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CONTRACTS, RELATIONSHIPS AND INTEGRATION:

**TOWARDS A MODEL OF THE PROCUREMENT OF
COMPLEX PERFORMANCE**

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Abstract

Although there is a growing body of research exploring the transition to a more service-based orientation in complex product markets, the majority of this literature adopts what might be classified as a 'manufacturer-active' point of view; that is it explores the challenges faced by firms (e.g. aircraft and capital equipment manufacturers, building firms, etc.) seeking to 'sell' their re-conceptualized streams of revenue. There has been much less research exploring the challenges associated with the transition from traditional asset acquisition processes to 'buying' or procuring complex performance (PCP) - here defined as a combination of transactional and infrastructural complexity. This paper explores the macro and micro-economic context to this specific problem space and develops a preliminary conceptualisation of the process of PCP. It draws on two principle literatures: one focused on the boundary conditions firms consider when choosing to 'make or buy' a range of different activities from the market (e.g. Fine and Whitney, 1999; Gilley and Rasheed, 2000; Williamson, 1985; Grover and Malhotra, 2003) and, the other on public procurement (e.g. Thai and Piga, 2006; Knight *et al.*, 2007) and Public-Private Partnerships in particular (Broadbent and Laughlin, 2005; Froud, 2003). Three distinct governance challenges are presented: (1) contractual, (2) relational and (3) integration. The paper explores the implications of the conceptual model by developing a range of research propositions that are intended to be the foundations for future research.

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1. Introduction

Buying the performance outcomes of a resource-in-use, rather than acquiring the resource and using it, is not a novel phenomenon: from the laundry where a customer purchases 'cleaned clothes' to the vehicle-leasing firm where a client contracts for 'miles travelled'. Today however, this approach is being increasingly applied to the procurement of complex performance: DuPont for instance, after years of outsourcing non-core services, awarded a long-term contract to Convergys to redesign and deliver the various HRM programs for its 60,000 employees in 70 countries (Engardio *et al.*, 2006). Likewise, in the computing and telecommunications sectors for example, the volume of outsourced R&D and manufacturing services is forecast to grow to almost \$350 billion by 2009 (Carbone, 2005). Similarly firms like Infosys are developing and maintaining a range of mission critical IT applications for numerous international financial institutions. The same trend is evident in public procurement: UK government for example has long commissioned specific research projects from universities and private-sector institutions but in recent years more and more complex research performance is being outsourced and contracted for: for instance, Serco has managed the national standards laboratory, a large scale, internationally respected centre of excellence in measurement and materials science R&D, since 1995.

Interestingly, although there is a growing body of research exploring different aspects of this transition to a more complex service-based orientation (Potts, 1988; Armistead and Clark, 1992; Mathe and Shapiro, 1993; Miller *et al.*, 1995; Hobday, 1998; Gadiesh and Gilbert, 1998; Wise and Baumgartner, 1999; Kumaraswamy and Zhang, 2001; Mathieu 2001a, 2001b; Brady *et al.*, 2005; Davies *et al.*, 2007), the majority of this literature adopts a 'provider-active' point of view;

that is it explores the challenges faced by firms (e.g. aircraft and capital equipment manufacturers, building firms, etc.) seeking to 'sell' their re-conceptualized streams of revenue. There has been much less research on the challenges associated with the transition from traditional asset acquisition processes to 'buying' complex performance (e.g. Lindberg and Nordin 2008, van der Valk 2008). This represents a significant empirical and theoretical research opportunity because it is a global phenomenon that necessitates understanding of the factors that influence both private and public-sector organisational scale and scope. This exploratory paper comprises two main sections. The first introduces the content of, and context to, the research - offering a model of performance complexity. In the second, the additive process of procuring complex performance (PCP) problem space is presented as a series of three governance challenges: *contractual*, *relational* and, *integration*. The implications of the conceptualization are discussed in a range of propositions that can be viewed as foundations for subsequent research in this increasingly significant area of public and private sector procurement.

2. The Content and Context of PCP

Consider the provision of aero-engine 'power by the hour'. Although inter- and intra-organisational boundaries have clearly been changed, the intrinsic complexities of aero-engine supply and support have not been removed by this procurement arrangement: these sophisticated capital assets still need to be paid for (depreciated) and supported, often globally, by a Maintenance-Repair-Overhaul (MRO) organisation, with the support of a range of external contractors. Moreover, although an apparently simple procurement arrangement, with airlines specifying x hours of flying time, closer consideration reveals a whole range of

likely buyer conditions (e.g. short versus long haul, timing and location of maintenance operations) and provider caveats (e.g. provider contract assumes the engine doesn't exceed certain operating parameters, etc.) in any contract. In sum, this is a good example of what the paper means by complex performance outcomes and the additive challenge of PCP. 'Power by the hour' as an outcome actually means on-wing aero-engines operating within efficient and effective boundaries - this is complex performance. Buying this kind of outcome means that airlines have to make significant judgements about reconfigured sets of specialized and complex input capabilities - this is PCP.

This archetype provides a useful point of departure for this conversation but in order to build a conceptually robust picture of PCP it is necessary to bound the distinct phenomenon before moving on to explore *why* and *how* organisations embark on the PCP process.

2.1. What is PCP?

Noting that any complexity construct is relative, subjective and a function of the level of analysis applied, the relevant literature highlights two dimensions of performance complexity that have particular relevance to subsequent procurement decisions.

The first relates to the *performance* complexity itself (Danaher and Mattsson, 1998), a function of characteristics such as the level of knowledge embedded in the performance (e.g. the ability to type up doctors notes compared with the ability to read an X-Ray chart) and/or the level of customer interaction (e.g. scripted 'performances' compared with 'performances' that are "...empathetic and facile with respect to language and culture": Youngdahl and Ramaswamy, 2007). Knowledge-intensive and highly interactive services like management consultancy have traditionally presented a

significant challenge for procurement processes because they are difficult to specify ex-ante and, correspondingly, difficult to measure and monitor. Unsurprisingly, this has often meant that they are a controversial area of public and private expenditure. Second, there is the complexity of the *infrastructure* through which performance is enacted. This complexity can be largely characterized by the extent to which it is “bespoke or highly customized” (Brady et al., 2005). Infrastructure procurement is often irregular and, as a result, buyers often rely heavily on specialist suppliers, indeed increasingly firms “know less than they buy” especially in the light of recent outsourcing trends (Davies, 2003). Figure 1 combines these dimensions into a matrix of total procurement complexity.

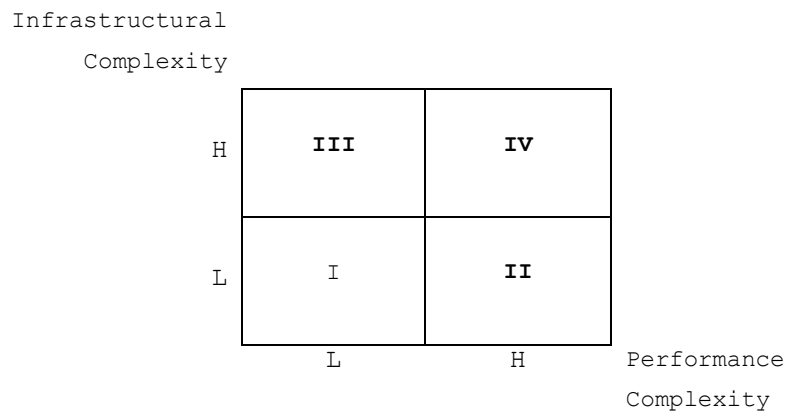


Figure 1. The Procurement Complexity Space

The top-right quadrant of the matrix, labeled category IV, represents the highest level of aggregate complexity and provides the preliminary definition of PCP.

Procuring Complex Performance is defined by inter-organizational arrangements that are characterized by significant levels of performance complexity (i.e. must include numerous knowledge intensive activities) and

infrastructural complexity (i.e. must include substantial bespoke or highly customized hardware and software elements).

Although further work will be needed to operationalize the two framing dimensions (and thereby generate empirical tests for the typology and its boundaries) in this preliminary work it is possible to further detail the other categories in order to reinforce the differential characteristics of Category IV.

Table 1 below summarizes each category and provides illustrative examples.

Category	Example
I	Domestic waste collection service. Here, a public authority (e.g. Minneapolis, one of the first US cities to introduce competition in refuse collection) procures a service with a simple specification and stable demand patterns (low performance complexity); based on well-known technologies operating in a fixed area (low infrastructural complexity)
II	Management consultancy services, in particular 'grey matter' assignments such as senior-level policy guidance (Maister, 1995), are a good example of high performance complexity (i.e. knowledge intensive and strongly client relationship/interaction driven) and low infrastructural complexity.
III	An off-shored IT support service with a call centre where customer interactions are limited in scope and carefully scripted (i.e. low performance complexity) is delivered via a relatively sophisticated and complex technological infrastructure.
IV	The UK governments' (long delayed and expensive) replacement of its airborne surveillance and counter-measures aircraft (Nimrod/MRA4) for instance. The prime contractor, BAe Systems, won the contract to develop and manufacture a small batch of technologically advanced aircraft (albeit based on a very old airframe) and provide their supporting operational and training infrastructure together with various second line training and maintenance services (high infrastructural

	complexity); all procured under an availability contract that provided for different levels of mission hours under different operating conditions, etc. (high performance complexity).
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Table 1. Different Categories of Performance Complexity

Additionally, it would be interesting to explore how these types of complexity interact and modify over time. For instance, international engineering firms like Arup and Atkins use off-shoring strategies to manage knowledge and information (transactional complexity) through the life cycles of their own complex infrastructure provision, suggesting that simplification and complexity segmentation strategies will form an important part of any PCP arrangement. Equally, competitive, technological, regulatory and legislative forces will inevitably alter relative positioning. The type III call centre example for instance, could become a type I as infrastructure further standardizes and greater automation of analysis reduces the performance complexity.

2.2. Why buy complex performance?

Although the strategic logic for the 'make or buy' (supply or buy) decision is normally efficiency maximization, a range of factors, such as global trade liberalisation, narrower definitions of core competencies and greater technological complexity (Oliva and Kallenberg, 2003) seem to be changing the scale and scope of outsourcing. Customers of firms like Flextronics (electronics sector) and Li and Fung (garment sector) for example, are no longer buying sub-contract manufacturing capacity but rather procuring 'solutions' to complex business problems. Although this suggests that buyers are seeking a broader range of strategic contributions from their suppliers, this appears to challenge the dominant theoretical,

Transaction Cost Economics (TCE), logic for outsourcing. Assuming opportunism and bounded rationality (Rindfleisch and Heide, 1997) TCE asserts that firms attempt to minimize transaction costs by "assigning transactions (which differ in their attributes) to governance structures (the adaptive capacities and associated costs of which differ) in a discriminating way" (Williamson, 1985, p.18). As a result, firms only internalize activities where adverse costs might arise from operational difficulties in a market exchange, primarily uncertainty, frequency, and asset-specificity¹. However where there are high levels of asset-specificity, TCE suggests that hierarchy becomes the least-cost governance solution². In other words, this logic suggests that organizations would/should not procure complex performance or that a purely transaction-based logic is insufficient to understand the PCP phenomenon. In a related discussion³ Holcomb and Hitt (2007) balance economizing arguments with a logic where "the complementarity of capabilities, strategic relatedness, relational capability-building mechanisms, and cooperative experience [are equally] important conditions...for strategic outsourcing". Using this balanced definition it is proposed that:

Proposition 1:

PCP arrangements are considered where organizations can rely on markets for specialized capabilities, able to

¹ An asset is transaction specific if its value in a transaction with another party is reduced and correspondingly, the larger the value 'gap' between its best and best-alternative use, the greater the specificity of the asset.

² Although governance through hierarchy necessitates high fixed set-up costs, its use of authority rather than court enforced contract law (for market governance) provides greater control over specific capability investments (Masten, 1988).

³ See also earlier work by Poppo and Zenger, 1998; Combs and Ketchen, 1999; Madhok, 2002; Jacobides and Winter, 2005 and Hoetker, 2005.

deliver complex performance, that supplement existing capabilities deployed along a firms value chain and create value beyond that achieved through cost economies.

This notion of looking for strategic value from procurement is also evident in the public sector. Faced with increased pressure to be both more effective and efficient many governments have turned to the controversial magic formula of private sector involvement in the financing, development and provision of public services: effectively creating complex performance arrangement. Contractual arrangements such as the UK Government's Private Finance Initiative (PFI)⁴ for instance were explicitly conceived as mechanisms for *'purchas[ing] quality services on a long-term basis so as to take advantage of private sector management skills incentivized by having private finance at risk'* (UK Stationery Office, 2000, p.8). Despite these similarities, the distinct nature of public sector PCP activity, introducing divergent values and strategies⁵ to both contractual negotiations and subsequent performance management, necessitates consideration of several additional factors. For instance, although private-sector PCP arrangements become increasingly possible as markets for specialized capabilities emerge (Jacobides 2005), politically motivated public buyers can pre-empt established market provision. Some public sector 'make-buy' decisions for instance, might be more accurately described as choices between in-house

⁴ Leaving aside specific (sometimes ideological) concerns, such as whether the policy is legitimate, cost-effective, actually results in risk transfer or is sufficiently accountable (e.g. Froud, 2003) this paper argues that PFI is still innovative public procurement practice.

⁵ It has been argued that many of the UK Private Finance Initiative contracts have been influenced more by politics than economic rationality (Lonsdale, 2005a).

provision⁶ and processes of encouraging (via development funding, etc.) one or two specialized private firms to develop/offer new services that the state can eventually buy! In the construction sector for example, it was arguably the emergence of public sector Build-Operate-Transfer (BOT) infrastructure projects that created the *ex-ante* need for firms to develop their complex performance provision capabilities (Gann and Salter 2000). Similarly, Boeing, following an order in 2006 from Air India for 68 aircraft (worth over \$11 billion - at 2006 list price!), also agreed to create a Maintenance, Repair and Overhaul (MRO) facility in Nagpur and further fund a number of existing Indian flying schools. Therefore it is proposed that:

Proposition 2:

Public-Private PCP arrangements are considered where a public buyer is seeking (for a variety of policy motivations) to create/support markets for specialized capabilities that replace and/or supplement existing state provision and create value beyond that achieved through cost economies.

3. The Process of PCP

There will inevitably be multiple distinct governance challenges associated with the PCP process. For example, producers or systems integrators often face monopolistic markets, with highly politicised purchasing decisions, government regulators, sophisticated buyer/operators and long lead times in commissioning, design and production. It is only through the award of extended revenue generation opportunities that suppliers are encouraged to commit but, paradoxically, these multi-decade life cycles

⁶ Noting that state service provision is often the result of market failure.

introduce further uncertainty and complexity. This paper focuses on three areas of specific conceptual and practical concern:

1. *Contractual*. How do you write, monitor and enforce contracts in situations of high asset specificity, high uncertainty and low exchange frequency, circumstances that would lead a TCE analysis to suggest hierarchy as the optimal governance solution?
2. *Relational*. Trust, social ties, etc. are essential complements to contractual mechanisms but in complex PCP arrangements their development may be disproportionately time and resource consuming.
3. *Integration*. Given the PCP intent is to replace, transfer and/or renew in-house capabilities, ex-ante diagnosis of systems constraints and legacies, and ex-post integration activities are likely to be key ex-ante and ex-post challenges.

As each area is explored in more detail, a number of further research propositions are identified.

3.1. Contractual Governance

'Classical' contract theory argues that parties safeguard against the hazard of opportunism by applying legal contracts, specifying what is acceptable and what is not, with threats of legal enforcement or non-legal retribution (Williamson, 1975). In theory, 'complete' contracts can be drafted (Lyons and Metha, 1997), that is contracts containing all the necessary safeguards to mitigate opportunistic behaviour and reduce transactional ambiguity by clear specification of what is and what is not allowed within a relationship (Lui and Ngo, 2004). For instance mitigating the risks associated with opportunistic behaviour by stipulating penalties that change the pay-off structure (Parkhe,

1993). Following this logic, an optimal contract is the one with the lowest transaction costs relative to outcome. In practice however, drafting costs and asymmetric information render most contracts "incomplete", only defining remedies for foreseeable contingencies and/or specifying processes for resolving unforeseeable outcomes (Poppo and Zenger, 2002, p.707). PCP arrangements introduce a number of additional conceptual and practical challenges for contractual governance, beyond those introduced by a very large number of technological and transactional variables, all multiplied by the uncertainties introduced by extended timeframes. Consider for example, the bilateral interdependence (Carney, 1998; Lonsdale, 2005b; Bennett and Iossa, 2006; Leiringer, 2006) that is created by very significant levels of exchange-specific investment (e.g. building a hospital for a public health authority). Although this mutuality (i.e. where else will the buyer obtain hospital services; what else will the supplier do with a hospital) could, in certain circumstances, reinforce inter-organizational co-operation, from a contractual perspective it also clearly exposes both buyer and supplier to potential opportunism and therefore increases the likelihood that all parties (but especially public-sector buyers) will feel obliged to engage in a complicated and challenging contracting process. Additionally, as PCP processes are likely to "be both irregular and infrequent ... [organizations] ... may rely more intensely on suppliers and specialist external advisors." (Flowers, 2007); this could potentially contribute to extreme contracting costs (Baiman and Rajan, 2002). Thus it is proposed that:

Proposition 3:

The greater the complexity of the performance solution being procured, the greater the time and costs associated with the contracting process.

In addition to being difficult and expensive, Holcomb and Hitt (2007) argue that such contracting is "often counter-productive". After all, if PCP contracts are *both* incomplete (e.g. Lonsdale, 2005b; Bennett and Iossa, 2006) and excessively detailed, it is likely they will be inflexible and difficult to monitor ex-post (Macaulay, 1963; Macneil, 1980). In other words, and paradoxically, although PCP exchange governance may be heavily reliant on contractual mechanisms, it may actually lack enforcement capabilities. As a result, it seems likely that these arrangements will be regularly opened up to various forms of external arbitration, including formal review by the local legal system (Deakin and Wilkinson, 1998).

Following Agency Theory perspectives on information asymmetry between principal⁷ and agent⁸, effective PCP contractual governance needs to address both search costs and contract monitoring/enforcement costs. In other words, it depends upon accurate ex-ante specification of service requirements *and* establishing meaningful ex-post controls. So, for example, successful bidding for a typical PFI contract depends upon accurate operational forecasts (e.g. traffic volumes, patient numbers, etc.) and effective control is dependent upon ongoing capture of the same essential operating standards (Nisar, 2007). Whilst this may be straightforward for some applications (e.g. a toll road), research into the most complex PCP arrangements, like the UK National Air Traffic Service (NATS), has

⁷ The buyer - responsible for designing and proposing the contract.

⁸ The supplier - who will perform the task and must decide if interested in signing or not (Macho-Stadler and Pérez-Castrillo, 2001)

highlighted this as the PCP challenge (Walder and Amenta, 2004). Others have proffered the complementary argument that effective governance in long-term supply relationships is linked to effective knowledge and information management over the whole lifecycle, based on reliable and consistent data. (El-Haram et al., 2002; Brady et al., 2005; Schofield, 2004; Tranfield et al., 2005). Thus it is proposed that:

Proposition 4:

The greater the complexity of the performance solution being procured, the more significant the ex-post contract monitoring costs (design and implementation of incentive structures, resource intensity, time commitment, etc.).

Discussion of ex-post contract monitoring also raises the analogous question of how PCP contractual governance, normally devised for a single prime supplier, influences the rest of the supply chain. Given that many 'integrated solutions' are produced in multi-firm alliances, collaboration between parallel primes can seemingly be made to work but it is less clear to what extent other firms, especially small firms (SMEs), can operate under PCP contracting forms, given that their typical life-cycle will be shorter than an average PCP contracting period. Thus it is proposed that:

Proposition 5:

PCP arrangements will not be replicated by prime suppliers with their suppliers (in particular with smaller firms) in subsequent network tiers.

3.2. Relational Governance

Various studies have noted the complementary characteristics of contractual and relational

mechanisms (Zucker, 1986; Larson, 1992; Poppo and Zenger, 2002; Klein-Woolthuis *et al.*, 2005; Halldórsson and Skjøtt-Larsen, 2006; Vandaele *et al.*, 2007). Tranfield *et al.* (2005) for example argue for the significance of relationships in PCP governance, especially when co-ordinating intra- and inter-organisational networks with a multiplicity of stakeholders. More generically, clearly articulated terms, remedies, and processes of dispute resolution in combination with relational norms of solidarity, bilateralism, and continuance may yield greater confidence to cooperate (Baker *et al.*, 1994; Stephen and Coote, 2007). Similarly, social processes (e.g. trust) that promote norms of flexibility, solidarity and information exchange, can safeguard, albeit informally, against exchange hazards and facilitate the enforcement of obligations (Granovetter, 1973, 1985; Ring and Van de Ven, 1994; Gulati, 1995; Baker *et al.*, 2002) and unforeseeable contingencies may be accommodated by a bilateral approach to problem solving which facilitates adaptations - especially within a long-term relationship (Zand, 1972). Conversely, there are significant embedded difficulties associated with the effective application of relational mechanisms in PCP, especially public-private, relationships: power imbalance (Grimshaw *et al.*, 2002); divergent values and strategies⁹ in contractual negotiations/performance management (Teisman and Klijn, 2004); inappropriate risk and benefit sharing (Dixon *et al.*, 2005; Erridge and Greer, 2002). Moreover, continuity of staff is almost impossible in any multi-year contract - and individual relationships are a core component of inter-organizational relational governance. Finally, if relational governance goes beyond calculative self-

⁹ It has consistently been argued that many of the UK Private Finance Initiative contracts have been influenced more by politics

interest it can yield blind trust, which can be (rationally) exploited in competitive environments (Williamson, 1993). Thus it is proposed:

Proposition 6:

In PCP governance joint use of contractual and relational mechanisms generates more efficient outcomes than the use of either in isolation but contractual governance will tend to dominate.

Some studies have explored the dynamic interaction between contractual/relational mechanisms (e.g. Poppo and Zenger, 2002; Olsen *et al.*, 2005). For instance, given that a contract is often presented as a manifestation of power that can promote conflict (Gaski 1984) and defensive behaviour (Zand, 1972), Koppenjan (2005) argued that early 'interaction' helps develop common understanding and mutual trust and thus positively impacts contract negotiation processes. Equally, relational governance strongly complements contractual processes when facilitating continuity in the face of changes and conflicts (Macneil 1978). Thus it is proposed that:

Proposition 7:

The greater the complexity of the performance solution being procured, the greater the benefits to all PCP exchange parties from investments in relational governance during the contracting process.

Conversely, Larson (1992) highlights that the development and maintenance of relational governance, including a network of social ties, may be time and resource consuming, especially with PCP arrangements where the scale and scope of exchange can be extremely

than economic rationality (Lonsdale, 2005a).

significant and repeat business may be less likely (North, 1990). Thus it is proposed:

Proposition 8:

The risk of potentially significant sunk costs will prevent PCP exchange parties from investing in the development of relational governance before a contract has been signed

3.3. Integration Governance

Consider the transfer of an established infrastructure asset system, like the Chicago Skyway Toll Bridge, into a PCP arrangement. Long maintained by the City of Chicago's Department of Streets and Sanitation; in October 2004 the Skyway Concession Company (SCC¹⁰) was awarded a 99-year operating lease, making it responsible for all operating and maintenance costs and giving it the right to all toll and concession revenue. In other words, although future upgrades and maintenance costs were clearly part of the motivation for the outsourcing decision, the Chicago Skyway was primarily a 'substitution-based' procurement decision (Gilley and Rasheed, 2000) - one where the buyer sought to replace or transfer extant capabilities. Correspondingly SCC had to be cognisant, pre-bidding and pre-contract, of the "constraints defined by existing systems and the legacies of the technologies they embody" (Gann and Salter, 2000). Given that such system integration capabilities have been identified as key success factors in the integrated solutions market place (Brady *et al.*, 2005, Davies *et al.*, 2007), it is proposed that:

Proposition 9:

¹⁰ A joint-venture between the Australian Macquarie Infrastructure Group and the Spanish Cintra Concesiones de Infraestructuras de Transporte S.A.

The greater the complexity of the performance solution being 'substituted' through procurement, the more significant the technical systems integration challenge (i.e. time for pre-contractual appraisal, pre-transfer preparation and post-contractual systems migration).

Moreover, integration is not just a question of appraising and connecting 'hardware' but significantly also requires active management of human resources. Most of the Skyway employees for example, found themselves switched from the public to private sector and, no matter how experienced the incoming service provider may be in contracting for this process (e.g. TUPE¹¹ compliance) the ongoing management of employees requires considerable effort. Moreover, the business case for many PCP arrangements derives from anticipated cost-savings and the identification of these efficiencies is predicated on accessing detailed operational performance data. Some of this data capture can be automated (e.g. the Rolls-Royce Naval Total Care Package - a form of 'power by the hour' for Navy buyers - employs remote Engine Health Monitoring Systems as a core component of their management systems) but there will always be significant human input and as such performance monitoring will be influenced by the incentive structures that encourage individuals to complete forms, write reports, make timely calls, etc. Thus it is proposed that:

Proposition 10:

The greater the transactional complexity of the performance solution being 'substituted' through

¹¹ The Transfer of Undertakings (Protection of Employment) Regulations 2006 (TUPE) is the main piece of UK legislation governing the transfer of an undertaking (e.g. contracting out of a service) or part of one, to another organization. Designed to protect employees in a transfer situation enabling them to enjoy

procurement, the more significant the employee integration challenge (i.e. time for pre-contractual appraisal, pre-transfer preparation and post-contractual incentivization and management).

In addition to 'substitution-based' models, a great deal of PCP can be classified as 'abstention-based' procurement (Gilley and Rasheed, 2000), where capabilities are bought rather than committing to the necessary in-house investments. Indeed, the benefits of long-term PCP are typically presented as those that derive from the synergy between designing, building and operating: seeking innovative solutions based on whole life-cycle costing (Ratcliffe, 2004). For instance, aligning the design and construction phase of an urban transport system project with the corresponding long-term delivery phase may lead to cost-effective and innovative service improvements (e.g. with respect to environmental impact). Thus it is proposed that:

Proposition 11:

The greater the infrastructural complexity (i.e. long duration contract integrating multiple design/operating phases) of the performance solution being procured, rather than developed in-house, the more significant the opportunity for supplier innovation.

Somewhat paradoxically however, this same extended supplier commitment gives rise to the greater risk of moral hazard. Although a supplier may have delivered the additive capability and originally specified performance improvements, the buyer will remain concerned that they are not enjoying the most innovative, cost-effective and appropriate service if

the long-term arrangements have - by definition - created an effective monopoly for the supplier? In many PFI/PPP markets for example, this concern over a lack of long-term flexibility (Dixon *et al.*, 2005) and minimisation of alternative supply options has given rise to the inclusion of market benchmarking processes in the original contract; whereby key elements of the bidding process are re-enacted every few years (e.g. in the UK, every 5 years is typical) to ensure 'fair competition'. Although an interesting mechanism, the same challenges of asset specificity and uncertainty - together with a declining long-term incentive - give rise to the enduring prospect of supplier lock-in.

Moreover, 'abstention-based' procurement is likely, over time, to result in a greater capability gap between the buying organization and intermediate markets. Key suppliers of complex performance are able to combine the learning from previous projects with the learning from their established base, together with learning from previous bids and negotiations (Davies, 2003). The experienced supplier therefore develops a breadth and depth of capabilities that it can apply to any individual transaction with a potential buyer and given the financial and organizational significance of a typical PCP arrangement, bidder reputation (based at least in part on PCP track record) may have a disproportionate impact on selection and contribute directly to supplier rent generation. In contrast, the buyer of a complex performance package tends only to maintain internal capabilities that relate to the use of existing or initially scoped systems, rather than the acquisition or development of a new system. For many buyers therefore, it is likely that over time their capabilities will relate mainly to older generations of technology rather than the new ones they may subsequently wish to acquire. Thus it is proposed that:

Proposition 12:

The greater the complexity of the performance solution being procured, rather than developed in-house, the more significant the risk that supplier-led innovation outside that specified in the contract will diminish over the lifetime of the contract.

4. Empirical Research

This is not an empirical paper. The concepts and specific propositions presented are however intended to provide a clear starting point for further theory-driven empirical research (Melnik and Handfield, 1998). The authors themselves for instance, have conducted a large-scale (100+ interviews, 6 supply networks) case based investigation of propositions 6 and 7 (Zheng et al. 2008 report preliminary findings from this project). Specifically the work seeks to explore the changing significance of *contractual* and *relational* governance over time in the long-term relationships between public buyers and private service providers. Although a longitudinal approach in its pure form (i.e. following the contract over 25 or 30 years) was impractical, retrospective data was collected using the respondent-driven critical incident technique. Critical incidents or events that had a positive or negative impact on the relationship that occurred during the different project phases (i.e. procurement/bidding, construction and operation phases) were mapped along a timeline.

Further investigations should seek to challenge, test and modify this set of propositions that are inevitably 'work-in-progress'. The paper makes no specific recommendations for methodologies other than to encourage the widest possible range of methods, with the recognition that some of the propositions will probably be better suited to different approaches. An

investigation of propositions 1 and 2 for example, requires researchers to understand the strategic PCP-related motivations of a range of stakeholders who may not themselves recognise the phenomenon being addressed. This is likely to be best suited to exploratory case study work or possibly a range of Delphi investigations. Conversely, proposition 3 could, with suitable refinement and operationalisation of the PCP matrix (probably via discrete Likert scales), be analysed with quantitative methods using either questionnaire data or secondary sources as an input.

5. Conclusions

This paper set out to investigate the integrated solution or complex performance phenomenon and then provide some initial conceptualization, via a set of twelve research propositions, of the distinct practical and conceptual procurement challenges it creates. The performance/infrastructural dimension of complexity presented in section 2 offered a simple definitional schema for clarifying what exactly is meant by PCP - noting that buying performance outcomes rather than acquiring resources and using them is not itself a novel phenomenon (e.g. leasing). The complexity model allowed us to focus on the distinct notion of PCP. It is clear from this preliminary exploration that any complex phenomenon will generate myriad issues of conceptual and practical interest and as a result the core of the paper was a more focused discussion of distinct governance challenges associated with PCP. Accepting this limitation, conclusions emerged in three principal areas.

First, it is critical to set the PCP phenomenon in a broader economic and political context and highlight the central role of de-regulation/globalization and evolving public sector procurement in the emergence of the phenomenon. The work argues that a purely

transaction-based logic is insufficient to understand why the phenomenon has emerged (e.g. Transaction Cost Economics would suggest that PCP is an inappropriate make v buy solution) and that PCP buying organizations are therefore motivated by a combination of cost economies and capabilities management. The more 'strategic' or '(public) policy' (i.e. long term, ambiguous, risk bearing) nature of this type of decision-making renders it more controversial, as particularly evident in the critiques of PPP/PFI. The paper also argues that although buyers may have distinct strategic motivations, public and private PCP can be, *a priori*, examined as a common process.

Second, PCP arrangements introduce a number of specific challenges for contractual and relational governance. Complexity has the potential to render any contracting process both more expensive and more 'incomplete', opening up the intriguing possibility that although PCP exchange may be heavily reliant on contractual mechanisms, it may actually lack enforcement capabilities. As a result there will be significant benefits to all PCP parties from greater interaction but the potential risk of sunk costs determines the precise level of investment in the development of relational governance.

Third, both 'substitution-based' but more significantly 'abstention-based' PCP are likely, over time, to result in capability gaps emerging between buying organizations and their intermediate markets. The experienced supplier develops a breadth and depth of capabilities that it can apply to any individual transaction but the PCP buyer it is likely that, over time, capabilities will relate to older performance characteristics.

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