Transfer Prices and Innovation in Public Healthcare:

Costing and Clinical Choices in the NHS

1. INTRODUCTION

Innovation in healthcare depends on reconfigurations in work relations distributed across a multi-level set of practices, including clinical and managerial decisions (Maniatoulous et al., 2015; May, 2013). For innovations to become embedded in practice, actors are required to work together both individually and collectively as medical innovations involve not only technological artefacts but also supportive social and organisational aspects. These supportive organizational aspects might be impeded if the adoption of innovation results in budgetary penalties for the healthcare provider (Maniatoulous et al., 2015). In contrast to previous studies in the control of public services (Cuganesan et al., 2014; Arnaboldi et al., 2015) and healthcare organisations (Jackson et al., 2014; Petterson & Solstad, 2014), this paper focuses on the influence of centrally determined transfer prices for performance control purposes. In particular, it explores the challenges faced by organisational actors seeking to nurture rather than stymie technical improvements in public healthcare.

Drawing on an interpretive case study of a specialist health centre in the UK National Health Service (NHS), the paper addresses a puzzle. Although key clinical actors were keen to spread a technological innovation, they were not being supported by the financial and managerial goals and performance management systems in the organisation. We submit that our focus on the cost and management issues compliments other research on medical innovation where it is has been argued convincingly that 'the specific focus of an innovation (a new drug, computer system, clinical intervention, professional role and so forth) is never isolated from its social technical, and spatial contexts' (May, 2013, p. 26)

Given the context of internal markets, a potentially fruitful theoretical approach is suggested by transfer pricing practices as proposed in modern textbooks. These practices and prescriptions are often derived from an old academic discourse informed by neoclassical economics (Hirshleifer, 1956; Eccles, 1985). In contrast, we submit that policy prescriptions derived from a simple and reductionist view of Economic Man (Polanyi, 1957) are likely to be an inappropriate way of modelling the values and logics of actors in a public healthcare system (Martinelli and Smelser, 1990). Given that actors such as managers and clinicians play different occupational roles and have different types of training, it is likely that their thinking and behaviour will be informed by differing values, possibilities, communications and relationships with the world. In order to conceptualise these different outlooks or realities, we deploy a relatively recent development in research methodology known as pragmatic constructivism

(PC). This methodology focuses on the way that human actors construct their specific realities and explicitly rejects assumed models of actors such as Economic Man (Polanyi, 1957; Nørreklit et al., 2006). PC methodology provides a way of comparing the reasoning of managerial and clinical actors in relation to the dilemma of whether or not to adopt an innovation in the context of an internal market. More specifically, it analyses how actors respond to new facts associated with new clinical practices and potential cost-reducing opportunities. Closely related to the PC methodology, the paradigm offers policy prescriptions, which favour an actor-based approach to organizational relations. Actor-based management (ABM) rejects mechanical, top-down modes of governance in favour of management models based on dialogue and negotiation. (Nielsen et al., 2015; Nørreklit, 2011; Seal and Mattimoe, 2014).

The PC framework is based on a *pragmatic* philosophy; reality is defined in terms of what works. It is a metatheory or methodological approach that helps to narrow the theory-practice gap (Nørreklit et al., 2006). In the transfer-pricing literature, this gap was noted by Eccles (1985) and still seems evident in an economics literature in which only one or two dimensions of reality are drawn on (Göx, and Schiller, 2007). As the paper shows, we do not reject all insights from the mainstream transfer pricing literature but rather seek to develop a theory which addresses the specific issues of the NHS costing and fund transfer system. PC and its related prescriptive view of ABM are critical of mechanical models of governance which fail to engage with the values and beliefs of key players (Nørreklit, 2011; 2017). In our specific case study, a centrally determined average transfer price may be viewed as a top-down and mechanical model of pricing that fails to recognise the values of clinicians who are trying to introduce medical innovations that not only improve patient outcomes but which can save public money. As a result, a more creative perspective is called for.

In sum, the paper makes a number of contributions. First, based on a socially constructed and nuanced view of actors' reality, the paper's PC ontology offers a general methodological stance which could be productively applied to a variety of transfer pricing issues. Second, moving away from static notions of economic optimality favoured in the economics-based transfer-pricing literature (Hirschleifer, 1956; McAulay and Tomkins, 1992), the framework considers why the desire of clinicians to innovate seems to be at odds with the financial goals of health service managers (Maniatopoulos et al., 2015). Finally, responding to Eccles' (1985) complaint

about a gap between theory and practice in transfer pricing, the paper proposes policy recommendations based on pragmatist philosophies and research methods.

The paper is organized as follows. In section two, we build on previous work on transfer pricing and we present our main methodological and theoretical framework. In section three, we explain the data collection, while in section four, we interpret our field data. In section five, we discuss our findings and, in section six, we conclude the paper.

2. DEVELOPING A THEORETICAL AND METHODOLOGICAL FRAMEWORK FOR TRANSFER PRICING

In this section, we briefly review some of the mainstream economic approaches to transfer pricing. From that point of departure, we then present our methodological and theoretical framework, which proposes a more socially informed approach to traditional transfer pricing issues. We then use our framework to model the specific issue of organizational learning in an NHS context.

2.1 The traditional economic approach to transfer pricing

Modelling the system of healthcare financing as an internal market with administered transfer prices opens up a large academic literature (Göx, and Schiller, 2007). With one of the seminal papers in transfer-pricing literature (Hirschsheifer, 1956), prescriptions derived from neoclassical economics also informed other approaches to transfer pricing with proposals for accounting based on marginal/relevant costs (Eccles, 1985). Although we accept the premise that transfer prices are 'a device for coordinating the plans and actions of individual decision makers in decentralized organizations' (Göx, and Schiller, 2007, p. 673), our point of departure from the economics-based literature rejects simplified models of Economic Man and naive realist theories. Basing our approach on Nørreklit et al.'s (2006) seminal paper on PC, we show that the gap between theory and practice in transfer pricing (Eccles, 1985) can be narrowed through the adoption of a constructivist, yet pragmatic, research methodology. This methodology can also accommodate a key deficiency in the comparative statics of the neoclassical model – that is, the dynamic impact of transfer pricing practices on innovation.

2.2 PC and the concepts of proactive and pragmatic truths

There are a number of key principles and aims informing our approach to case study research. First, we view the organization as a 'social construction created by human beings…' (Nielsen

et al., 2015, p. 67). Second, the 'ambition of the actor-based research method is not to test a hypothesis of an a-priori model, but to obtain insight into a particular type of engagement and model of thinking that govern individuals and group of individuals' (Nielsen, 2015, pp. 67–68). Third, it is very important to understand in some detail how individuals and groups of individuals construct their reality and how they view both innovation and management accounting information. To these ends, we deploy a PC framework.

2.2.1 The PC framework: facts, values and possibilities as dimensions of reality

The defining characteristic of the PC approach is that, in contrast to reductivist prescriptive theories, it construes empirical material in a framework constructed out of a *multi-dimensional reality* (Nørreklit, et al., 2006; Jakobsen, et al., 2011). More specifically, actor reality is constructed through a synthesis of *possibilities (logics), facts, values and communication* (Nørreklit, et al., 2006). The PC framework explicitly analyses the *values* of actors, their perception of *facts* and the *institutional construction* of facts and *possibilities*. In the case study, there are some 'brute facts' such as human biology and physical phenomena that must affect their reality. However, given their particular professional backgrounds, managers and clinicians might be expected to have different values and possibilities which, in combination, influence the construction of their reality. In terms of medical innovation, what seems to be a logical possibility for a clinician may seem to be less compelling to a manager whose reality is based on integration of a different set of facts, values and communication. As we shall explain below, this differing view on reality is summarised though the concept of *topos*.

2.2.2 The integration of the dimensions of reality: the concepts of topos

Nørreklit et al. argue that there is no set of general principles that integrate their four dimensions of reality; rather it is a question of finding a specific *topos*, where '*topos* refers to the concepts and arguments applied in a specific setting' (2006, p. 43). Although it was originally developed in order to visualise the construction of management reality (Nørreklit et al., 2006), the concept of *topos* (plural *topoi*) may be applied to any actors, such as individuals, and/or collectivities, such as governments and organizations such as an NHS treatment centre.

An organizational *topos* is a necessary, but not sufficient for organizational success. If the organizational *topos* is top-down and mechanical, then there may be elements of illusion either in the individual elements or in the integration between the elements. A mechanical mode of governance may also impede another desirable property – organizational learning. This

property may be related to a capacity to develop and, just as importantly, to implement innovations into organizational routines (May, 2013; Maniatopoulos et al., 2015).

2.3 Organizational learning processes from a PC perspective: proactive and pragmatic truths

In PC, organizational learning is seen not just as a desirable aspect of organizational performance but, more fundamentally, as a way of establishing a form of 'truth' with which to analyse the validity of performance measurement based on budgets and accounting data. As Nørreklit et al. point out, the conventional view on accounting is that 'accountants provide a neutral and objective representation of an underlying reality…' (2007, p. 180). Pointing out that this paradigm of realism is not even believed by accountants themselves, Nørreklit et al. (2007) propose an alternative basis for validity drawn from PC but supplemented with the concepts of *pro-active truth* and *pragmatic truth*. Pro-active truth may draw representative and corresponding methods as a way of developing an *ex ante* perspective of an organization. Introducing a distinction between pro-active truth and pragmatic truth, Nørreklit et al. explain the distinction as follows:

> Proactive truth is truth we achieve when we combine the criteria of correspondence and coherence. Pragmatic truth is the realized result. While proactive truth gives us expectations and anticipations, pragmatic truth tells us whether our expectations were realistic. The proactive truth is based on our knowledge, concepts and calculations (2007, pp. 196–197).

The difference between proactive and pragmatic truth opens up the possibility that actors can engage in a learning process termed the 'pragmatics of truth' (Nørreklit et al., 2007, p. 197). Over time, organizational actors compare proactive truth claims with actual outcomes, that is, with pragmatic truths, in order to test whether their expectations, perhaps based on theories derived from their institutional and organizational environments, accorded with their experiences in their own organization. For example, as we shall see in our case study, cost data on surgical procedures may not have the expected impact on managerial decision-making, not because they are faulty from a representational perspective but because they are different from the centrally determined costs that inform the profit calculations of the treatment centre. As shown below, a fresh costing exercise is undertaken for this study where costs associated with all surgeries are calculated from primary data. As we shall see below, clinicians may expect that *if* they can show that a medical innovation costs less than current practice, *then* they may test this theory by comparing the costs of the new versus the old practices.

2.3.1 Deploying the concept of topos to model the differing realities of various occupational groups in an NHS hospital

At this stage of the paper, we deploy the PC framework to show how the reality of each occupational group can be constructed. As earlier, we propose that reality is constructed through the integration of four dimensions: values, facts, possibilities and communication, as shown in Figure 2. The occupational *topos* is very general as specific values, facts and so on must be derived from fieldwork. We would anticipate (even hope!), however, that the occupational *topos* of the managers will be different to that of the clinicians. The empirical questions then become: What is the relationship between the different occupational *topoi*? More specifically, how will the actors respond to new facts such as the emergence of new clinical practices and on the relative costs of the alternative treatments? Will the interaction between the different *topoi* lead to the sort of creative friction (Stark, 2009) shown schematically in Figure 2? As an *ex ante* model of the *topoi* of the main players, Figure 2 represents a possible proactive truth (Nørreklit et al., 2007). The pragmatic truth, as demonstrated in learning and knowledge creation, has resulted in the embedding of an innovatory medical practice (May, 2013; Maniatopolos et al., 2015). The proactive truth of the innovatory model shown in Figure 2 is, at this stage, only a tentative hypothesis. The pragmatic truth of the model can only be determined through an examination of fieldwork on clinicians and managers as they react to a specific technical and commercial challenge.

Figure 1 The PC framework: facts, values and possibilities as dimensions of reality

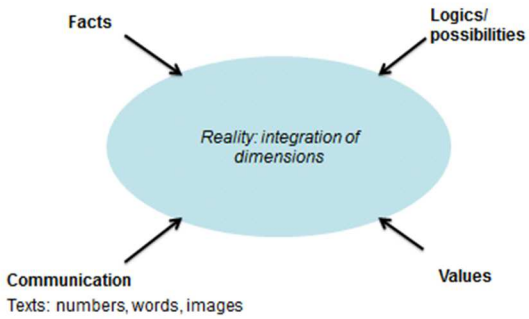
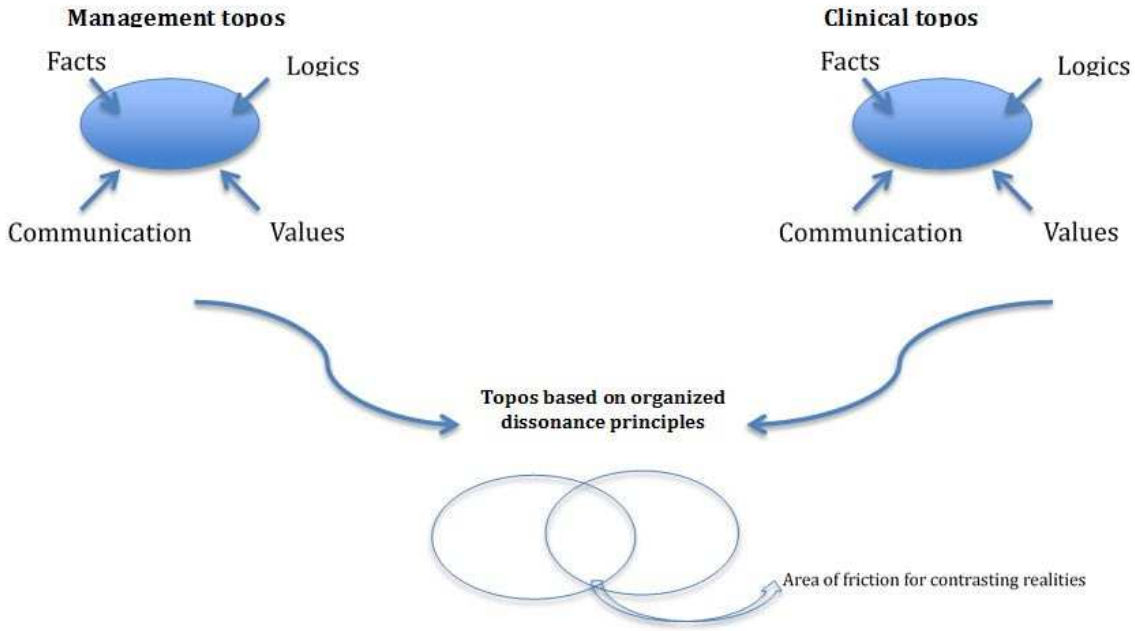


Figure 2. A general model of occupational topos (adapted from Norreklit et al., 2006)



We now consider our empirical material as a way of moving from proactive to pragmatic truth (Nørreklit et al., 2007).

3. THE CASE STUDY

3.1 Data Collection

The case study was conducted at a specialist healthcare centre located in the Eastern region of England. The researchers had an introductory meeting with one of the surgeons and the clinical director of the centre. They explained that their purpose was to better understand the cost of traditional surgery and innovative surgery so that they could study the costing processes in depth. The aim was to see if one of these groups of surgeries appeared to be more cost effective than the other through comparison of costs with the transfer prices in place at the time of study. The clinicians were interested in this issue. They agreed to help the researchers. After securing access to the centre and going through the ethical procedures required by both parties (approximately 6 months of preparation process) the researchers visited the centre regularly twice or three times every month. During the fieldwork, the researchers kept a diary for observational notes and any additional information about the case. This was supplemented by various internal documents such as costing reports, management related documents, agendas and minutes of relevant meetings, booking information about operating theatres etc. These

documents were used to prepare a new costing exercise for all the surgical procedures carried out at the centre during the fieldwork. To complement the costing, documentary and observational data, the researchers conducted face to face interviews with clinicians and managers. The aim was to investigate the perceptions of these two groups in relation to costs calculated so that their perceptions of reality (from the theoretical perspective of PC) could be understood and compared.

The centre was providing a range of surgical procedures. As this paper reports, some of these surgeries were classified as technologically advanced or innovative surgeries. Other surgeries were described as traditional method or open surgeries. The field research lasted about 8 months (October 2013 – May 2014), to generate fresh costings for all the surgeries conducted during the study period and to collect other data including clinical information about both types of surgeries. The costing data were used in describing the dimension of 'facts' in the managers' *topos* and in comparing the proactive and pragmatic truths. Financial and clinical data were supported by qualitative data collected through interviews, non-participant observation in meetings and informal talks with managers and clinicians. This supplementary qualitative dataset was used to describe the other three dimensions of PC as well as how these dimensions and the dimension of facts interacted in generating the occupational *topoi* of the clinicians and managers.

During the fieldwork, over 200 surgical operations were undertaken. All direct labour and material costs of these surgeries and costs of hospital bed days were manually collected from relevant accounting, clinical and management reports. These costs were then compared to average costs used as transfer prices to allocate funding to the centre. The purpose was to see if there were any significant differences between the costs calculated and transfer prices used in the NHS. This comparative costing dataset was supplemented by observational notes taken during six management team meetings, informal discussions and seven one-to-one interviews with the individuals listed in Table 1. The average length of interviews was 37 minutes.

Table 1. Interviews

Interviewee no	Job title	Manager or Clinician	Duration of the interview
1	**Clinical Director**	**Lead clinician with overall general management responsibilities of the Centre**	**37 mins**
2	**Consultant anesthetist**	**Clinician**	**28 mins**
3	**Consultant anesthetist**	**Clinician**	**32 mins**
4	**Trainee surgeon**	**Clinician**	**57 mins**
5	**Trainee surgeon**	**Clinician**	**43 mins**
6	**Service manager**	**Manager**	**36 mins**
7	**Operational manager**	**Manager**	**32 mins**

Guven Uslu, et al. (2013) explain in detail the surgical procedures that are provided in similar specialist centres. The flow chart in Figure 3, taken from their study, shows the steps required to make a decision on which type of surgery to be undertaken. As the figure shows, innovative surgery is shown as the Process B on the map, whereas the open surgery, which is considered as the traditional method of surgery is shown as the Process C on the map. Both the innovative surgery and the open surgery were on offer to patients who needed to have a surgery for their treatment at the centre. However, there were some drastic operational and clinical outcome differences between the two processes (see Table 2 below).

Figure 3. Flow chart of medical procedures in the case study (taken from Guven-Uslu et al, 2013)

Figure 3. Flow chart of medical procedures in the case study

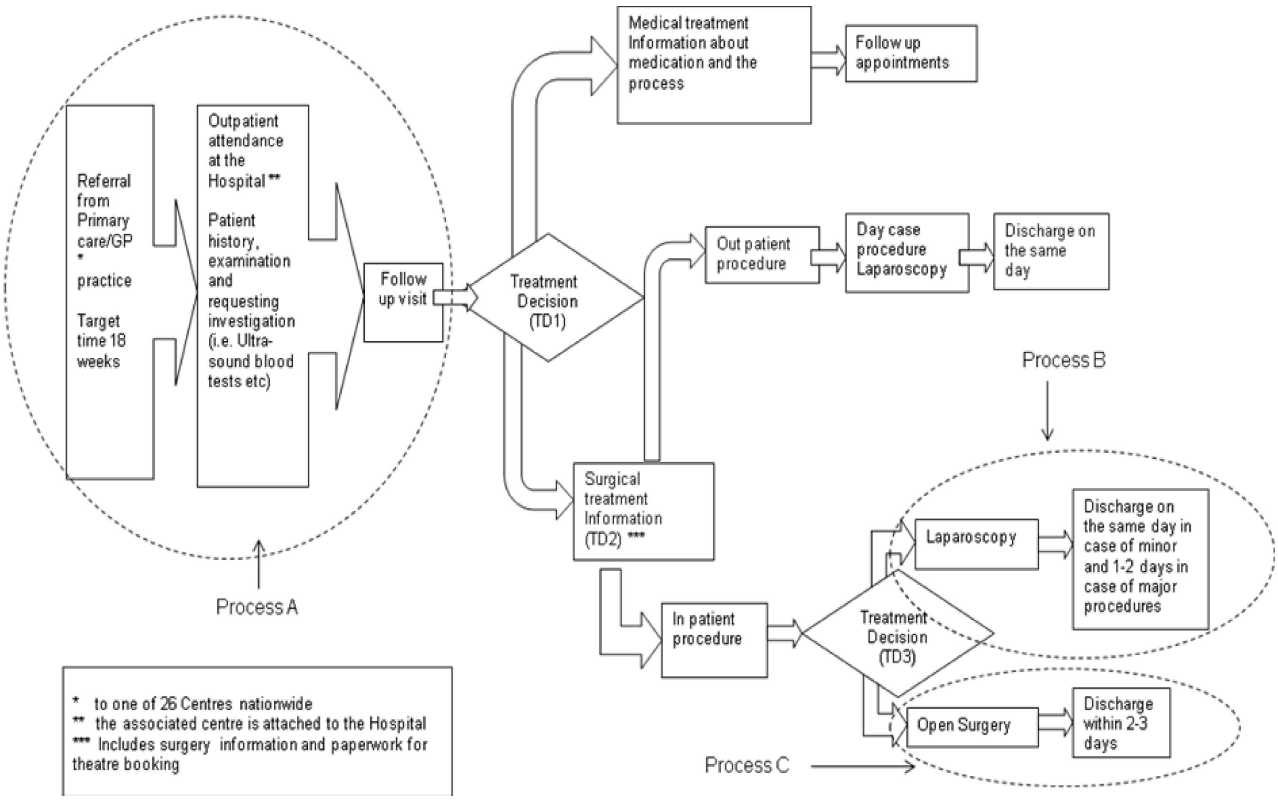


Table 2. Comparison of process details for an innovative surgery versus a typical open surgery

	Innovative surgery	**Open surgery**
Operational aspects		
Hospital stay	Shorter hospital stay	Longer hospital stay
Operative time	Longer operative time	Shorter operative time
Equipment used	Expensive and highly technical	Routine equipment without extra investment
Expert knowledge	Expert surgeon in laparoscopic surgery (advanced procedures)	Qualified surgeon
Clinical aspects		
Recovery period	Quick post-operative recovery	Long recovery period
Blood loss	Reduced blood loss	Greater blood loss
Blood transfusion	Less need for blood transfusion	Greater need for blood transfusions
Infection rate	Lower infection rate	Higher infection rate
Need for medication	Decreased analgesia requirement	High analgesia requirements

Health condition	Used mainly in benign conditions	Can also be used in suspected and malignant conditions
Complication rate	Higher complication rate	Lower complication rate

In the remainder of this section we first explain the clinicians' *topos* where the four dimensions of PC are discussed with help of the qualitative and clinical factual information. Following that, we present the *topos* of managers. For that purpose, we use the costing dataset and centrally set transfer prices shown in Table 4. We show the two occupational *topoi* separately so that we can then explain the areas of friction and why the existing transfer pricing practice of standard average costing does not seem to generate either the outcome favoured by the clinicians, or the most cost efficient outcome for the NHS.

A case study approach is used to collate the above quantitative, qualitative and observational data in order to provide in depth explanation to the research questions. Cooper and Morgan (2008) define case study research as ' an in depth and contextually informed examination of specific organisations or events that explicitly address theory'. Thomas (2011) suggests two main elements for case study research that are consistent with this definition: the subject of the case study (the thing that is being studied) and the object of the study (the theoretical and analytical frame). The subject of the study in this research is the specialist health centre. It is chosen as 'exemplary case' to study the phenomenon (Lichtman, 2014; p.121). This approach is also consistent with the PC methodology and meta theory, which is the other element for case study research.

Single case study analysis, has however been subject to a number of criticisms. The most common of these are the methodological rigour, researchers subjectivity, and external validity. According to Thomas (2011, p.511) in spite of the fact that case study research is used in several disciplines, 'there is little in the way of organisational structure to guide the intending inquirer'. Flyvbjerg (2006) discussed this as one of the five misunderstandings related to doing case study research and concluded that conducting good case studies is valuable for social sciences. Neopositivists, such as Ruzzene (2012), aim to make case studies more objective and generalisable, suggesting possible ways for checking external validity.

As stated by Cooper and Morgan (2008) case studies are difficult and challenging to undertake in accounting research. They conclude that the main difficulty of case study research is 'how

to assess it'. To address this, they advise to have clear evidence of adequate immersion in the case in terms of the range and documents studied, interviews conducted, time spent in the organisation and the range of sources used. They add that the researchers need to specify the conditions of access, their independence from the people studied, to convince the readers that the information is valid. In addition to those specifications, the contribution to and the use of theory must be articulated. We have followed their guidance and explained for our case study all of the issues that they raise.

3.2 Conceptualising the Multiple Occupational Topoi

3.2.1 Occupational Topos of Clinicians

This section explains the four dimensions of clinicians' *topos*, based on their professional values, clinical and managerial facts, possibilities they perceive and communication that they engage in. The concepts of proactive and pragmatic truth are referred to explain the integration of these dimensions.

3.2.2 Facts

The clinical team at the centre consisted of one clinical director, four consultants (two experienced consultants with more than 15 years of experience and two more junior consultants with less than 5 years' experience), two trainee consultants, four nurses and two anaesthetists. The clinical director was an award-winning surgeon with an excellent professional reputation, both nationally and internationally. He had been leading the centre successfully for over 4 years. The trainee surgeons were employed at the centre as part of their 2-year rotation and were preparing for their professional examinations.

Laparoscopic surgery included seven different types of surgical procedures. It had a shorter lead time with fewer complications during aftercare. It was essential that an experienced surgeon was leading the surgery and oversaw the aftercare. Open surgeries, however, offered limited variety with only three different types of surgeries. Compared with laparoscopic surgery, open surgeries had a longer lead time and a higher possibility of complications during aftercare. However, open surgery has been offered at the centre for long time and was compatible with the human and other resources available. As it did not involve competent use of the laparoscopy equipment, all clinicians could perform open surgery, compared with the

limited surgeon capacity for the technologically advanced laparoscopic surgery. Open surgery was perceived to be part of the routine surgical service, without pressure of constraints around technological and/or expert knowledge or availability of time slots in the operating theatre. Junior doctors felt comfortable with undertaking this process. It constituted more than 65% of all surgical operations provided at the centre and generated about half of the total income.

In sum, laparoscopic surgery had better health outcomes for patients compared with open surgeries, causing open surgeries to be replaced with laparoscopic surgery in some other health systems. Consequently, clinicians at the centre questioned the management processes in relation to technological conservatism.

3.2.3 Values

Evidence for the professional values of clinicians was collected through interviews, informal talks and observation of discussions in meetings. Trainee surgeons were concerned about the very limited possibility of practicing laparoscopic surgeries. They shared their concern with the clinical leader and decided to write a report about this issue to be presented at their oral examinations. These individuals appeared as enthusiastic surgeons who were willing to make genuine improvements to their practice. They were motivated by professional values of saving and improving the lives of patients, possibility of increasing capacity to treat more patients quicker and a willingness to make an impact in their practice. The following quotes from a trainee and an experienced surgeon reflect their emotions and disappointment:

> *It is deeply concerning to me that I am not able to get the best out of my training in this specialty. How will we grow the experienced surgeons capacity in this specialty if we can not practice how to use this piece of equipment? This is not logical. (Trainee consultant)*

> *Theatre times are blocked out for open surgeries, and the hours are limited for laparoscopy. This is frustrating as a few times although I had the time there was no space and therefore the relevant teams were not ready. I remember the trainees were disappointed. (Experienced consultant)*

The clinicians' comments implied that their professional values and current modern practices of laparoscopy were being suppressed by organisational processes and structures that were designed top-down and away from their professional practical world. Their proactive truth and the pragmatic truth did not match, as these quotes and the volume of the two types of surgeries indicated. Trainee consultants were at a loss in understanding why this was happening and

expected more – and clearer – communication as clinical evidence indicated that it would be more beneficial to perform laparoscopic surgeries.

The other constraint in relation to laparoscopic surgery was the limited number of experienced consultant surgeons able to perform these surgeries. A third issue raised was the difficulties in booking the operating theatre for laparoscopic surgery. All of these limitations and constraints resulted in laparoscopic surgery not being performed with the frequency desired by the clinicians. Next, the third dimension of PC - 'communication'- is explained in relation to this dilemma.

3.2.4 Communication

This section addresses the communication intermediaries and styles that clinicians used when sharing information and ideas about this dilemma, both within and outside the hospital. The consultant surgeons were part of established networks of professionals from both the UK and other countries and therefore received continuous updates on changes and advancements in their specialties. It was through these professional links that they were convinced that the use of traditional methods should gradually decrease and be replaced with newer, more modern treatment methods and surgeries. This would also enable an increased number of surgeries to be performed and the possibility of increasing efficiency in the medium to long term. Internal communication between clinicians and managers was regular and mostly formal. Clinicians were informed that the centre was in financial balance but were reminded that this was a difficult position to maintain. They were expected to consider the resource implications of any suggestions for making changes to the existing service pathways. One of the junior consultant surgeons commented as follows about internal communication between clinicians and managers:

> *We often are in touch with our manager in the department here. Apart from that I don't think we get engaged so much with management and decision making. We operate within a defined and structured system of allocated times for particular tasks. It is not always easy to follow what is happening at other parts of the centre or for all other surgeries. Perhaps the director would know about these more.*

This opinion indicated that communication channels did not exist for clinicians to discuss with managers what they perceived as a practical solution and to suggest alternative possibilities to make it work. This evidence also showed that clinicians were active participants in external communication channels and were updating their professional knowledge through this network and various other sources. Compared to this, inside the hospital the communication between

managers and clinicians was formal and limited in terms of information-sharing and designing of joint action plans.

3.2.5 Possibilities

The 'possibilities' dimension captures the reflexive nature of individuals and groups of individuals who see logics as enabling the constant monitoring of both existing and alternative practices. Here, we use the concepts of proactive and pragmatic truth to capture the clinicians' perceptions of possibilities. The proactive truth of clinicians was mostly designed by their expert knowledge and facts about the two types of surgeries framed by their occupational values. All clinicians were in favour of replacing open surgeries with laparoscopic surgeries because of the established health and recovery benefits. This view represented their pragmatic truth. When questioned about the costing of laparoscopic surgery, one of the experienced surgeons commented as follows:

> *All we know is that the centre receives more money when we do open surgeries. Is it because laparoscopic surgery is more expensive? I don't think so. It might seem as if it is more expensive because of the technical details but it is actually more efficient, much quicker and I would think better value for money.*
> *I think if we did all surgeries with laparoscopy we would be able to treat more patients and then bring more money to the centre in the medium and long term.*

Table 3. Occupational *Topos* of Clinicians

Facts	**Logics – Possibilities**
Centre of excellence	Technically advanced surgeries/procedures
Scientific evidence	More surgeons with new knowledge
Continuous flow of patients (national)	Better health outcomes
Provides laparoscopic (new) and open (old) surgery	Helping more people
Financially balanced or with surplus, but hard to maintain	Career aspirations

Communication	**Values**
College guidelines	Saving lives
Best practices, benchmarking	Improving health
Professional networks	Learning, adapting
Professional media	Timely and accurate decisions
Training	

The proactive truth of the clinicians was reinforced by their belief about the effectiveness and efficiency of laparoscopic surgery as well as their confidence in terms of the potential to increase the number of patients, hence increasing income for the centre in the medium to long term. A gradual shift from open surgeries to laparoscopic surgery was perceived by clinicians as the proactive possibility to increase the number of experienced surgeons while helping to fulfil the career aspirations of trainee surgeons.

Table 3 summarizes the four dimensions of the occupational *topos* of clinicians. As explained above, the integration of these dimensions shows how clinicians produce their reality and the proactive truth for laparoscopic surgery to be the main surgical procedure provided at the centre. We can now contrast their realities and truths with those of the managers.

3.3 The occupational topos of managers

Data on the four dimensions of PC in relation to the manager's perceptions were selected from the notes taken at meetings between clinicians and managers as well as during interviews with the service manager and operations director.

3.3.1 Facts

The financial facts about the centre were as follows. The surgical procedures brought a steady stream of income of around 60% of the total annual income. Laparoscopic equipment was used continually by health technicians and trainee doctors for diagnosis. For the treatment, however, it was possible to offer eleven different categories of surgeries. These are grouped as surgeries with use of laparoscopy (7 types) and without use of laparoscopy (3 types), indicating traditional 'open surgery' and one type of open surgery that was assisted with laparoscopic equipment. Although more variety was offered in laparoscopic surgery, the majority of income was received from open surgeries. The centre was considered a centre of excellence in its specialty with a steady stream of patients referred not only from their own region but also from other regions.

3.3.2 Values

The managers' occupational values were highly influenced by the existing performance management systems in place in the NHS. The main management control tool was the budget which was perceived as the main reference point for financial issues. According to the operations manager and the service manager, they were following the financial and managerial rules and procedures of the NHS, and the centre was performing well:

> *We are governed by the rules of commissioning and we have a responsibility to make sure that we continue receiving sufficient income for the centre. We are in a good position financially and operationally….*

According to the cost, quality and performance indicators, they were doing better than comparable centres and therefore did not have any reason or incentive to engage in discussions about service redesign or work reconfiguration. When asked about the high volume of activity for open surgeries, they mentioned that the clinical justifications of surgical decisions were out of their remit. However, they commented that it would be to the benefit of the centre to improve the surgical procedures that they were relatively more efficient and better at, and that these appeared to be the open surgeries. More than half of the surgeries were open surgeries and all surgeons were qualified and sufficiently experienced to perform these. Increasing the number of laparoscopic surgeries meant increasing the number of experienced surgeons. This was not considered an easy and cheap undertaking and could also mean investment in new laparoscopic equipment. According to the operations manager:

> *These issues are business decisions. For any of these to happen, it is essential that business cases are prepared and explained at the board level. We have not done anything in relation to those yet. Also the financial and operational benefits need to be shown.*

The service manager commented as follows:

> *We are efficient in a number of open surgery procedures and we would prefer to continue with those…These are our core activities at the operating theatre and perhaps these are supporting the financial burden of some of our laparoscopic surgeries.*

3.3.3 Possibilities

The managers' perceptions of 'possibilities' were the other important contributor to the described friction as they were considerably different from those of the clinicians. Their view of what was possible was bound by the rules of fund transfer to the centre according to centrally determined transfer prices. Since the existing framework served their values of increasing efficiency and maintaining financial surplus, there was no reason to question the operational flows or quality of the service; from these perspectives, the centre was one of the best in the

country.

3.3.4 Communication

The main communication intermediaries that the managers used for internal communication were formal and informal meetings and management documents. Key pieces of information that were used in these management meetings were budgetary information, together with institutional benchmarking comparisons, NHS guidelines and reports. These documents included both financial and non-financial information. The tariff prices that we refer to as transfer prices in this paper were not mentioned in these reports. When asked about the data presented here in tables and whether or not these were used in discussions with clinicians, the operational manager commented as follows:

> *We usually do not have time to go into that much depth in our meetings with clinicians...We know they have suggestions to increase laparoscopic procedures but we would need to financially and operationally justify these, with detailed costings and expected savings, etc…*

The managers were active and influential in communication and were aware of the current status of the service or, in PC terms, the pragmatic truth surrounding the dilemma. They were better informed than the clinicians about the institutional financial structures and the boundaries of the existing performance management system. This affected their view of proactive truth and hence the possibilities of what could be done for the centre to continue running successfully. Table 4 summarizes the four dimensions of the managers' occupational *topos*. The differences in perceptions of these two groups resulted in a disagreement, and what we call the 'area of friction' emerged between the two occupational *topoi*. Below, we explain this area of friction and discuss how a better alternative could be devised between the two groups.

Table 4. Occupational *Topos* of Managers

Facts	**Logics – Possibilities**
Provides laparoscopic (new) and open (old) surgery Financially balanced or with surplus, but hard to maintain Budgetary control responsibilities Tariff prices	Increasing efficiency Improving financial outcomes Maintaining operational outcomes and quality
Communication	**Values**
NHS guidelines Reports and other documents Formal and informal meetings Professional networks	Efficient and effective service Meeting performance targets Maintaining service quality

3.4 How new cost information highlighted the area of friction between the managerial and clinical topos

As reported, neither of the two occupational groups discussed the detailed costs of the various types of surgery. In order to explore these issues, the researchers calculated of detailed information about activity times and costs for all 11 categories of surgeries. These costs were calculated from manually collected data at the centre and therefore included the costs associated with each procedure. According to the figures calculated with actual costs, laparoscopic surgeries were cheaper to perform than some types of open surgeries. The average cost of all laparoscopic surgeries was £1,172.45, whereas for open surgeries the average cost was £1,428.22. The costs highlighted the fact that complicated laparoscopic surgeries (type 6 and 7) were more costly than other two types of open surgeries, whereas all other types of laparoscopic surgery were considerably less expensive than open surgeries.

The corresponding transfer prices (or 'tariff prices' in NHS terminology) for all 11 groups of surgeries were searched for in the National Tariff price database and used at the time of investigation. Table 5 shows the costing data for all types of surgeries and presents these figures, as well as the differences between the costs of each type of surgery and the tariff prices. It is evident from the table that the surplus generated from certain open surgeries was extremely high compared with the efficient but less surplus-generating laparoscopic surgeries. Also, laparoscopic surgeries with hospital stays of 2 days did not generate a surplus but small deficits. Within the boundaries of the sensitive financial balance between these two types of surgeries, the centre continued to operate successfully with existing work processes defined for several years. There was no evidence of any planning to reconfiguration work processes in order for more laparoscopic surgeries to take place. This view was the opposite of what the clinicians

perceived as proactive truth, as explained previously.

Table 5. Comparative operating times, costs of surgeries and differences between costs & transfer prices

Type of surgery	Average operating theatre time	Staff cost (A)	Cost of stay (B)	Equipment cost (C)	Total (A+B+C)	Tariff Prices (Transfer prices at average cost)	Difference (transfer prices – Total)
Laparoscopic surgery – 1 day stay							
Type 1	50 mins	£251.00	£148.94	£616.18	£1,016.12	£1,495.00	£478.88
Type 2	30 mins	£150.60	£148.94	£616.18	£915.72	£924.00	£8.28
Type 3	30 mins	£150.60	£148.94	£171.70	£471.24	£1,495.00	£1,023.76
Type 4	60 mins	£301.20	£148.94	£301.70	£751.84	£924.00	£172.16
Type 5	90 mins	£451.80	£148.94	£881.00	£1,481.74	£2,978.00	£1,496.26
Laparoscopic surgery – 2 days stay							
Type 6	90 mins	£562.50	£297.00	£916.14	£1,775.60	£1,495.00	-£280.60
Type 7	105 mins	£656.25	£297.00	£841.61	£1,794.86	£1,495.00	-£299.86
Open surgery – 2 or 3 days stay							
Type 8	110 mins	£687.50	£297.00	£931.18	£1,915.68	£6,726.00	£4,810.32
Type 9	150 mins	£937.50	£446.80	£1,121.14	£1,567.96	£1,495.00	-£72.96
Type 10	60 mins	£301.20	£446.80	£53.00	£801.02	£2,978.00	£2,176.98
Open surgery assisted with laparoscopy – 1 day stay							
Type 11	60 mins	£343.20	£148.94	£672.20	£1,164.30	£2,978.00	£1,813.70

The facts and costing data collected at the centre provided more insights about the pragmatic truth that the managers described. When compared with the proactive truth that clinicians were promoting, the pragmatic truth of managers appeared as a less-than-optimal situation. Clinicians were inclined to work to achieve their proactive truth whereas managers were content with the pragmatic truth within the requirements of the performance management system.

As can be seen in Table 5, open surgeries generated more revenue than laparoscopic surgeries in average cost and tariff price (transfer price) comparisons. Paradoxically, the tariff reflected the fact that laparoscopic surgeries were a more efficient type of procedure than open surgeries and hence generated less income, which was consistent with the surgeons' perceptions. However, there were some significant differences between the tariff prices of open surgeries and the cost at which these surgeries were performed at the centre. It was apparent that the centre was significantly more efficient than other centres in the provision of certain types of open surgeries (types 8, 10 and 11). As a result, they were generating a very high surplus of more than £2,000 per open surgery, on average. When this is compared with the surplus collected through laparoscopic surgeries, it was evident that the open surgeries had a considerably higher and more positive contribution. The resultant financial success and the relative efficiency of using the existing procedures of open surgeries were perceived to be

essential by managers. When this information was shared with trainee surgeons, their reactions were as follows:

> *We were not aware of these differences. Yes, there are some financial benefits to do for example Type 8 open surgery but we can perform the same treatment with for example Type 6 laparoscopic surgery. There is not the same amount of financial surplus with that treatment but probably we can treat more patients if we train in that procedure and perhaps we would be able to make a higher positive contribution in the long term… If we continue with the existing logic and based on these figures, then I am afraid there is no possibility for further application of laparoscopy in this specialty. This does not look very promising for trainees. …*

4 DISCUSSION OF THE CASE STUDY: APPLYING THE CRITERION OF PRAGMATIC TRUTH

The cost data calculated in this study helped to establish a proactive truth about the two types of surgeries. The pragmatic truth of managers, as the realised results, was different from what the proactive truth of clinicians had indicated. Data revealed that these two were distinct from each other. The key question is: Is the *topos* 'real' in the sense of avoiding illusions? If there are illusions, are they because of problems in individual dimensions (e.g. a faulty construction of facts)? Or are they due to a failure to integrate the dimensions? In our field work, the clinicians and the managers each seemed to have well-integrated models of reality. However, the organizational outcome actually revealed a certain lack of strategic ambition in the sense that the system was not delivering enough innovation. In particular, the clinicians perceived that the wider governance model was not working *as well as it could* because it did not integrate the possibilities of cheaper and clinically superior treatments. Each occupational group had their own reasoning and explanation as to why they had their particular view of the reality. Better communication between these groups of actors might have enabled these different perceptions to be discussed leading to a jointly formed, mutually beneficial organisational reality (Nørreklit, 2017) Unfortunately, the actors experienced difficulties in developing effective communication so that their proactive truths could be aligned to reach an organisational *topos* which reconciled both commercial and clinical values.

In Figure 2, we proposed a model based on organized dissonance. The costing database was perceived and used differently by different *topoi* simultaneously. The proliferation of multiple understandings and multiple performance-management expectations reinforced the dissonance in the system but, in contrast to the examples cited by Stark (2009), the organizational frictions

were not a source of creativity or new organizational practices. Unfortunately, the pragmatic truth in the fieldwork revealed dysfunction rather than organized dissonance. The new costs calculated revealed the proactive truth supported by the clinicians' *topos*. The pragmatic truth reflected that costs used at the centre were calculated according to existing top-down cost allocation methods of the NHS. The financial income of the centre was based on mechanical governance ideals of transfer pricing according to this existing costing exercise. This approach rejected the proactive truth calculated based on the bottom-up costing exercise undertaken in this study for the innovative surgery. As a consequence of this, organizational learning did not take place as innovation was not embedded as the preferred treatment. In terms of our theoretical framework, there was an impediment to realising the pragmatic truth proposed in the theoretical model. Future studies could investigate methods and approaches to achieve this.

4.1 The national tariff as an example of mechanical governance

From a PC/ABM perspective, the journey from proactive to pragmatic truth was impeded by an approach informed by mechanical rather than actor-based governance. The mechanical approach reflected the philosophy of the average cost and the 'average hospital' (Llewellyn and Northcott, 2005), which is the system of national tariffs. The clinical outcome was very similar to that found by Maniapoulos et al. (2015) in that innovation could save money for the whole system (NHS) but not for an individual hospital. Paradoxically, in their case study, innovation was not hindered by an imposed national tariff but rather by its absence.

From our theoretical perspective based on a reading of transfer pricing theory, we would argue that a negotiated transfer price *potentially* improves communication between actors and provides incentives for an innovation to be implemented. This approach is also consistent with the spirit of ABM, which prescribes locally derived actor-based solutions rather than top-down, centrally-determined regulations (Nørreklit, 2011; 2017). Yet negotiations will not produce the outcomes suggested by transfer pricing theory if the overall incentive system is flawed.

5. SUMMARY AND CONCLUSIONS

This paper addressed a dilemma where two occupational groups perceived a particular technological innovation in different ways, as explained through the concepts of proactive and pragmatic truths of PC methodology. Clinicians were questioning the limited use of the technology despite its operational advantages and health benefits to patients. Managers, on the other hand, were unwilling to increase the use of this technology because of the implications

of such a change were a possible decrease in the financial income that the centre was receiving. In PC terms, the clinicians argued for a proactive truth of gradually shifting from the traditional method to a more modern, innovative surgical method. They believed that this would help to increase the effectiveness and efficiency of the service. However, the managers' explanation of pragmatic truth was as follows: as the traditional method was generating higher financial income to the centre and was more in line with the current capacity, continuing with the traditional method would maintain the financial and operational success of the centre. Therefore, they perceived no apparent need or urgency to shift from the traditional to a more modern method of surgery.

The main point of departure between the two truths was caused by the transfer prices of these two surgeries. According to the costs of surgery calculated during the fieldwork and compared with the administered transfer prices, it was apparent that the centre was one of the most efficient providers in the country for some types of traditional surgery. This resulted in the generation of high financial surpluses for the centre. Even though the technologically more advanced surgeries were also performed efficiently, the surpluses that these services generated were less than the surplus from the traditional techniques. In sum, centrally determined transfer prices and the way they are used to calculate income resulted in the friction between the managers and clinicians, as they perceived the innovation described in this paper from two contrasting occupational *topoi*.

From a transfer pricing point of view it could be argued that goal incongruence resulted from the imposition of centrally determined prices (McAulay and Tomkins, 1992). From this perspective, the issue of communication highlighted above could perhaps be solved if parties had greater commercial freedom and could negotiate their prices. The difficulty with this proposal is that it faces the politically emotive charge of 'privatising the NHS', as negotiations would only be meaningful if they were accompanied by the sort of profit incentives that are associated with private-sector markets. This proposal would also conflict with our methodological stance, which explicitly rejects the reductionist models of Economic Man and a single path to a single optimal solution. As we have argued through our PC framework, individuals and groups have rich and complex ontologies, which offer possibilities for diverse communication strategies and different paths (Nielsen, et al., 2015) towards the desired goal of medical innovation. Furthermore, in large and complex organisations such as the NHS, leaving

the decision of transfer pricing to inter organisational negotiations could have the potential to cause chaos in the implementation of new treatments.

Reviewing the policy issues in terms of our methodological and theoretical framework, the challenge for the NHS is to develop a managerial *topos* that tolerates ambiguity and does not suppress friction between groups but seeks to mobilise it as a way of nurturing organizational learning. As shown in Figure 2, the challenge is to convert the proactive truth of the model into an enacted, pragmatic truth. The policy challenge is one of promoting a process of engagement between the diverse occupational groups and their differing occupational *topoi*. Avoiding a top-down 'command and control' model of governance, institutional mechanisms need to be designed which can *routinely* promote the spread of new surgical procedures that are not only clinically superior but, as this case illustrates, are often cheaper than the existing procedures. This policy issue is not a simple one of 'more' or 'less market' but rather a combination of coordinating mechanisms that promotes organizational learning in the NHS and support technical innovation. The problem does not lie in the different *topoi* of the various occupational groupings in the NHS. The diversity of viewpoints is inevitable and could be productively reconciled in an administered managed market in which transfer prices are more carefully and more frequently re-calculated.

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