

## **THE GOLDEN CIRCLE: A CASE STUDY OF ORGANIZATIONAL CHANGE AT THE LONDON AMBULANCE SERVICE [CASE STUDY]**

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### **ABSTRACT**

*This paper analyzes the way in which the London Ambulance Service (LAS) recovered from the events of October 1992, when it implemented a computer aided despatch system (LASCAD) that remained in service for less than two weeks. It examines the enactment of a programme of long-term organizational change, focusing on the implementation of an alternative computer system in 1996. A contextualist approach, informed by the sociology of translation, is adopted for the analysis. The paper examines how alternative interests emerged and were stabilized over time through the use of discourse and power within and outside the organization. A key element in the process was the Golden Circle, a method of association used to engage key actors in a change intervention, while isolating them from external influences that might see things otherwise. The story traces four years in the history of the LAS from the aftermath of October 1992, through the birth of the Golden Circle to the achievement of National Health Service (NHS) trust status. LASCAD was the beginning of the story, this is the middle, an end lies in the future, when the remaining elements of the change programme are enacted beyond the Golden Circle.*

### **1. INTRODUCTION**

The London Ambulance Service (LAS) is one of the largest ambulance services in the world. It provides an accident and emergency service for London's 16 district health authorities, covers a geographical area of over 600 square miles and services a resident population of nearly 7 million. In October 1992 the LAS attempted to introduce a computer aided despatch system, LASCAD, to handle the command and control functions of the service automatically. The story of the events leading to the collapse of LASCAD has been told many times and in many ways, but what has received much less attention from academics and media alike is what has happened at the LAS since then. Between 1992 and 1996, the LAS was the subject of two major public inquiries following the failure of its computer system and the death of Nasima Begum. It attended a House of Commons Select Committee inquiry that investigated the performance of the service, and experienced various formal and informal evaluations by health authorities, Government ministers and the media. The outcomes of these evaluations have been that the LAS was awarded National Health Service (NHS) trust status in 1996 and received a British Computer Society award for its control room and computer system in 1997 (London Ambulance Service Web site).

This paper is an account of one part of the LAS' recovery from the events of 1992, through a process of long-term, and ongoing, organizational change. It focuses on the implementation of an alternative computer system, called CTAK, in 1996. It does not seek to explain LASCAD as exceptional failure nor CTAK as exceptional success, since such dichotomous reasoning is thought to present too narrow a view. Rather the argument is that organizational change is often highly contested (Knights and Murray, 1994), since a multiplicity of views of reality is a naturally occurring phenomenon. Thus, the change process is essentially precarious and unpredictable, but moments can be reached when conflicting interests are stabilized sufficiently to create space for movement, in which a change intervention can occur. This paper examines how such a space was created at the LAS, providing an environment in which a specific technological change intervention took place in 1996. Following this introduction, section 2 explains the research approach used in this paper. Section 3 presents the case study narrative. Section 4 analyzes the case using the sociology of translation. Section 5 presents conclusions from the study.

## 2. RESEARCH APPROACH

Accounts of LASCAD (for example, Page et al, 1993; Financial Times, 1993; Beynon-Davies, 1995; Hougham, 1996; Wastell and Newman, 1996; Introna, 1997) present it, to varying degrees, as a project in which the interests of staff were poorly addressed by management. Explanations of managerial and staff action necessarily differ according to the model of human behaviour adopted by researchers. These accounts also refer to environmental forces prevailing at the time, although again they vary in the extent to which they examine how these global forces influenced action locally. These two interrelated issues – the nature of human agency and the way environmental forces influence action – are the focus of this research. They are felt to be key to explaining not only why LASCAD collapsed, but also why CTAK was adopted. Furthermore, a consideration of these issues is more widely accepted as essential to understanding how organizational change takes place, as other authors argue.

Research on organizational change and information systems has been the subject of detailed study by Walsham (1993) and Knights and Murray (1994). Whilst recognizing that these authors claim a strong affiliation with social constructivism and that their reviews reflect this orientation, they address and draw from a broad range of schools of thought in the interpretive research tradition. This view of knowledge as a social construction, and an openness to different theoretical perspectives reflects our own research position. In referencing Walsham's review of the literature, the particular interest of this paper is his adoption of Pettigrew's theory of contextualism (1987, 1990). Our interest in contextualism stems from its ability to address the global and local environments of organizational change through the outer and inner contexts, whilst linking between these levels using a cultural/political perspective. Walsham (1993) describes a number of case studies grounded in a contextualist approach that draw upon the social theory of structuration (Giddens, 1979; 1984) to explain action from a cultural/political perspective. In a later study, Walsham and Sahay (1999) draw on contextualism and actor-network theory to analyze the implementation of geographical information systems in India.

Knights and Murray classify the literature of organizational change along two dimensions, reflecting the focus of research (as increasingly globalized or localized) and position with regard to politics (as disruptive or inescapable). They conclude that processual theory (Pettigrew, 1973) has value to offer, but suggest that this theory be incorporated within a perspective that views conflict as endemic in (rather than disruptive of) organizational life. The authors emphasize the importance of addressing both the global and local contexts of change and, in this sense, are critical of actor-network theory (Callon, 1986; Latour, 1987), suggesting a localized focus in this approach. Knights and Murray propose a processual approach to organizational change, in which global and local conditions are socially constructed and enacted in a political process of power/knowledge relations. They draw on social theory, in particular from the work of Foucault (1977a, 1977b) on the circular relationship between power and knowledge.

Avgerou (2000) also argues for the use of social theory in information systems research. She suggests that while, historically, systems theory and organizational rationalism have been dominant research approaches in the field, structuration theory and critical theory offer powerful and increasingly visible alternatives. These

alternatives, she argues, can enhance our approach to, and understanding of, information technology (IT) and organizational change.

Without wishing to engage in a debate about how authors have positioned the literature within a particular classification scheme, we suggest that these researchers raise two issues of specific interest to this paper. First, that an analysis of organizational change should consider both the global and local contexts of change, and second, that social theory can provide a model of human behaviour that helps us to arrive at a rich understanding of what did happen, is happening and may happen. These two issues are related in so far as social theories, such as structuration theory and concepts of power/knowledge relations, provide an enabling mechanism for linking between the global and local contexts. On the latter point, we suggest that this linkage mechanism is also available within actor-network theory, in line with arguments by Latour (1991) and Walsham (1997). This paper addresses these issues by presenting a multi-level analysis of organizational change that draws on the sociology of translation (Callon, 1986), one of a number of powerful tools and ideas, collectively described as actor-network theory (Latour, 1987). The sociology of translation addresses how key players interact with one another, forming alliances and mobilizing resources in support of their own interests through the use of discourse and power. The outcome of these interactions is a particular change intervention, arrived at through four moments of translation, which are problematization, intersement, enrolment and mobilization.

Problematization occurs when a key actor defines a problem in terms of a solution s/he can provide. The key actor identifies a group of other actors whose identities are defined in such a way that the proposed solution starts to become an obligatory passage point in the network being built, in other words, the only way to resolve the problem. During intersement the actor who has proposed the solution attempts to stabilize the identities of the other actors, who may submit or decline. Various intersement devices are used to link actors to the proposed solution and weaken their links with actors who would see the problem otherwise. If successful, intersement confirms the problematization and helps to corner the entities to be enrolled. Enrolment is a negotiated process in which stratagems and trials of strength accompany the intersements and enable them to succeed. Some actors may be enrolled without discussion, others may need to be seduced, persuaded or forced. Mobilization involves designating representatives for the actors, who displace the actors themselves, and speak for them. If successful, mobilization results in a constraining network of relationships, but this may be challenged at any time. The delegates can be betrayed by those they were thought to represent. Translation is achieved by displacements that require discourse and the exercise of power. If successful, it directs actors towards an obligatory passage point. If not, it diverts them away from it.

In section 4 the sociology of translation is used to explain organizational change at the LAS over four years. In this case study, the global context is of particular interest during problematization, while the local context becomes increasingly important during intersement, enrolment and mobilization of allies for a particular change intervention. Therefore this research examines both how environmental forces influenced action during a specific period of organizational change at the LAS, and how actors engaged locally in enrolling and mobilizing support for that intervention. The case study material presented here is drawn from data relating to a current research project at the LAS, which started in 1998 and has involved an extended period of access since February 2000. Whilst the aims of that research project go well beyond the explanation presented here, we have used some of the data from it. In particular, we have drawn from LAS internal documentation, project meetings, and interviews with members of staff involved in change initiatives at the LAS over the last ten years. These contributors include senior and middle managers, based at LAS headquarters in central London, and operational staff, based either in the control room at LAS headquarters or at ambulance stations around the capital.

### **3. THE CASE STUDY NARRATIVE**

This section presents the case study narrative. It traces the main events and initiatives that took place from the collapse of LASCAD (October 1992) through to a review by the House of Commons Select Committee on Health (December 1996) into the early performance of the LAS as a NHS trust. The base narrative is derived

from the second report of the House of Commons Select Committee on Health (1995), and is supplemented with material from the research project described earlier. Other public inquiry reports are referenced where they are drawn upon. This description of technological, organizational and environmental developments is seen as a necessary prerequisite (Pettigrew, 1987) for the contextualist method of analysis adopted in the next section. Whilst recognizing that these developments were interrelated, limitations on the length of this paper permit a focus on technological developments only. Thus organizational and environmental developments are referenced selectively in the sections that follow, where they are considered key to understanding the technological changes examined.

Following the withdrawal of the LASCAD system, a public inquiry into the events leading to its collapse was ordered by South West Thames regional health authority. The Page inquiry report, published in February 1993, argued for a programme of investment in the LAS and a slower pace of change. Acknowledging the need for service improvements, it recommended the development of a computer aided despatch system (CAD) that should have 'total ownership by management and staff, both within CAC [Central Ambulance Control] and the ambulance crews' (pg. 8). A CAD system is a computerized system to handle the command and control functions of an emergency service automatically. Such a system might handle some or all of the following functions to varying degrees of automation: i) call taking and gazeteer; ii) tracking of vehicles; iii) allocation and mobilization of resources to incidents; iv) ambulance resource management; and v) provision of management information.

In the months following publication of the Page report, the LAS board was abolished, the regional health authority assumed direct responsibility for the LAS and a new top management team was recruited (Wells, 1995). The revised management arrangements became fully effective in April 1994. Initially, the new senior management team at the LAS focused on improvements to organizational and technological infrastructures. The regional health authority made an additional £14.8 million funding available to enable this strategy, conditional on improved performance against ORCON (Operational Research Consultancy) standards. Particular targets of responding to 80% of emergency calls within 14 minutes by September 1994, rising to 85% by March 1995, were written into the business plan. ORCON standards are nationally recognized standards of performance for UK ambulance services, set by Government. Prior to a review of ambulance performance standards (Chapman, 1996), ORCON standards required that: i) 50% of ambulances should reach patients within 8 minutes, and ii) 95% of ambulances should reach patients within either 14 minutes, in urban areas, or 19 minutes, in rural areas.

While the LAS was being taken back under the direct control of South Thames regional health authority, other ambulance services were applying for independence. These services were responding to a reorganization of the UK National Health Service (NHS) into a system of self-governing trusts, in which ambulance services, hospitals and community units negotiate their contractual responsibilities with regional health authorities in purchaser/provider relationships within an internal market. By April 1994, the majority of ambulance services had achieved NHS trust status. A crucial measure of the suitability of applicants for NHS trust status is quality of service. In the case of an ambulance service, performance against ORCON standards, facilitated as appropriate by a CAD system, is a key concern.

In June 1994 the media spotlight fell again upon the LAS. Against a backdrop of the declared intention of a House of Commons Select Committee to conduct an autumn inquiry into the LAS' performance, Nasima Begum, an eleven year old schoolgirl, died of complications from an existing kidney condition, after a 53-minute wait for an ambulance. In October 1994, the Secretary of State announced a public inquiry into this event, headed by William Wells, chairman of South Thames regional health authority. This inquiry was to run alongside the Select Committee inquiry into the future of the LAS. The results of the Wells inquiry were published first in January 1995. Whilst acknowledging an unusually high demand on 19 June 1994, Wells found 'continuing management weakness ... inappropriate staff distribution and shift changeover times and virtually a complete lack of modern technology' (report foreword). A number of recommendations were made to address these weaknesses and additional funding was agreed to enable them. The review team expressed its commitment to taking the LAS 'to a financial position where it can secure a significant improvement in performance standards and become a viable applicant for NHS trust status' (Wells, 1995, pg. 27). Following publication of the Wells report, work on its recommendations began at the LAS. In the

control room, manual operations continued during 1995, but some restructuring took place to relieve issues with ambulance allocation. Further work was done on creating a sound IT infrastructure, including building a new ambulance control room. Work began in April 1995 on development of a call taking system. This development addressed the first of the five elements of a full CAD system referred to earlier.

Criticism of the LAS re-emerged in June with publication of the findings of the House of Commons Select Committee on Health (1995). Whilst endorsing Wells' recommendation that the LAS seek trust status, the Committee was concerned that 'it may not be practicable to achieve this by April 1996' (pg. lxvi). It claimed that the 'recent history of the LAS has provided an object lesson in how not to manage a public service' (pg. xxi). Findings of specific interest to the technological change emphasis in this paper include the Select Committee's comments on information systems developments at the LAS. On the issue of procuring a new computer system, the Select Committee urged the LAS to 'consider very seriously the possibility of purchasing an "off the shelf" CAD system' (pg. 1). Whilst critical of the proposed five-year timeframe to introduce a new computer system, they gave their support to 'the efforts that are now being made to improve the technical infrastructure of the LAS' (pg. xlviii).

Work on the bespoke development of a call taking system continued during 1995. The technological change enacted in this period took place in a discrete and self-supporting area that was analyzed and dealt with in isolation from other influences. This approach, christened the Golden Circle, is discussed in the next section. Although external bodies were not allowed to interfere with the nature or manner of delivery of the change, contact was maintained with the regional health authority via weekly progress meetings with the chairman of the region. The new system was due for implementation by September 1995 (Wells, 1995), to coincide with the LAS' application for NHS trust status. In the event, system implementation took place during January and February 1996. At the same time, the decision to award trust status to the LAS was announced. Thus the LAS became a NHS trust on 1 April 1996 and has continued to operate in that way since. Following implementation of the call taking system, performance against ORCON standards rose progressively. By the last quarter of 1996, performance against the 8-minute standard had risen to 36% from an average of 16% during 1995, while performance against the 14-minute standard had risen to 91% from an average of 74% during 1995 (House of Commons Select Committee on Health, 1996). The LAS entered its new control room and call taking system into the 1997 British Computer Society awards and gained the Information Systems Management excellence award on 14 May (Times, 1997). The introduction of a call taking system in 1996 was part of a continuing programme of organizational change at the LAS. Significant challenges remain. These include incorporating the remaining four elements of a full CAD system.

#### **4. ANALYZING THE NARRATIVE**

This section analyzes the preceding narrative using the sociology of translation. Problematization examines how the regional health authority, acting for the NHS and ultimately the UK Government, defined an obligatory passage point (OPP) in NHS trust status for the LAS. A key actor in this initiative was the chairman of the regional health authority, who was able to draw on several sources of power to translate actors towards this OPP. This action involved building a network of interests around his proposed solution (interessement), in a negotiated process of consolidating alliances with other actors (enrolment). By focusing in this paper on the technological developments required for the LAS to achieve NHS trust status, the IT director emerges as a key actor in the local context. The actions he took during interessement, enrolment and mobilization of support for these developments are also discussed. Thus this analysis examines how conflicting interests emerged and were stabilized over time through the use of discourse and power within and outside the LAS. Power relationships in this context should be understood as describing the way in which actors are 'defined, associated and simultaneously obliged to remain faithful to their alliances' (Callon, 1986, pg. 224). Key to this process is a system of association in which actors are linked together through identities defined for them, which they may accept or decline.

#### 4.1. Creating the Obligatory Passage Point

When the LASCAD system collapsed in October 1992, the vision of total automation in call taking, vehicle tracking, resource allocation and mobilization for London's ambulance service was destroyed. The overarching viewpoint that the LAS needed to improve its performance remained intact, but the LASCAD system was no longer accepted as the mechanism (or OPP) for achieving that objective. Instead, deep divisions surfaced, both within and outside the LAS, on the appropriate mechanism.

Publication of the Page report (February 1993) marked a new attempt at problematization. It identified roles and responsibilities for key actors. The senior management team should make a major investment 'in the workforce ... the fleet and the estate' (pg. 64). The IT director would 'have overall responsibility for all IT and communications planning and implementation' (pg. 63), including delivery of a new CAD system. The CAD system was defined as 'a complex multi-supplier, systems integration project' (pg. 63), which might take 'four years to develop and implement fully' (pg. 7). Staff should be consulted by management and see other evidence of management's 'commitment to, and appreciation of' them (pg. 9). In this way, the authors of the report may be seen to propose a system of alliances between entities as the way to solving the problems of the LAS. This method of association proposed roles and responsibilities for key actors, in which their identities were defined in such a way as to be mutually reinforcing (Callon, 1986). This problematization was not only hypothetical but also incomplete. Some actors were not in post to accept the proposed identities, others who were in place might not accept them. Whilst a new CAD system was an actor in this context, it was not defined as an OPP. Instead, South Thames regional health authority, which commissioned the Page inquiry and became responsible for the LAS following the collapse of LASCAD, attempted to create an OPP in the many and diverse recommendations of the Page report. In this way, it sought to link its interests with the identities of key actors at the LAS. This analysis focuses on how that attempt was negotiated and translated over time, to create a stable network of interests with a new OPP.

The appointment by the regional health authority of the members of the new senior management team at the LAS marked an initial stage in attributing the identities proposed in the Page report. This attribution of identities was only partly successful. The new management team slowed the pace of change, compared with the period 1990-1992. They accepted their identities in as much as they adopted a business plan and technology strategy that addressed organizational and technological infrastructures, but in the period to January 1995, service improvements on which funding for these plans was agreed, were not achieved. In particular, the IT director negotiated his identity as the procurer of a new CAD system, by focusing on improvements to technology infrastructure, which included rewiring the ambulance control room and replacing the emergency telephone system.

Following the withdrawal of LASCAD, tensions existed among LAS staff about the feasibility of designing a CAD system for London. The fact that demand for ambulance services in London is demonstrably greater in scale than elsewhere caused many staff to believe 'that systems that might be adequate for other services would not be adequate for the LAS' (Page et al, 1993, pg. 20). The range of perspectives is reflected in the following comments:

*there hasn't been a computer system built that could deal with our demand*

*there isn't one out there you can buy and I don't believe there's one that you can design that will be able to do it for us*

*well, all right, maybe, maybe it could, but I'm going to reserve judgement*

and then there were those who were 'more used to computers and more trusting that something would happen that was good for us'.

In late 1992, staff in the control room were torn between a desire to 'get back to the way that we were [in other words, to manual operations]', and a recognition that this 'was by no means ideal'. Reverting to full manual operations was seen as problematic because conveyor belts, used to transport call details from call takers to allocators (who assign vehicles to emergency calls), had been removed when LASCAD was implemented. So, in

recognition of the overarching need to improve response times, control room staff made a short-lived attempt to continue using the call taking subsystem within LASCAD:

*... that's the one bit of it that no one really wanted to let go of, because that was actually quite good, apart from the difficulties there were about the calls printing out .... we did try for a little while .... but there were too many risks involved in it, so we went completely back to handwriting calls, having to ferry them about the room because we weren't set up in a way that you could get them to [the allocators], we actually had to employ people to run the calls.*

The decision to retain the call taking subsystem of LASCAD when the rest of the system was withdrawn, may be seen as the use by LAS management of an interestment device that proved unsuccessful. Had this subsystem proved more robust, it might have served to lock call takers into place in a new network (Callon, 1986) and thereby have facilitated enrolment of control room staff to a full CAD development. Instead a printing error was sufficient to break the fragile link joining this interest group into the network being built. When this attempt to move forward slowly was abandoned, the predominant identity of LAS staff became one of a desire to return to the state that existed in 1990, prior to the arrival of John Wilby as chief executive. This identity, whilst acknowledging the need to improve performance, was characterized by an attempt to achieve this using prevailing manual methods for the foreseeable future, supported by an increased number of staff. Thus the period to June 1994 was one of attempting to create a workable control room structure to support manual operations in an environment that was becoming increasingly unsuitable, not only because essential equipment had been removed, but also because noise and overcrowding intensified as staff numbers increased and call volumes rose. The futility of this approach, given the increasing pressures on the LAS, was brought sharply home to staff with the death of Nasima Begum, which forced a rejection of accepted methods of working and crystallized the need for change:

*.... and just when we thought we were getting on top of things, we discovered we were not really; there are some pretty awful things possible that could go wrong, and did go wrong.*

Here, the impact of the 'London effect', the belief that 'we're different, we're special', is crucial. Comments in the earlier part of this section demonstrate both the rhetoric that LAS staff used to describe the 'London effect' and the ways in which they were unable to enact it, using either a completely manual system or an implementation, however selective, of LASCAD. This suggests that the task for LAS management of enrolling staff support for a new computer system required an approach that preserved the rhetoric whilst providing an alternative method of enactment.

External bodies, including Government committees, community health councils, other ambulance services, the public and the media, were characterized by a range of identities reflecting perspectives critical of the LAS. These actors subscribed to the view that the LAS was not moving quickly enough to implement the recommendations in the Page report. Indeed, some were very sceptical that the LAS in its then current form was capable of implementing them (minutes of evidence to House of Commons Select Committee on Health, 1995). The external lobby voiced criticism in several ways, from drawing on public outrage following the death of Nasima Begum to call for better performance by the LAS, to suggesting that the service be broken up and amalgamated with other authorities.

Wells' response to the conflicting interests examined in this section was to conclude that 'trust status would be a desirable objective for the London Ambulance Service' because it would 'strengthen and clarify the chain of management responsibility' to ensure that 'necessary improvements are implemented' and a 'high standard of service to the public' is provided (report foreword). This recommendation, proposed to take effect from April 1996, built on the rejection of existing methods of working following the death of Nasima Begum and facilitated the enrolment of conflicting groups within the service. Supporting recommendations strengthened and extended those in the Page inquiry report, including the need to develop a CAD system and to have a national review of ORCON standards. By focusing attention in the LAS on restoring public confidence, Wells neutralized criticism from external bodies and defined an OPP in trust status as the way to improving the performance of the LAS. Thus Wells, in his joint role as chairman of the public inquiry and chairman of the regional health authority, defined the problem in terms of a solution he appeared able to provide, and in this way, he became indispensable (Callon, 1986).

Wells used several sources of power to define both the OPP and the actors required to traverse it. He used public outrage following the death of Nasima Begum to force LAS management and staff to speed up the pace of change and to persuade the Government to make sufficient funds available to enable this process. By couching his recommendations in terms of trust status, which few would argue was a desirable objective for the LAS however unattainable they thought it might be, he was able to create the impression of unity of purpose in pursuit of a common beneficial goal. Finally, by publishing his findings in January, five months before the Select Committee, Wells was able to set the scene for change on a decisive but largely positive note, whilst indicating weaknesses in the LAS that the Select Committee would criticize. In creating an OPP in trust status, Wells not only identified a desirable objective but, in the context of an established internal market within the UK NHS, arguably the only possible objective for the LAS if it was to continue to exist as an organizational entity in its own right. Thus Wells presented a problematization that was difficult to contradict, so in Callon's (1986) terms, his statements were held to be uncontestable.

#### **4.2. Translating the Actors**

In recommending that the LAS seek trust status, Wells linked the interests of the regional health authority to the identities he proposed for members of the LAS' senior management team, and emphasized service improvements as a necessary condition to implement the proposed solution. Thus progress towards a full CAD system in five years, with implementation of a call taking system in September 1995, was a key part of the identity proposed for the IT director. Service improvements through new rostering arrangements, a redistribution of staff among ambulance stations and the introduction of standby arrangements (whereby crews wait in their ambulances for emergency calls) were a key part of the identities for other members of the senior management team. Each of these actors had some room for manoeuvre while their identities were stabilized. Although Wells addressed issues on a number of fronts by defining an OPP in trust status, again we focus on technology issues. In that sense, the OPP was concerned with implementing a call taking system in September 1995, that would enable the necessary improvements in performance against ORCON standards to qualify for trust status, and developing a full CAD system within five years, to ensure continued performance improvements. This analysis focuses on how the IT director defined, enrolled and mobilized support for technological developments after negotiating his own identity.

During 1994 and 1995 the IT director, in collaboration with a few members of the senior management team, used the power of an ailing IT infrastructure to slow the pace of change to enable him to 'have something that I knew I could deliver'. It was well-recognized among this group that this approach would 'be seen as stalling', yet Wells built on and formalized this approach, and then the Select Committee, in contrast to its comments on other management initiatives, reinforced this course of action. The IT director's strategy of portraying the LAS as 'an organization working hard to succeed and making significant progress' proved successful again on the issue of procurement of a new computer system. This time the Select Committee urged him to consider purchasing a packaged CAD system but did not insist, despite the successful experiences of other services and their insistence on many other things. So the IT director pursued an in-house development approach. Thus he was able to employ existing infrastructural weaknesses as an interessement device to divert attention away from a full CAD system towards a system with reduced scope built in-house on a sound IT infrastructure. In this way he negotiated the identity proposed for him in the Page, Wells and Select Committee reports, whilst setting the scene for development of a call taking system in which he became a key actor.

Turning to how the IT director locked LAS staff into the network of interests around this system during interessement. Here the Golden Circle approach was employed. This approach involved managing change by partitioning activities, so as to isolate areas directly involved in a change from other influences both within and outside the LAS. The argument was that people outside the Circle were not affected by the change, hence should not interfere with it. The Circle was drawn around the 300 staff in the control room, who were defined as those with a legitimate interest in development of a call taking system. People outside the Circle, including LAS ambulance crews, were not aware of the implementation date for the new system. This approach identified the actors to be involved in the development and sought to disassociate them from those who might challenge the legitimacy of the project. It built on existing support within the control room for a call



taking system (discussed earlier) and sought to persuade this group that such a system could be implemented successfully. Using rhetoric relating to how the LAS had failed before with both a bespoke development and a packaged solution, the IT director was able to introduce prototyping techniques, which gave control room staff an identity, as an actively involved user group, within the development process. The IT director claimed that this approach was one that the LAS had not tried, and equally importantly, had not failed with, before. In calling what was happening the involvement of a user group, he had grounds for this claim, even though prototyping was no more than a tactic employed in an overall bespoke development strategy.

Members of the user group were not aware of either the Golden Circle terminology or the related policy of partitioning until implementation of the call taking system in 1996. Yet the approach was laid out in the technology strategy written in late 1994. So control room staff were seduced into an alliance, the rules of engagement in which became apparent to them only over time. Nevertheless, these members of staff were aware that something was taking place in a shared space that was substantially different from the opposing regimes that characterized the LASCAD development; as when changes to the prototype were required:

*We'd sit in our little huddles in the corner saying "what do you think we should do, ... what shall we say, and ... how will we handle this?", never quite sure what sort of reception you were gonna get. And we'd come away from those meetings [in the shared space] sometimes and say "hey ... we really can say what it is that we want – we can tell them we're gonna have to have it, and then we get it – this is good"*

Focusing on the rationale for partitioning, the IT director describes it thus:

*It was ... a means of defence on one part and a means of captivating and motivating the important and affected players on the other part. It was never intended to disempower but rather empower those who felt so hopelessly ignored in the CAD crash of before. It was about doing justice to those who paid a heavy price during the CAD collapse and ensuring their views were dominant on the grounds that others would be unaffected. It was about team spirit, togetherness, and a sense of identity. It was often almost palpably tangible but sometimes gossamer like. It was real, it was false, it was for use, it served no purpose, it hindered, it facilitated, it empowered, it excluded, it included, it marginalised, it promoted strength, it promoted willpower, but most of all, it worked!!!! [exclamation marks in the original].*

During enrolment, the IT director adopted an 'infiltration' approach with users. Key individuals were identified who liaised between the technology department and the control room. These individuals were trusted by 'staff side' to protect its interests, whilst being considered supportive of the proposed changes by 'management side'. Deals made with both sides by these individuals were instrumental in enrolling and mobilizing support for technological change. The IT director described one such member of staff as:

*a great lump of glue that brought all the interests together, because at that time [second half 1995] some people thought that they could talk to us and some people thought they couldn't, but they all thought they could talk to [member of staff].*

The staff member described the role as:

*we made a pact with one another ... in trying to get the trust of the people in Control that we would not let anything happen that would be detrimental, so there were a lot of instances where we had to say "stop" ... we had to be sure that things that were allowed to go wrong last time couldn't go wrong this time ... we had to do a lot of work on helping people to believe that we wouldn't let us go down that route again, never again.*

Within the Golden Circle, four different technical solutions were evaluated by IT staff, two of these were proposed to the user group, and then one was developed and built in joint consultation. As the project progressed, different user requirements were addressed by inviting contributions from representatives of these interests. These representatives spoke on behalf of the 300 staff in the control room and negotiated the final solution so that ultimately, resources could be mobilized in readiness for implementation. Staff who were enthusiastic about computerization were seconded to the user group, and:

*we made sure we threw in some sceptics as well, because if you could convince them, then that would do a lot of convincing of other people ... we could use them to spread the right sort of word ... they'd hear this person*

*talking about such and such ... people would say "blimey, if he's saying it's all right, it must be OK ... because you can never please him".*

The Golden Circle approach and accompanying prototyping techniques resulted in a constraining network of relationships around a call taking system called CTAK. Actors were translated towards this OPP through the use of power exercised in discourse. In this way, the approach illustrates the different aspects of the moments of translation: definition of actors; use of interestment devices, in the form of a partitioning rationale and prototype demonstrations to the user group, which locked actors into identities proposed for them and impeded other alliances; a negotiated process of enrolment in which deals, pacts and trials of strength accompanied the interestments and made them appear attractive; and designation of legitimate representatives for various interest groups during mobilization. In stabilizing the identities of control room staff, two considerations were crucial - their fear of failure, and their conflicting need to enhance self-esteem. In the first case, staff used the powerful image of a computer disaster on New Year's Eve to delay implementation of the new system from December 1995 to January 1996:

*put yourself in the place of those people working on a strange system with the call rate rising as it does through December and reaching its peak on New Year's Eve ... why would we want to do this to them?*

In the second case, despite their view that 'we're different, we're special', staff were conscious of how far behind other services the performance of the LAS had fallen:

*... people were not out to sabotage trying to make it work ... people wanted to be not looked down upon ... not just by the public at large and the press particularly, but by other ambulance services. When we were at that stage [implementation], other ambulance services were moving on to their second computer system ... and there's us still fumbling around with pens and paper ... we didn't want to be the ones who are bad at doing things or so behind at doing things, so there was a lot of self-respect in there as well.*

Whatever the rhetoric about the 'London effect', it seems clear that part of the identity of control room staff was that traversing the OPP would not only improve the performance of the LAS, but would also restore their sense of achievement and with it their self-esteem.

## 5. CONCLUSIONS

This paper is an account of events at the LAS over a four year period, as it recovered from the collapse of LASCAD through a process of long-term, and ongoing, organizational change. It focuses on the implementation of a new computer system in 1996. The analysis adopts a contextualist approach, informed by the sociology of translation. Social constructivism, and actor-network theory in particular, has been criticized for having a localized focus (Knights and Murray, 1994; Reed, 1997) and hence blinding analysis to a consideration of issues in the global environment. We feel that a crucial issue in this debate is whether actor-network theory is construed as a complete and constraining methodology or simply viewed as a collection of powerful tools and ideas. We take the latter view and thus have adopted the sociology of translation as a sensitizing theory in a processual analysis of change. In taking this position, we argue that the same tools can be used in both the global and local contexts (Latour, 1991) and thus that the sociology of translation provides the 'motor' to our contextualist analysis (Pettigrew, 1987).

The story opens after the collapse of LASCAD in October 1992 and continues through to December 1996, when the Select Committee on Health reviewed the early performance of the LAS as a NHS trust. When LASCAD was withdrawn, the way to improving the performance of the LAS became an issue on which deep divisions surfaced, within and outside the service. The analysis examines how alternative interests emerged and were stabilized over time, enabling introduction of a call taking system, CTAK, in 1996. It argues that stability was achieved through the creation of an OPP in NHS trust status (and within that, in CTAK), and a method of association between actors, the Golden Circle, that used prototyping techniques as a central tactic. We may compare this approach with the one used during the LASCAD development of 1990-92, to draw some conclusions about the methods of association that may be used to enrol others.

First, by creating an OPP in NHS trust status for the LAS, Wells proposed a solution that, in 1995, was held to be uncontested (Callon, 1986). While undoubtedly some felt that the LAS could not achieve this objective, in the context of an established internal market within the UK NHS, there was an absence of voices raised in contradiction to Wells' proposal. In his joint role as chairman of the public inquiry into the death of Nasima Begum and chairman of the regional health authority, Wells was able to support his proposal with additional Government funding worth £15 million. In this way, the changing environmental context of the UK NHS influenced action locally at the LAS. In 1990, the situation was less clear-cut. The internal market within the UK NHS was just beginning to emerge. The options available to ambulance services were still being considered. The chief executive of the LAS was under pressure to cut costs. Thus his room for manoeuvre during the LASCAD development was substantially reduced (McGrath, in press).

Second, the CTAK system addressed a need – to provide more efficient and effective support for call taking – that was acknowledged at the LAS as far back as 1992. Thus the challenge for the IT director in 1995 was to find an approach to technological development that built on this need without jeopardizing the initiative by, at the same time, introducing some of the more controversial elements of the LASCAD development. The way he used rhetoric, concerning weaknesses in infrastructure and approaches to systems development, to enrol support from LAS staff, the Select Committee and other external bodies demonstrates the use of power exercised in discourse to lock potential allies into place. This can be seen very clearly when we consider that he translated the Select Committee's suggestion, that the LAS purchase a packaged CAD system, into a bespoke development of just one of the five elements of a CAD system. Furthermore, he did this at a time when the LAS was under considerable pressure to improve its performance in line with other services. The fact that the controversial elements of a CAD system have, to date (April 2001), still not been installed indicates that further challenges remain for the IT director. History suggests that he will not take these all at once, unlike John Wilby in 1992.

Third, the Golden Circle approach and the use within it of a negotiated process of systems development involving deals, pacts and trials of strength encouraged more user input than had been the case at the LAS during the LASCAD development. So, although some user requirements were challenged by IT staff, and other requests were keenly contested within the Circle, the sense of a joint, if not unproblematic, venture rather than pitched battle prevailed. John Wilby's more uncompromising style in 1992, shows an absence of the seduction, persuasion and infiltration evident in the Golden Circle approach adopted by the IT director in 1995.

In the five years since the LAS achieved trust status, its organizational change programme has continued alongside the need to respond to ever more demanding standards of performance. Although technological change continues to involve substantially the same interest groups as in 1995/96, the Golden Circle no longer functions as the mechanism for enrolling and mobilizing support. The complex interactions that account for this transition tell another story in the history of the LAS, one in which identity, power relations and technological change, again, are deeply intertwined. So we may conclude 'that translation is a process, never a completed accomplishment' (Callon, 1986, pg. 196). New displacements may occur that upset the equilibrium. Thus organizational change is precarious and unpredictable. Key actors can create moments of stability, but these are not guaranteed to endure.

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