could have very serious implications for the patient"

Within the operational area of the product business ISO: 13485: Medical Devices is key. This particular branch of ISO relies on consistency and proven results via policies and procedures rather than tools for continual improvement. Setting an operational benchmark that is repeatable is paramount to maintain accreditation. Operationally it could be considered that this creates a division of labour or departmentation (Hatch and Cunliffe, 2006, p.103) between the volumes required from the production department and the quality of the product from QC which could impact negatively on capacity/ throughput. This organization relies heavily on strict policies and procedures as a model of consistency for employee control.

Participants had varying understandings of the QMS, this was mainly dependant on seniority, that being the more senior the better the understanding. Regardless of position, the QMS remained a major influence on how people performed their duties. Conflict of interests began to emerge during the research surrounding the QMS and the differing priorities of the

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production and QC departments to meet the standard. An unwritten rule was evident around the conflicting priorities of the two departments.

From this it is obvious that departmental barriers are indirectly promoted by the application of the QMS. Scott-Morgan (1994) suggests that departmental conflict is a classic symptom of conflicting enablers that are roughly in balance. At this organization the production staff have an awareness of the requirements and importance of the QMS but have to balance against another pressure from their direct manager for production volume.

Rule 3: Do what it takes - go to any means to ensure output

"[Working additional hours] I think people are probably expected to work whatever they need to do to get the job done"

"There is a patient at the end of what we do and people will go out of their way to ensure that the patient is not inconvenienced, because of this people won't just close their books and go home"

"There are certain terms and conditions that are not spoken or written down. A good example is staying behind 15 minutes and not being paid for it"

One of the key factors in the psychological contract between the organization and the production and quality assurance departments was around ensuring that the work was completed on time and in the volumes required.

The unwritten rule found was that additional hours will be worked when required. One individual confirmed this when he commented, "you would be seen as unreasonable if you don't do what the company expects". In most cases, staff accepted that if the extra hours were formally recognised or rewarded then there would be far lower sickness levels and unproductive background conversations, which are currently the most common side effects. However most staff felt that this remained a one-way relationship, between them and Medico.

Rule 4: Patient comes first - patient care is paramount

"There are people who are dying and need this stuff……come on and do some overtime"

"'Medico' makes a difference to others lives"

"Do not inconvenience the patient – provided good ...(the product)"

Understandably from an operational perspective in this organization lies the awareness that your actions and subsequent mistakes could ultimately harm the patient. This written rule is clearly stated in Medico's vision statement and quality policy: In the centre of all our efforts is the health and welfare of the human being.

Although a clear written rule in this organization, it is also used as an unwritten rule in terms of motivating staff to conform with requests when the 'patient card is played'. This was particularly true for the operational staff in the production and QC departments, with the example from one participant commenting,

"Imagine if any other department (referring to customer services, finance etc.) were asked to work twelve hour shifts over a twenty four hour period at the drop of a hat".

The conversation further suggested that inter- departmental barriers were inadvertently promoted during times of crisis, which demonstrates an unwanted side effect of the unwritten rule. A wanted side effect however is the teamwork that appears during times of crisis in the operational departments, where, in most cases, production and quality react proactively and positively as a team. In terms of Scott-Morgan's (1994) MET framework, challenge arising from the routine can be seen as the motivator and crisis is the trigger.

Rule 5: Impress management - do a good job

"Like people to conform, toe the line, fit in. Don't create waves and conform and will be made to do this"

"Achieve volumes" (of product)

"Try to make sure you behave and do everything to a tee. They are tight on very small things."

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This is a written rule of most organizations in terms of meeting your responsibilities as an employee, and as such an unwritten rule also emerges. In his research, Scott-Morgan (1994) was looking at aspirational managers, and for them impressing their own manager was mainly related to career progression with an unwanted side effect being chronic short-termism. In the case of Medico, a similar phenomenon was found at a more operational level driven primarily by the silo departmental structure which presided given the competing departmental objectives. Describing departmental barriers as the 'silo-virus', Schutz and Bloch (2006, p. 42) suggest the following:

> The carriers of the silo-virus are not the functional areas themselves, but the people working in them. Consequently it is not the "chemistry" between departments, but the chemistry between people that creates the bridge across critical interfaces.

Ultimately impressing one manager may be to the detriment of another's beliefs, as previously shown in terms of achieving volumes regardless of possible compromises to quality. It is clear at this point that there is an overlap between the unwritten rules.

5   Main Results

The application of Scott-Morgan's (1994) methodology not only identifies the unwritten rules for the QC and production departments at Medico, but also reveals the side effect of these rules. Inter-departmental barriers were the predominant unwanted side effect promoted by the unwritten rules. They translated into different and conflicting rules in the two departments, 'getting it right' and getting the necessary materials to the patient.

Communication was found to play a major contributing role to the perceived inter-departmental barriers between production and QC. Although Medico's vision statement was mentioned a number of times in the interviews, very few people were able to support the presence of clear focused corporate strategy. The vision statement was used as a mechanism for communicating the expected organizational culture, however as one individual commented *"we can all stick pieces of paper and instructions on the wall, this doesn't mean they will be followed"*. Feedback on the day -to-day communication however suggested that the organization's first order reality had not been defined. First order realities require a set of linguistic agreements, understandings, and vocabulary for their existence (Van Maanen, 1978; Ford, 1999). Ford goes on to discuss how second order realities create an alternative

reality when personal (mis)understandings are applied (the unwritten rules). Most participants implied that, although communication issues exist the tools were available to improve this inefficiency.

Opportunities for inter-departmental communication were perceived as rare which continued to be the case following the improved proximity of the two departments, thus reinforcing the silo mentality. Production and QC operatives had little sense, or recognition, of senior management, and by default their immediate line managers became the key enablers. The unwritten rule 'impress your boss', which is of course common (Scott-Morgan op cit.) became very focussed on immediate departmental activities. Operatives did not see themselves as part of a bigger picture.

> *"Communication between departments within what should be classed as one production environment is not [joined up]."*

The management structure at Medico also played a part in reinforcing the inter-departmental barriers. When an interviewee was asked what de-motivated him, his response was undue criticism from other departments for what he called 'poxy' things. He also suggested that when this was reported to his line manager nothing was done to counter this criticism. In most cases the enabling factors were management along with targets and objectives. As such the obvious triggers relate to impressing management and achieving the targets and objectives associated to individual or departmental roles.

> *"It's production, labs and quality. If I'm being completely honest we don't work well together, we never have worked well and I don't believe we will work well until certain changes in management are put in place.*"

Medico's organizational structure is typically vertical which promotes a directive rather than embracive management style (Johnson *et al*. 2006, p.516). The production department perceives that it is very low in the power structure. One participant commented, in a statement that reflects a socially constructed, second order reality:

> *"Production operatives are [perceived as] scum and are treated like that by the customer services, everybody throughout the building. We are the thick idiots that work the machines and nobody actually understands the importance of what those people out there do".*

The root cause of this feeling may lie in the original leadership of the company having a clinical focus which bestowed greater prestige on those in similar roles. In recent years, leadership has moved towards those with backgrounds in engineering and medical devices which has brought about a greater focus on operations as being a key part to business strategies and industry contexts promoting a more resource-based view of strategic management (Gagnon, 1999; Hayes and Wheelwright, 1984; Rumelt, 1984).

There was no clear direction from senior management on the use of the QMS which created a conflict between the production and QC departments. The senior manager directly responsible for the QMS explained that there were areas of incompatibility between corporate procedures and the quality standard, as the latter was introduced after the former had been adopted. The QMS in fact became a system for managing documents rather than one for assessing the process. It became a meme that generated opposing second order realities between production and QC through individualised performance indicators and promoted a culture of consistency required solely for maintaining ISO accreditation. Because the system was misunderstood and used inappropriately, it generated conflict between the departmental teams that made use of it. This conflict was evident at all operational levels including management and staff, and was primarily due to management requirement (the departmental objectives).

6   Recommendations and Actions

Scott-Morgan (1994) developed the unwritten rules methodology as a mechanism for facilitating organizational change, it was fundamental therefore for the approach to uncover data that was considered valuable and meaningful to senior managers. The prime aim of applying the unwritten rules analysis to Medico was to address a number of problematic business issues, including a declining profit margin and evidence of barriers re-emerging despite the removal of physical barriers between the production and QC departments through an improvement in their proximity. The senior managers that approved the research were keen for it to identify actions that would address these issues, so we include here the recommendations and actions that were made. Simultaneously, by including these actions, it demonstrates how realist ethnography can impact on management.

The inter-departmental barriers were confirmed to be the predominant unwanted side effect promoted by the unwritten rules at Medico that impacted negatively on operational

planning resulting in unnecessary cost and rework in a complicated production environment. Conflicting 'modes of thought', constructs or memes were evidenced in the production and QC departments as separate elements of the intra-organizational ecology (Weeks and Galunic, 2003) and they needed to be addressed.

Once the Motivators, Enablers and Triggers (MET) have been evaluated, it is the evaluator's job, argues Scott-Morgan (1994), to determine how these factors can be enhanced or changed, which in this context is the removal of inter-departmental barriers. For this secondary analysis of recommendations for organizational change at Medico, the MET structure used for the unwritten rules analysis can be used to identify solutions, focusing on the Triggers.

The principal researcher made a number of key recommendations to Medico's VP to address the inter-departmental barriers that were impacting negatively on capacity/ throughput. Keen to improve production levels, the VP supported the recommendations through action. In this sense the ethnographic case study approach that was adopted by the principal researcher, who was also Medico's Facilities Manager, became one of Action Research, although we do not report the detailed impact of taking this action in this paper. Nevertheless it would have been unethical for the researcher not to act upon the research findings given his work role capacity and responsibility to the organization.

Among the key recommendation was the management structure of the QA and Production functions. Previously QA was under the Medical Director (who was a Board level director) and Production was the responsibility of the Manufacturing Manager (who was not at Board Level), but it was recommended that the QA and Production Manager report to a single Manager having overall responsibility for throughput which would overcome the conflicting requirements of the separate departments and assist with communication. The managerial structure was reconfigured. Both the QA and Production Manager now report to the same Manager (the Plant Manager); a new role that reports directly to the VP. The new Manager's role and its direct reporting line, now demonstrate the importance of both production and quality to the wider organization showing better internal strategic fit as well as external fit with the market (Ruffini *et al* 2000; Hill and Brown, 2007).

The principal researcher anecdotally confirms that there is now much less evidence of a conflict between the production and QC departments since the reconfiguration of the

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reporting lines with one individual being responsible for achieving both volume and quality targets. Because quality assurance now plays an equal role to production volume in the organizational structure, the overarching Manager also promotes a culture of transparency amongst his team. He has made transparency of change a clear first order reality amongst his staff, so that when problems arise there is interest in understanding the root cause to avoid future problems, as opposed to the previous blame culture.

Another recommendation to VP focussed on overcoming the issues with communication identified in the research. The introduction of wide and various communication channels was recommended, providing opportunities for dualistic communication between management and each of the departments, but also facilitating the communication between the departments. These include interdisciplinary project teams called Process Improvement Groups which meet monthly to share issues and solutions; A monthly team meeting that involves both production and quality staff discussing the impact of their work and the position of the business in the wider market; and teambuilding exercises are used at regular intervals, along with team based decision making processes, which ultimately saves time and reinforces the importance of the team.

Recommendations were also made to address the unclear first and second order realities identified in the research to arise from the QMS. The QMS had become a tool merely for producing the documentation that governed it rather than directing the processes it involved, resulting in competing second order realities between production volume and quality. The organization was advised to re-evaluate the processes required for compliance to give more of a balance between production and quality assurance, yet still meeting the requirements for ISO accreditation. The action was taken and the organization now places greater emphasis on the Operational Equipment Effectiveness (OEE) which was a measure always used by the company, but it took a back seat to the QMS since this historically fulfilled the all-important ISO compliance. The OEE is a more rounded measure and takes three objective complementary measures of the production operation and also in fact complements the requirements of the ISO accreditation. The measure has increased from 69% effectiveness to 89% effectiveness in the last year, as production and quality assurance operatives are considered to embrace the culture of transparency that has been introduced by the Plant Manager and report any errors or issues. With this measure, errors are attributed to

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the plant equipment rather than the people that operate them, so transparency does not assassinate individuals.

7   Conclusions, limitations and future research

Adopting a theoretical framework developed outside of the field of OPM provided valuable insights into the organizational behaviour of the production and QC departments in Medico. The application of an organizational ecological perspective demonstrated the importance of addressing socially constructed unwritten rules within operations management that had an impact on operational effectiveness. Scott-Morgan's (1994) framework proved a tool that was able to reveal, and explain, organizational dynamics within Medico in a manner that resulted in management action and improvements in organizational effectiveness. In that sense the research supports the validity of the framework and demonstrates practical application of ethnography in an operations environment. Contra however to Scott-Morgan's original suggestion the research has shown that it is not only the unwritten rules of middle management that obstructs change, but also those adopted on the shop floor. In today's arena of empowerment and resource cost efficiency, staff opinion was considered to be more complementary to the study than middle management only, so in that sense the case reported extends the validity of the analytical approach adopted.

The realist ethnography approach we have described may be of wider relevance in OPM and OPM research. As others have noted it is a field which has continued to emphasise quantitative methods and the use of analytical research paradigms (Chase, 1980; Meredith *et al*, 1989; Swamidass, 1991; Gupta *et al*., 2006) whereas traditional, or relativist, ethnography has emphasised the uniqueness of concepts and the researcher's individual interpretation. The realist ethnography described in the case study did assume culturally rooted barriers to change, but also recognized an ethnographic approach as likely to be fundamental to gathering the empirically rich content necessary to understand the organizational ecology and uncover the unwritten rules of the organization. An advanced but operational 'shop-floor' is revealed as exhibiting behaviours rooted in socially constructed modes-of-thought, the perceptions each group had of the other and the self-fulfilling behavioural patterns that were consequentially adopted. The results offer, we argue, a demonstration of the value of at least a certain form of ethnography to OPM practice and hence a means by which ethnography might contribute to future OPM research.

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The theoretical, organizational ecology perspective we used has much in common with complexity especially the evolving rather than adaptive view of complex systems. We examined emergent issues that affected production volume not appreciated by the previous control methods in place. The knowledge, experience and awareness gained from adopting this approach was also invaluable in identifying the conceptual structure that could be 're-engineered' so as to initiate the required organizational change. We use the engineering metaphor with a caution because, fundamentally, the solutions changed the triggers (sensu Scott-Morgan, ibid) rather than the underlying motivators. Pursuing an ecological analogy it may be closer to selective breeding to encourage desirable traits rather than true genetic engineering (c.f. Price, 1995).

Potential limitations of the study should be recognised. Firstly as a case study the research has been undertaken on one particular service and manufacturing business. The specific results may not be generalizable, even if the method is. As Scott-Morgan emphasised the particular drivers of unwritten rules may be specific to particular organizations, or subsets thereof. Second, the realist ethnographic approach adopted was conducive with the work role of the principal researcher and his experience of the organization's behaviour, but this could equally have influenced the feedback that interviewees provided. Scott-Morgan's recommendation to the effect that ideally an unwritten rules investigation should be undertaken by a combination of internal and external researchers could not be followed in this instance for reasons of confidentiality. We did however scrutinise the results twice, once by a researcher very familiar with the original method and once independently. Thirdly, as with all cross-sectional studies, the results could be influenced by the specific circumstances of the time period that the interviews were undertaken. This may be especially pertinent given the recent change in physical proximity that the two departments had experienced however the degree to which the subsequent actions by the VP enabled beneficial changes would argue that against time specificity. It is the example of a realist ethnographic study benefiting an operations and production orientated organization that we hope the case demonstrates.

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