THE LIMITS OF THE MARKET: VERTICAL RE-INTEGRATION, EXPLAINED

Eugenia Cacciatori
CRORA - Università Bocconi
via Sarfatti 25, 20136 Milano
Tel: +39 02 5836 2579; Fax: +39 02 5836 2634
eugenia.cacciatori@unibocconi.it

Michael G. Jacobides
Assistant Professor of Strategic and International Management
London Business School
Sussex Place, Regent’s Park, London NW1 4SA
Tel: +44 20 77066725; Fax: +44 20 7724 7875
mjacobides@london.edu

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*: Please address correspondence to: M.G. Jacobides, London Business School, mjacobides@London.edu
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Abstract

Drawing from archival and qualitative data from the UK building construction industry, we develop an inductive framework that explains why industries gravitate for long periods around vertical specialization; and how and why they shift from specialization to re-integration. First, we observe that various industry groups, including professionals and their associations, play an active role in shaping the nature and the boundaries of the industry. As each type of industry participant develops its own, path-dependent knowledge base, the institutional structure of production tends to be reinforced through co-specialization and the creation of the institutional background. However, pressures for re-integration appear when the vertically specialized architecture is no longer able to respond to the market needs, because of the excessive compartmentalization. The gap between needs and capabilities sets in motion a slow process of de-legitimization of the old structure, and institutionalization of the potential new, re-integrated structure. This process is facilitated by broader social changes (e.g. the reduction of protection vis-à-vis the professions), and by the lobbying of industry participants who hope to ameliorate their strategic position through re-integration. We find that re-integration is driven by firms that try to avoid commoditization by leveraging or protecting their knowledge base; or by bundling new services onto their existing offerings. Our analysis suggests that agency, strategizing, and knowledge bases shape and are shaped by the boundaries of the industry and the markets within it.

Keywords: Markets, Vertical Scope, Evolution, Integration, Strategic, Knowledge Base, Capability, Construction Industry
How do value chains evolve? How do we shift from integrated to dis-integrated sectors, with new intermediate markets appearing? How and why do we shift back towards re-integration, with old markets abandoned and new types of markets emerging to serve “one-stop-shop” needs? Surprisingly little research has gone into explaining how and why the institutional structure of an industry changes over time. Several related issues have been studied, but institutional dynamics has not received the attention it warrants. Scholars have examined such facets as the life-cycle of an industry’s product and process technology (Abernathy and Utterback 1978; Klepper 1997), changes in technology and their impacts on firms’ success (Tushman and Anderson 1987; Henderson and Clark, 1990), and adaptation to changing demands (Winter 1984; Burgelman 1991). Recent research has started analysing different institutional frameworks and the arrangements in different countries and settings (Whitley 1998); the co-evolution of organisational forms and their environment (Djelic and Ainaimo 1999); and the nature of knowledge development under different institutional regimes (Nooteboom 2001). This research hints at, though does not directly address the question of, how vertical scope and the attendant boundaries of organisations evolve in an industry.

Also, while a remarkably large literature has considered the individual choices of firms about whether to make or buy (e.g., Williamson 1985, 1999), we are only recently coming to the realisation that the existence of choice as to whether a firm can make or buy, i.e. the existence of an intermediate market, should not be taken for granted. Industries may start off being integrated, with the “dotted lines” where markets connect parts of the production process emerging only at some time later (Baldwin and Clark 2003; Jacobides 2004). At the same time, markets for “integrated solutions” (Davies et al. 2001) such as “one-stop-shops” may need to be established. Thus, the option of being integrated should not be taken for granted: In the service industries in particular, customers (and regulators) must be convinced of the value of integrated service provision.

So what drives these changes in the boundaries of organisations and in the markets that link them? Our paper explicitly addresses this question. In so doing, it looks at the forces shaping and changing the institutional layout of sectors and the value chains within them. It thus complements our understanding of the broader social and institutional context (Whitley 1992; Callon 1998; Granovetter and McGuire 1998; Carruthers and Babb 2000; Fligstein 2001; Djelic and Ainaimo 1999; Nooteboom 2001) with a study of a sectors, looking at the nature of markets and of the organisations these markets bring together.
Our focus in this paper is on one of the service industries– the procurement of buildings. Our objective is to explain why a particular structure (in this case, vertical specialisation) was the dominant mode or organisation of production for so long. More importantly, we also aim to explain when and why this structure changed, shifting from vertical specialisation to re-integration. This analysis sheds light on an understudied trend particularly notable in services– that is, the shift from a collection of functional specialists, each serving their own vertical niche, to re-integration and a set of “one-stop-shop” solution providers.

Our qualitative and archival analysis is based to an extent on comparative international studies of building procurement in EU countries (cf. Building Research and Information 2000), but mostly on our archival and qualitative analysis of the evolution of the UK building industry. We take the perspective of the entire value chain: our focus is the entire set of industry participants, and the desire to understand how labour is divided between the different types of players (that is, how markets define the boundaries and identities of institutions in the sector) as well as why and how this changes. This analysis of the value chain evolution, focusing on the process of vertical re-integration, allows us to make several observations which complement existing theory. First, we can see that the layout of the industry is not determined by technology alone: Indeed, the same industry has produced a variety of different structures of divisions of labour among different types of players in various European countries. Corroborating Djelic and Ainamo’s (1999) finding on the nature of organizational forms, and Whitley’s (1992) analysis on national business systems, we find that there are significant and persistent international differences between countries with regard to how labour is divided between different participants in the same industry. From this point of view, the unique contribution of our research is to show that the institutional break-up creates particular knowledge bases, and that these knowledge bases tend to reinforce and sustain the division of labour. In this respect, we suggest that the role of professional groups in shaping the structure of an industry is not limited to the carving out of monopoly markets. In the process of establishing a monopoly over specific parts of the supply chain, professionals contribute to sustaining the structure of the industry in two ways. Firstly, the system of professions resulting from jurisdictional claims over related bodies of knowledge (Abbot 1988) influences the trajectories of the knowledge base of the players, and in this way defines what types of capabilities the system as a whole develops. Secondly, the same means that are used to sustain professions’ monopolies and facilitate interaction with the clients, act to reinforce and lubricate the transactional arrangements between different industry participants. We show that once vertical specialisation emerges, even in the presence of considerable difficulties, inertial and
path-dependent forces, mostly emanating from industry incumbents, will tend to discourage changes such as vertical re-integration.

Our research also shows that this inertial structure of vertical dis-integration has some limitations. Our analysis examines why and when we shift from dis-integration to re-integration. First, we observe that the capabilities in an industry are shaped by knowledge accumulation processes, and that these processes and the corresponding knowledge bases established are affected by the institutional division of labour. We then posit that de novo vertical re-integration is ultimately caused by a mismatch between the capabilities of the dis-integrated vertical structure of production and what final customers demand. Given such a mismatch, re-integration is then enabled by the de-institutionalisation of the vertically specialised form of production and the institutionalisation of the integrated / one-stop shop structure – which often entails innovations aimed at reducing any potential contractual or transactional issues that such structures may generate. We see that evolutions at the social level, such as the reduction of the role of professionals, or the changing attitudes of the state, promote a greater variety of institutional forms and, in our case, re-integration. We finally argue that the ultimate causes and enablers are necessary, but not sufficient conditions for re-integration. Re-integration, we argue, is driven by different types of firms that take the initiative to re-integrate and also lobby for the institutionalisation of these new arrangements. In exploring what determines the drive of these firms, we suggest that firms re-integrate as they try to protect their domain from commoditisation and leverage their knowledge base; or try to bundle their services with other, higher-margin activities, leading to an integrated set of services. So the changes in the industry structure are driven by the strategic interests of industry participants, as opposed to being driven by transactional or efficiency considerations (Williamson 1999), as some of the existing theory would have it.

Specifically, our paper starts with a discussion of the existing literature on vertical integration, at firm and industry levels, and identifies the theoretical gap that we aspire to fill. We briefly present our method, and then provide an overview of setting and attendant business problem, which is how to procure a building. We then move on to a discussion of the institutional structure of production in the UK building industry as it was until the late 1970s. To put the structure of the industry in perspective, and to underscore the fact that the industry was not driven by technological determinants, we provide comparative information on other EU country structures, which differ significantly. Having discussed the nature and drivers of the longstanding vertical specialisation, we then shift to analysis of the UK industry, focusing on
the major re-integration process, i.e. an integrated procurement Design and Build system. We explain how and why this re-integration came about, and in so doing illustrate the role of capabilities —and consider how well these capabilities matched the needs of new and evolving clients. We also highlight the role of agency—the efforts of particular participants to reshape the institutional environment and make it more hospitable, pushing the industry towards re-integration. We then briefly recap our theoretical claims, and describe our contributions to the literature and the limitations of our approach in the discussion section.

1 THEORY: EXISTING VIEWS ON VERTICAL (RE-)INTEGRATION

1.1 The Analysis of “Make vs. Buy” on the Margin

The theoretical framework that focuses on the question of vertical scope in general, and on vertical integration in particular, is undoubtedly Transaction Cost Economics (TCE) (Williamson 1975, 1985, 1999; Klein, Crawford and Alchian 1978). As Williamson has noted, the main thrust in TCE is the question of vertical integration, and a vast number of papers and books have been published on this subject since the 1980s (see Shelanski and Klein 1995; Boerner and Macher 2003, for reviews). TCE theorists argue that the greater the hazards relating to market exchange, the less firms will use it, since, in comparison, firms are considered a relatively safe haven. The transaction costs involved in using the market arise either from the \textit{ex ante} problems of information misrepresentation for any given exchange (Barzel 1982), or the risks of asset-specific investment (Williamson 1985; Grossman and Hart 1986), the value of which may be expropriated \textit{ex post} by an opportunistic party. Thus vertical integration sets in whenever a market transaction would require hard-to-get or hard-to-measure specific investment or effort.\footnote{Industrial organisation economists (IO) have also looked at what drives vertical scope at the firm level, and the conditions under which an oligopolist would want to be integrated downstream. For a number of reasons, all of which stem from the incentive to maximise monopolistic or oligopolistic rents, oligopolists may be incentivised to own (and thus control) the downstream segment (assuming that, too, is a monopoly, or at least an oligopoly) to enhance their total profits. Thus, IO economists argue, firms may want to integrate in order to “raise rivals’ costs” (Salop and Scheffman 1983), control scarce resources (Galbraith 1967; Porter 1980), eliminate multiple marginalisation (Salop 1979; Dixit 1983), improve the ability to price discriminate (Stigler 1951; Arrow 1975; Riordan and Sappington 1987), or to obtain a strategic upstream supply. These motivations have received significant attention in the economics literature, because of their theoretical interest, but short shrift from organisational theorists or strategists, who might consider the existence of such successive monopolies or oligopolies a relatively rare case and the behavioural foundations or the face validity of that analysis problematic.}

More recently, another stream of research has come to examine the question of vertical scope, focusing on capabilities and competencies. Williamson himself points out that a firm's history and capability endowments matter to boundary choices, a theme developed by Argyres (1996) and Argyres and Liebeskind (1999). Williamson also recommends that the traditional TCE
query “‘What is the best generic mode (market, hybrid, firm) to organise X’ be replaced by the question ‘How should firm A – which has pre-existing strengths and weaknesses (core competences and disabilities) – organise X?’ ” (1999: 1003).

In a similar vein, Madhok (2002) points out that an individual firm’s choice must depend not only on the characteristics of the transactional conditions, but also on its strategic objectives, the attributes of its own capabilities, and the governance context it has created. On the empirical level, Walker and Weber (1984) first identified that differences in costs are a significant driver of the choice of whether to integrate or not, a finding corroborated by Argyres (1996). Poppo and Zenger (1998) and Schilling and Stensmaa (2001) confirmed this finding; Leiblein and Miller (2003) and Hoetker (2004) also recently observed that differences in capabilities are a significant predictor of a particular firms’ scope, and Jacobides and Hitt (2004) found that differences in capabilities explain an order of magnitude more of the variance than differences in transaction costs do.

1.2 From “Make vs. Buy” to the Analysis of the Value Chain Structure and its Evolution

Such research, whether founded on the analysis of transaction costs, or on the more recent work on capabilities, is essentially static, and provides a ceteris paribus explanation: it explains how, say, a higher level of transaction costs might affect an individual firms’ scope, presuming that a firm can choose to integrate or be vertically specialised. What this research does not do directly, is to examine how the “menu of options” in an industry changes- that is, it does not examine how firms do get to choose if they can rely “outside” and use a market transaction, or whether there is a market where they can sell an integrated, “one-stop-shop” bundle. This issue was highlighted by Jacobides and Winter (2004: 2), who argue that to understand a firms’ vertical scope we have [not only] to understand the mechanics of how transactional and capability conditions determine which of the possible choices on the menu of available alternatives will be chosen by an individual firm at a given time… we also have to understand how this menu of available choices is being formed in the first place, both in the short run and in the long. This means understanding how that menu is shaped by the generative process at the level of the industry. To accomplish this, it is crucially important to take a systemic approach to the evolutionary dynamics of scope determination.

By taking the entire value chain as the focus of analysis, and by looking at the process of re-integration, we observe another hidden limitation of TCE in explaining re-integration. That insight is that, at least in the service sector, re-integration often strictly requires the emergence
of an entirely new market, with its own conventions, calculative devices (Callon 1998), and infrastructure (North 1986). The problem is that TCE and much of organisational analysis focuses on the textbook image of products, whereby vertical integration is a simple choice of one of the producers, which can select to integrate upwards or downwards along the value chain. However, in many sectors, including construction, this is not so: rather, for such vertical integration to occur, then some markets must atrophy (architectural services market, engineering, and quantity surveying market, etc), at the same time some others must become instituted and legitimised (integrated building provision market, with its own contractual and legal infrastructure).²

TCE and other comparative static frameworks, cannot then account for changes in scope and in the “menu” of available alternatives, for two reasons. Firstly, because they fail to incorporate some of the important elements of the constraints operating at the industry and national levels. These include the national system of professions, which co-evolves with the industry’s institutional structure and the institutionalisation processes for new markets and new solutions. Secondly, because they cannot explain the endogenous changes in scope, and more specifically the shifts at industry level from integration to dis-integration (cf. Jacobides 2004), and from dis-integration to re-integration—this latter being the empirical focus of this paper. By focusing on these endogenous processes, our research highlights the role of agency played by the different constituents in driving vertical re-integration and changing the institutional environment.

1.3 Explaining Statics (and Stasis) and Explaining Change: Sociological References

Our paper focuses on one particular aspect of the industry structure –the vertical organisation of production over time- and it tries to explain both the forces pushing for maintaining the status quo and the forces that push a structure off its equilibrium, and also the shift from specialisation to re-integration. To do so, we draw on the work done in institutional and organisational sociology, particularly the analysis of institutional change; we also consider the role of professions both in the process of stasis and maintenance of the status quo, and in changing the structure of the industry.

As Greenwood et al. (2002) showed, professional associations play an important role during periods of change. Professional associations act as a locus of debate in which a process of

² It is interesting to note that this points to some unexpected parallels between the analysis of dis-integration (e.g. Jacobides 2004) and re-integration. Both often require the emergence of a new market and, as such, a similar infrastructure, and a shock to ensure that such institutional change can occur.
‘theorisation’ can take place, enabling professionals to define how to react to and shape change. Our study confirms these findings by showing that professional associations are important constituencies in the processes at work in changing the industry environment. However, by offering a coarser-grained, but broader overview of the strategies of several professions in interaction, we extend their research by showing how different types of industry participants try to shape their industry environment in competition with each other. That is, we consider how different groups clash in their attempts to structure, then maintain, then change again the industry structure. Thus, our study allows us to overcome the limitations of Greenwood et al.’s research, and pay, as they recommend, “more attention to how [different] communities [and constituents in the same or related sectors] protect their identity to others and to the processes used in negotiations with them” (2002: 76). It also helps expand the vast literature on professions, and especially studies of conflict at the margin among professions, and among professions and other groups (Hall 1968; Abbott 1988; Ackroyd 1996), by showing how the system of professions also affects the vertical structure of an industry, an area not explicitly considered to date.

1.4. From Accounting for Change in Industry Structure to Explaining its Causes

Our analysis of the changes in scope is not limited to the processes used to facilitate change; our real objective is to examine why change happens. We do not take change in scope as exogenous- our objective is to consider it as an endogenous process and understand not only how, but when and why re-integration happens. To do so, we draw on Jacobides and Winter (2004), and consider whether, as they argue:

the cycle pushing toward specialisation gets reversed when new and superior capabilities arise from knowledge bases that are misaligned with the existing vertical structure of the industry. This sets in motion a process that may eventually make vertical integration typical, endogenously increasing TC along the way. … The ensuing selection process reduces overall specialisation, as integrated players out-compete the existing co-specialised ecosystem. In the wake of a … discontinuity… the management task is itself changing along with design details upstream and downstream, making the coordination task particularly challenging. The shift of several manufacturing or component sectors towards “total solution provision” (Foote et al. 2001), by redefining the scope and the way the firm and its identity (and capabilities) are defined, is another case in point.

Our intention is to illustrate the process of vertical re-integration and provide a deeper analysis of how it operates, looking in particular at the agency of firms in transforming their environment, and attempting to complement the emerging research on the evolution of value chains and industry structures.
1.5. The Gap in Extant Theory, and our Contribution

Our paper, thus, fills a gap. It provides an analysis of the dynamics of the vertical structure of an industry, focusing first on the forces working to sustain specialisation, and then bringing into the analysis the role of knowledge bases and the study of professions. It thus supports and extends work on the localised nature of business systems (Whitley 1992b). More importantly, our contribution includes a unique analysis on re-integration which goes beyond the role of transaction costs. It explains what drives the changes in vertical structure, extending the recent work by Jacobides and Winter (2004) and focusing on how and why vertical re-integration occurs. In so doing, it suggests that in addition to looking at the micro-mechanics of the individual transaction (Williamson 1985), and the broader social forces that shape the national business system (Whitley 1992), or social fields (Fligstein 2001), or conceptions of markets (Carruthers and Babb 2000), we need to also consider a range of crucial meso-level phenomena at the level of the industry, of the value chain structure, and the participants within it. By this means, we come to appreciate the agency of industry participants both in sustaining and in changing their institutional environment, creating and obliterating markets along the way. We thus offer a new theoretical template explaining the process of re-integration, which can provide a more satisfactory account of how industry and firm boundaries (and the corresponding markets) change over time; and why.

2 Methods, Sources and Data

The research described in this paper relies on qualitative and quantitative evidence gathered as part of a research project aimed at understanding the processes of competence accumulation and adaptation in firms operating through projects. While conducting the in-depth case study of a large integrated British engineering consultancy on which the research was based, it became clear that the dynamics of organisational change inside the company, and in particular the motivations and outlook of the actors involved, were linked to the changing institutional landscape of the British construction industry. The evidence presented here was primarily gathered in order to gain an understanding of and document the wider trends in which organisational change took place. Indeed, one of the reasons that we have confidence in our findings is that they were evident, even in the early phase of the research, when they were not being specifically sought. Thus, we were quite literally directed to the findings by their prominence. The specific follow-on research confirmed this earlier evidence.
Our study relies and builds on a variety of sources, which were used in order to triangulate the evidence and ensure internal validity. Sources include three well-known published studies describing the historical evolution and characteristics of the British construction industry up to the mid-1980s (Bowley 1966; Hillebrandt 1984; Ball 1988) and several other published studies on the role and nature of the professions operating in the industry, in particular in relation to buildings, the focus of this paper. The evolution of the industry in the turbulent period from the mid-1980s to the beginning of the twenty-first century was reconstructed through a variety of documentary sources. These include government-sponsored reviews (primarily the Latham and Egan reports (Latham 1994; Construction Task Force 1998)), reports produced by the professional associations operating in the industry on the future of their professions, and trade-press articles. The professional association of quantity surveyors (the Royal Institution of Chartered Surveyors – RICS) was particularly active as locus for this debate, commissioning at least five reports on the topic between 1984 and 2002.

An understanding of the issues related to the role of engineers and engineering in changing procurement was therefore mostly gathered as part of the case study, which relied on 60 in-depth interviews and scrutiny of a large amount of company documents, annual reports and initiatives. Although the interviews were not transcribed, since at the time of the study their recording was considered to be intrusive and potentially hampering to the data gathering process, detailed notes were made and written up immediately after the interviews. Most of the quoted material comes from published sources; but the findings and the industry history are corroborated by the interviews we conducted, and we do include some particularly vivid quotes from these interviews.

Finally, the qualitative data gathered was complemented with quantitative data derived from elaboration of annual surveys carried out by two trade journals, Building and the New Civil Engineer, the latter being the official journal of the Institution of Civil Engineers (ICE). While there is an extensive literature on the built environment professions, understanding of the evolution of professional firms is less well developed. The data from the survey made it possible to reduce this gap. In particular, the evolution of the competencies of professional services firms is notoriously difficult to track, as they do not patent or copyright. The Building survey allowed a glimpse of this evolution through the examination of the evolution in the patterns of employment of chartered professionals (data from 1989 onwards are available). The data provided by the New Civil Engineer survey also help gauge the growing spectrum of activities carried out by engineering firms through a count of the fields used to classify their
activities over the years and through the changes in the self definitions provided by the firms surveyed.

In terms of triangulation, we used multiple sources of evidence to ensure an accurate representation of the industry’s evolution (Yin 1994); our focus was on confirmability (Guba and Lincoln 1982). The archival data were reliable, since they originated from different parts of the building industry—some from engineers, others from architects or quantity surveyors and from their associations, and thus we did not run the risk of accepting the view of only one type of industry participant. Therefore, the findings we report here refer to a set of events which have substantial inter-subjective agreement, coming from different types of industry participants.

In terms of arriving at a theoretical framework, we tested our findings against the archival data and reports of the time, as well as the information gathered through the interviews. In the relatively infrequent instances of ambiguity in the support of a thesis, we modified the argument to allow a reasonable amount of convergence to be achieved, otherwise we regarded the thesis as being unsupported. Methodologically, our objective was to ensure we had an accurate depiction of the industry - of what had happened—and to provide an interpretation, through inductive theorising, of what had brought this about (Eisenhardt 1989; Yin 1994).

3 PROCURING BUILDINGS – THE SETTING AND A BRIEF INTERNATIONAL COMPARISON

3.1. Procuring Buildings: The Basic Issues

The construction industry provides some of the most basic infrastructures for our daily activities, including the buildings in which we live and work. Construction is probably best thought of as a process that includes:

- designing, constructing, maintaining and adapting the built environment. These activities involve a multitude of organisations from a range of different industrial sectors, working together in temporary coalitions on project-specific tasks. These functions include design, engineering, supply and integration, erection and installation of a diverse array of materials, components and increasingly complex technical systems (Gann 2001: 125)

Construction in general, and procuring a building in particular (which is the focus of our paper) are difficult tasks. Contractual problems from the final customer’s perspective, are

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Note that the construction business is wider than just building procurement; it also encompasses civil engineer, plant engineering, etc. We chose to focus on buildings for two reasons. First, although there are common traits and trends, the detailed structure of procurement differs between the different segments of the construction industry, so that focusing on one simplifies the analysis. Second, the procurement of buildings tends to be more complex.
numerous (cf. Winch 1995): It is extremely difficult (and perhaps even infeasible) to specify ex ante exactly all the properties of the building; more often than not, changes and modifications emerge over time, as the client gets a better feel for what is wanted, or as plans are adapted, and it is almost impossible to estimate the costs of several parts of the building process. So the building procurement system as a whole faces transactional issues and challenges. What is interesting, however, is how the industry is structured as a result of these challenges; and our comparative international analysis shows that there is no one “technologically” or “contractually” correct way of organising.

There are certain aspects of buildings that make them interesting as a setting. Buildings are expensive investment goods that take a long time to build, are immovable, cannot be stored in lieu of later demand and are largely assembled on-site in open environments. Building, therefore, is significantly affected by the economic cycle and weather patterns, making this a very risky and cyclical industry. Furthermore, buildings are complex goods with a comparatively very long life span, and which are purchased before the client can fully assess their features. These characteristics, as well as the increasing technical complexity and attendant transactional problems (Winch 1995; Grout 1997), mean that building procurement methods need to deal with the apportionment of exogenous risk among the various participants in the process, including the client, with risk of opportunism linked to asymmetric information, and with the management of (increasing) technological complexity. Furthermore, building procurement methods need to address these issues in a context in which the state plays an important role both as client and as regulator, setting the legal framework in which procurement contracts operate; influencing decisions about what can be safely built at which locations and with what characteristics; and often influencing the shape of the division of labour through the regulations governing public procurement of buildings.

Our fieldwork and archival analysis suggests that the structure of the building sector, the nature of its participants, their boundaries, and the markets within them, vary substantially across firms and across time. In order to substantiate our claim that there is no one technologically determined way to organise the industry, and in order to examine why vertical specialisation was, for a long time the (almost only) choice in procuring buildings in the UK, this section reviews the relevant comparative evidence. First we explain the traditional, dominant structure in UK building procurement before the 1980s. Then, we move into an analysis of France and than procurement in civil engineering in terms of the organisation of the division of labour, offering more scope for the analysis of alternative arrangements. Nevertheless, our framework also applies to the other parts of the construction sector.
Germany, to compare and contrast with the UK. Next, we consider why vertical specialisation in the UK was the dominant choice for so long. And finally, we introduce the first part of our induced framework, which explains why a given industry structure tends to re-inforce itself. In particular, we consider why specialisation persists for such a long time, even when it creates problems for the system as a whole.

3.2. Traditional Procurement in the UK pre-1980s: Vertical Specialisation, UK style

The dominant method for building procurement in UK in the post World War II period is commonly known as ‘traditional procurement’. The structure of traditional procurement is shown in Figure 1.

*Insert Figure 1 about here*

In traditional procurement, the client appoints a designer (typically an architect, but sometimes an engineer – especially for industrial buildings) who acts as main client adviser. In particular, the main designer advises the client on the selection of other consultants (e.g. if the main designer is an architect, she will advise the client on the selection of the structural or service engineer). When the main designer is an architect, the design is measured by the quantity surveyor, a distinctively British professional, who produces the so-called Bill of Quantities which lists the quantity of materials required to carry out the construction, and estimates the construction costs. The architect’s drawings and the Bill of Quantities (or the engineer’s drawing and her estimation of quantities and prices) become the basis of a competitive tendering process through which the client, with the advice of the architect and the quantity surveyor, selects the main contractor that will carry out the physical construction of the building. Once appointed, the main contractor subcontracts part of the work to other firms, again often on the basis of a competitive process, although the main designer can nominate key subcontractors. Crucially, in this configuration, the client has individual contracts with each of the players, excluding only the subcontractors.

3.3. Building Procurement in Germany

Germany, while similar to the UK in terms of types of buildings and level of development, had a different structure in its own building sector. Syben (2000) describes the roles of the different actors in the German building procurement process as follows:

[The Architekt] makes the first draft of the project and by doing so he first mediates between the idea of the client and the reality. So it is – on behalf of the client – the Architekt, who decides not only the form and dimensions of the building, but also the technology and very often the material. He then makes a
technical description of the building and he later works out the detailed design […]; the tender documents; the production planning and layout of formwork and reinforcement made by the contractor; and the work of the structural calculations. The Architekt also makes a rough cost estimation. Those structural engineers, who are employed by contract to work out the structural calculation in this phase, normally have a contractual relation only to the client.

Also in a contractual relation only to the client but with a special position in the project coalition is the Prüfingenieur. He is a structural engineer of greater experience and with a public permit to examine the structural calculations made either by an independent civil engineering office or by the contractors in-house professionals. Without the examination of the structural calculation by the Prüfingenieur a building permit cannot be obtained.

After obtaining the building permission the Architekt prepares the tender documents, i.e. the specialised list of performances (the Leistungsverzeichnis) demanded. He coordinates the tendering process, assisting the client as a consultant to place orders with the contractor or selecting them in the tender process. Here too, all contractors are in contractual relations only to the client. Finally, the architect makes the time schedule and the overall organisation plan (who starts when and works how long on site) and he supervises the work on site, concerning programme, conformity of work and design and quality, on behalf of the client (Syben 2000: 124)

The role of the German architect therefore is similar to the role played by an architect in the UK, but also encompasses the activities undertaken in the UK by quantity surveyors (who would cover all the activities related to cost estimation, preparation of tender documents and selection of contractors). German architects also perform duties that in the UK are undertaken by the general contractor (who has the responsibility for organising all site work, in particular the work programme, time schedule and organisation plan). This much wider role of the architect in Germany derives from the absence, until recently, of general contractors in Germany. Indeed, most building work in Germany is assigned through the tendering of lots to separate trades, as opposed to the tendering the whole building to a general contractor as is the case in the UK.

3.3 Building Procurement in France

A significantly different structure is in place in France, where large integrated general contractors play a prominent role (Campagnac 2000). In the early 1970s, the law regulating public procurement introduced the figure of the maîtrise d’œuvre ‘as the single point of responsibility for the conception and control of the execution of the whole of the works to be realised’ (Campagnac 2000: 134]. The law defined the maîtrise d’œuvre as an independent role, not identified with a specific profession. During the 1980s, however, contractors found ways to work around regulations, and often were able to win contracts on the basis of the
integrated provision of a range of services, in particular construction and design. Notably, France has larger and more integrated contractors also because they were supported by the system of “concession”, which meant that they could also be involved in the financing and maintenance of a project, a concept only recently introduced in the UK.

However, in 1985, as a consequence of growing concerns about the cost and quality of buildings, the responsibilities of maîtrise d’œuvre were extended, opening the role to contractors. The object was to incorporate construction expertise. This same regulatory structure reinforced the role of the architect, by assigning responsibility for contract management, site coordination and post contract administration. Furthermore, after 1985 in France, in the case of integrated provision of design and construction, the firm undertaking the contract was required to be a consortium of an architect and a contractor. In 1993 following a trend away from integration and towards specialisation (i.e., the exact reverse of what happened in the UK), new regulation was introduced to further reduce the opportunities for large integrated contractors, which stated that the maîtrise d’œuvre must allow tendering by trades if the client so wished. Within this context, design input from contractors was further limited to projects dealing with particularly difficult technical issues.

3.4. What can we learn from the Comparative International Analysis of Construction? Path-dependencies and the Importance of National Contexts

This brief overview of the different shapes of building procurement in the UK, Germany and France shows how the shape of building procurement and the role of the different actors vary across countries and across time. As Winch (2000b) remarks in the editorial to a special issue comparing European national construction systems:

> Although architecte, architect, arkitekt, architetto, and Architekt appear to mean the same thing, they do so only in a limited sense. All are designers of buildings, and all share a common root in the Greek architekton, but the historical evolution of the contracting systems means that their social meanings are very diverse, and that even their functional meanings are not coextensive. The French architecte has a much more constrained and limited role in the construction process than the British architect; the German Architekt has a state-derived role in obtaining building permits which the British counterpart does not, and so on. In the case of some actors such as the German Pru fstatiker, the British quantity surveyor, and the French bureau de controˆle, there is simply no close comparator in other systems. (2000: 90)

Comparative international analysis also documents that building procurement presents a tension between a ‘professional model’ - based on a specialised division of labour in which design is separated from construction- and an ‘industrial model’ –in which design and
construction are integrated (Campagnac 2000). However, the specific ways in which this tension surfaces, and in particular the level and type of specialisation and integration, differ substantially across countries. In the words of Campagnac (2000: 139)

[…] comparative European research […] shows how the opposition between these two models [i.e. the ‘professional’ and the ‘industrial’] is found in all the countries observed, even if it crystallises more around the domination of one or the other according to the country. The outcome is a function of the particular historical configurations within the national contracting system and the compromise reached between the actors over time during the course of their relationships and conflicts, but also as a function of the legal mode of regulation and the social relationships at the national and sectoral levels.

Despite the shared contractual and organisational issues involved in procuring buildings, then, national systems do differ substantially in terms of the structure of their value chain and the roles of organisational participants within them. Furthermore, while convergence among countries is less widespread than is often believed (Whitley 1998), the trends in each national construction industry are often divergent and driven by national factors rather than by European policies or the effects of international competition (Winch 2000b). Winch (2000b) in his introductory note on Building Research and Information observes that:

a very important point to emerge from this analysis is that the extensive variation in the configuration of [building conception, control, and construction] and the regulatory context across the European Union means that attempts at harmonising those configurations will be extremely difficult. Construction business systems have evolved over very long periods, and display well-rooted rigidities, with the balance between the actors in the system hard fought and hard won. Proposals emanating from Brussels that threaten to disrupt that balance are likely to be resisted…. [A careful comparative international analysis shows] the different modes and directions of evolution across Europe. It is also noticeable that, with the exception of The Netherlands, the principal forces for change are generated domestically and neither by directives from the European Commission, nor international competition in construction services. (2000b: 95)

International differences among western countries and the oscillation of each country between integrated and specialised approaches make explanations based on the characteristics of the product and on technological considerations inadequate to account for the structure and dynamics/changes in construction processes. To achieve a better understanding of this aspect, we need to focus on the specificities of each national context to see how and why particular solutions became established and when, how, and why they changed. To appreciate the reasons why the UK was once dominated by the traditional procurement model, we offer a brief history, before moving into our inductive theorising to explain the structure and stasis in this sector.
4 BUILDING PROCUREMENT IN THE UK – THE DOMINANCE OF VERTICAL SPECIALISATION UNTIL THE LATE 1970S

4.1 The emergence and persistence of vertical specialisation in the UK

Traditional procurement in the UK was largely established during the second half of the 1800s and continued to be the almost sole method to procure buildings until the 1970s. Why did this type of procurement, based on vertical specialisation, dominated building procurement in the UK for such a long period of time? On the basis of our archival and qualitative work, we identified two different responses. First, as we discussed briefly in the introduction, procurement systems need to balance the trade-off between containing opportunism deriving from asymmetric information and managing the technological and organisational complexity of building construction. Traditional procurement strikes a balance in favour of checking the contractor’s opportunistic behaviour at the expense of organisational integration. Despite the consequent difficulties in ensuring that buildings are delivered on time and to budget, traditional procurement in this respect has advantages over alternative integrated procurement methods. Indeed, despite the diffusion of alternative procurement routes, traditional procurement is still recommended when quality of design is important, while other routes are deemed more appropriate when clients require very similar buildings on different sites, as is the case for retail chains (Latham 1994; Ball 1988). Furthermore, in countries such as France, where integration has been the rule for some time, the separation of design from construction has been reintroduced as a reaction against the high costs and poor quality of many buildings (Campagnac 2000).

The second reason for the dominance of vertical specialisation is that it was sustained by the agency of those who benefited from it and by the creation of distinct trajectories of knowledge development which contributed to solidifying the specialised division of labour. These explanations are in line with much of the literature on professions, which shows how the bodies of knowledge and the attendant practice of work on which professions are based are permanently ‘contested terrains’ among occupations striving to establish and maintain monopoly over them (e.g., Abbott 1988; Friedson 1986); To wit, there is substantial agreement between the historians and analysts of the British construction industry that the persistence of traditional procurement can be explained by the fact that it became locked into a set of institutionalised social relationships, and that these established relationships had important
consequences on the knowledge bases of the various actors involved in buildings (Bowley 1966; Hillebrandt 1984; Ball 1988).

Professionalisation also played a central role in enabling the configuration of traditional procurement to work, by making the claims of architects and surveyors of acting in the interest of the client more credible. Indeed, the traditional procurement process in the UK was accompanied by numerous restrictions set by the professional bodies on the activities that their members could perform (Bowley 1966; Hillebrandt 1984). Since 1887, chartered architects could not advertise their activity in any way, could not work for limited liability companies and could not become directors of companies connected with construction, property or development. Since 1907, chartered quantity surveyors belonging to the RICS could not work for limited liability companies in the construction field. Quantity surveyors working for contractors were organised in a parallel body, the Institute of Quantity Surveyors. The limitations on the employment of professionals posed an institutional barrier to the provision of integrated design. Furthermore, by segregating roles and experience, the institutionalisation of the division of labour promoted the separation of the trajectories of competence development by the various actors, which, in turn, acted to reinforce the division of labour and its underlying institutional framework.

4.2 Our Inductive Framework, Part I: Explaining stasis and vertical co-specialisation

On the basis of the evidence outlined above, we now introduce the first part of our inductive framework illustrated in Figure 2. The development of traditional procurement in the UK suggests that agency is important in shaping the division of labour and in promoting its institutionalisation, with lasting consequences in terms of the competence of the actors. The development of traditional procurement in the UK shows that initial conflicts between players create a way of carving up the value chain. Once this value chain structure is established, the players who benefit from it act to institutionalise it. Institutionalisation spawns regulation supporting itself, by both providing the conditions that make a specific division of labour work

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4 The co-specialised structure of traditional procurement was developed in the main during the 1800s, a period in which the organisation of building work underwent profound changes. Prior to that, trades were assembled by the client. Following legislative changes and the more proactive role of the state as client, general contractors emerged, who took responsibility for a whole project absorbing and replacing the independent trades (Leeson 1979; Cooney 1995). The growth of contractors, however, posed problems for clients, many of whom were inexperienced and felt unable to exercise control over cost and quality of the integrated provision of design and construction. The growing demand that industrialisation created for more technologically complex buildings offered opportunities to technical experts and, in particular, to architects, engineers and quantity surveyors, to offer themselves as client representatives, checking the work of the contractor. Architects, engineers and quantity surveyors used professionalisation as a way to maintain independence from contractors (Bowley 1966; Crinson and Lubbock 1994).
and by shaping trajectories of knowledge base development. The outcome of these processes is shaped by the wider institutional context of a country, including ‘background’ social institutions (such as those affecting trust among non-kin, and the nature of authority) and ‘proximate’ social institutions (in particular those affecting the division of labour and especially the mode of professionalisation) (Whitley 1992b). In other words, division of labour and institutional setting interlock, each acting to preserve the other, generating country specific trajectories of industry development (cf. Djelic and Anaimo, 1999; Jacobides and Winter, 2004). Figure 2 summarises this argument, showing how an institutional structure, and especially vertical specialisation, tend to create a self-reinforcing cycle which sustains and solidifies it over time.

Insert Figure 2 about here

5 EXPLAINING CHANGE: FROM SPECIALISATION TO RE-INTEGRATION

Whereas in this industry the dominant vertically specialised mode created a self-reinforcing pattern, such specialisation was not without its problems. Indeed, as we will argue, these problems were the side-effects of the very forces that served to sustain specialisation. Traditional procurement in the UK showed the first signs of weakness during the 1970s, when some experimentation with alternative forms of procurement took place (Morris 1994). Alternative procurement routes began to be more heavily used during the mid-1980s and by the end of the century they represented a very significant portion of building projects by value (see Figure 3). In this section, we review the evidence pointing to the problems in “traditional” specialised procurement and documenting the shift from specialisation to re-integration. We then move to the core of our induced framework, which starts with the ultimate causes of such re-integration, proceeds to its enablers, and finally considers its drivers. We examine the agency of industry participants, and consider why and how different types of firms tried to change their industry structure.

Insert Figure 3 about here

5.1 Issues involved in the vertically specialised structure of the industry

As we have seen, “At its best, the professional system reliably delivered high quality buildings, but it delivered them slowly and expensively” (Winch 2000a:143) However, traditional procurement at its worst meant, in the words of Morris (1994) that:

there was no-one in active management of the project – no-one balancing cost and schedule requirements against the designer’s wishes….Since building and
civil engineering designers typically had little tradition of design freeze, configuration or change management, or other design management techniques, design changes occurred regularly (design fees were generally a percentage of final project costs). Submission of claims for extra payments was thus an integral part of a contractor’s management […] (1994: 73 and 108, emphasis in original).

These characteristics meant that not only were the cost and time of completion unpredictable, but also that the client had difficulties in holding any of the actors involved responsible for delays and cost overruns. The elaborate vertical co-specialisation, with its system of cross checks, was achieved at the price of the separation of design from construction – both contractually and in terms of the rigid phasing of a project. This separation interferes with technological and managerial continuity during the project, making it impossible for any single actor to have control. As J. Nisbet, former President of the Quantity Surveying Division of the Royal Institution of Chartered Surveyors, remarked:

Architects are expected to produce working drawings and the builder is expected to carry out works in accordance with such drawings. The structural engineer relies upon the manufacturers to design the connections for a steel frame. The services engineer expects a subcontractor, appointed after the builder, to prepare all installation (i.e. working) drawings. Design co-ordination before construction starts is therefore impossible and ad hoc alterations on site are inevitable. Further, the tender and contract procedures adopted by architects and service engineers are at variance with the other, and this leads to difficulties and animosity in the management of cost and the administration of the contract conditions. Architects’ designs are usually the subject of Bills of Quantities but services engineers resolutely require tenders to be based on drawings and specifications. The common range of conditions of contract place responsibility of the cost of a project solely upon one person, usually an architect or engineer. The procedures adopted by the services engineer effectively prevent the architect or engineer from exercising control over the cost of the services element of a project. Urgent attention should therefore be given to the elimination of this muddle. (quoted in Latham, 1994: 24).

The lack of integration across the various phases of the project was further reinforced by the separate trajectories of competence development entailed by the very specialised division of labour.

5.2 The new structure: From specialisation to integration

The limitations of traditional procurement made it increasingly untenable when the construction boom that followed World War II came to a sudden end in the 1970s. Construction output declined sharply and the issues of cost and time of projects began to receive increasing attention. Public sector budgets shrank and the state as a client begun to lose relevance in comparison to private sector clients. In addition, the property boom of the 1980s made commercial clients a greater force in the industry; such clients were particularly
concerned with time and cost overruns and less concerned with the artistic and aesthetic aspects of buildings. Also, at the same time, the professions were coming under pressure, as were the rigid structures in the construction industry, with the state being more interested in facilitating change and “rationalisation”. As a result of these factors private commercial clients resorted to alternative procurement routes and public authorities favoured competitive tenders for the entirety of projects, thus increasing the need for a new structure. Some firms in the sector, in particular contractors, were more than willing to respond and several promoted more integrated modes of building procurement, thus shifting the industry towards re-integration.

In terms of re-integration, there are a variety of alternative procurement methods with the common characteristic of identifying a single point of responsibility for the project. Most alternative procurement routes do so by doing away with the need for the client to have individual contracts with each of the major players. Instead, the management of contractual relationships is delegated to one or two major players, which are the only ones contractually linked to the client. The most common form of alternative procurement is Design and Build (D&B), in which the client appoints a contractor (rather than a designer), who assumes overall responsibility for the project, including design (see Figure 4). In this configuration, designers are contractually linked with the contractor rather than the client. The other major group of alternative procurement methods can be labelled as project management. In this type of procurement, the activity of managing the project is contractually separated by either design or construction and paid a specific fee. In management contracting, a project manager, who can be either a consultant or a contractor, takes responsibility for the project and subcontracts most or all of the other activities. Finally, there is construction management, which is a slightly different approach where project management activities are carried out by a consultant who is paid a fee, but the client has individual contracts with all the other specialists.

Broadly, alternative procurement routes promote re-integration as they identify a single actor responsible for the project. However, the different types of alternative procurement promote different types of integration. Furthermore, different types of players integrate in a different way as a result of both the demands of alternative procurement and the trajectory of competence development linked to their traditional role in procurement. In particular, contractors have tended to integrate upstream into design as a response to D&B and management contracting routes. For instance, Amec ranked fourth among the top professional services firms by number of chartered staff in the Building 2001 survey. Consultants, and in particular engineers and quantity surveying, have integrated into project management and a
variety of services that would allow them to present the clients with a one-stop-shop consultancy solution.

*Insert Figure 4 about here*

The transition from a procurement route characterised by the presence of several specialised providers, to routes characterised by single point responsibility, was linked to the changing characteristics of demand (the emergence of private and especially corporate clients focusing on cost and time to completion, and the changing requirements of the institutional clients, including the government, from the mid-1980s onwards); and to the changes in the institutional framework, partly driven by broader forces and partly prompted by industry participants keen to change the “rules of the game”.

5.3 **Ultimate Cause of reintegration: Mismatch between capabilities and demand**

Our analysis suggests that the driver of reintegration in the British construction industry was a mismatch between the capabilities supported by a specific institutional framework and the demands of clients. As we have shown, the institutional structure sets an industry’s components on specific trajectories of competence accumulation that are compatible with and sustain its division of labour. However, if and when demand changes and requires the development of capabilities that are outside the trajectories determined by the institutionalisation of the division of labour, the system starts to break down. This is what happened in the British construction industry, where the competences of the different actors where tuned to produce high quality, expensive buildings for clients who could wait. When private commercial clients demanding standard buildings, to be quickly and cheaply built began to predominate, the system simply did not have the competencies to meet these demands, nor could it develop them because of the institutionalised division of labour.

The lack of a contracting profession, the limited design expertise available to contractors and the inability to influence design decisions all contributed to making contractors focus almost exclusively on ways to reduce costs and to improve the managerial, rather than technological, aspects of construction. Only recently, as a consequence of the integrated provision of design and construction, have there been signs that contractors are becoming more attentive to design issues (Black 2001). While the division of labour in traditional procurement meant that contractors were the “natural choice” as the overall project managers in the industry, they could not take on such a role because they were institutionally banned from developing design
capabilities. And, not having these capabilities, they were not “close enough” to be able to make a plausible case for re-integration.

Similar problems of excessive “narrowness” and of the development of counter-productive silos occurred in other professions, too, and especially architects. Rather perversely, the employment restrictions on architects as “professionals”, originally devised to be a hallmark and guarantor of their independence, limited their understanding of the construction process and of on-site operations. This, in turn, prevented them from developing project management skills. So the independence of architects meant that their knowledge base was developing in an increasingly separate, path-dependent way, increasingly ignoring the other parts of the building process. This lack of appreciation of other parts of the system was further aggravated in the 1960s by the dominance of the artistic dimension of Modernism on the syllabuses of architecture students, steering architectural training even deeper into the realm of arts at the expense of technology and management (Crinson and Lubbock 1994).

Training, and the subsequent identity of architects (which defined how they would interface with other parts of the industry, as well as how they would develop their capabilities) was a reflection of that trend. Commenting on architectural students’ projects, Crinson and Lubbock (1994: 160) argue that “To a layman these exhibits seem to have far more to do with the wilder reaches of contemporary art than with building”. Perhaps more revealing, from the syllabus, it appears that:

The study of structures, construction and building materials, while being part of all courses, cannot be described as an integral part. All three subjects tend to be taught through lectures, with little classwork and no attempt to relate them to architectural design. […] Although approximately half the schools visited required students to produce at least one measured drawing of a historic building (a fundamental means, if done thoroughly, of learning to understand its design and construction), this exercise was in most cases a rather lifeless formality. […] There was only one school, Newcastle, where students had any hands-on experience of any of the building trades like bricklaying or joinery. There were only two schools, Newcastle and Hull, where there was an emphasis upon community architecture, understood as the attempt to research and utilise the requirements and ideas of the user of buildings and of the general public and to involve them in the design of their surroundings. (Crinson and Lubbock 1994: 161-162)

Thus, the neat division of labour within the industry confined architecture to an increasingly isolated mode of knowledge development, and steered architects along a very narrow path of capabilities. Among built environment courses, architecture courses exhibit the least inter-
disciplinarity (Gann and Salter 1999), particularly in the sense that architecture students are usually not taught any management.

Yet architects were not the only ones to develop isolated capabilities, and put strains on the working of the system as a whole. The focus of quantity surveyors on the cost dimension of projects limited their understanding of aspects of design that were difficult to quantify (Davis Langdon and Everest Consultancy Group 1991; Rouse 2000).

This compartmentalisation, while it may have produced interesting buildings, and certainly allowed for a good deal of experimentation by architects, led to substantial cost overruns and chronic delivery time failures. The specialised structure of production had established a trajectory, and this trajectory could not satisfy the demands of clients interested in timeliness and cost-effectiveness. These were precisely what the purchasers of buildings were concentrating on, both because public and private clients were becoming more interested in these aspects, and because new clients started to have more involvement. So the shift in demand was as important as the evolution of the capabilities base.

More specifically, during the second half of the 1980s, a property boom – especially in terms of demand for office space, and a reduced public sector workload brought private commercial clients to centre stage (Latham 1994; Gann 2000). Private commercial clients were experienced buyers and therefore were less dependent on a professional designer overseeing the work of the contractors. At the same time, they were much more concerned with risk management, and completion on time and within budget, than with the aesthetic properties of buildings, as they tended to require relatively similar buildings at several locations (Becher 1999; Latham 1994; Powell 1996). As a result of these emerging new requirements (cf. Christensen, Verlinden and Westerman 2003) two features of traditional procurement were particularly criticised: the lack of an actor with overall responsibility to the client for the project, and the separation of design from construction. The latter meant that construction expertise entered the process too late to be useful (Bowley 1966). As costs were essentially defined at the design stage, contractors where relegated to the role of controlling costs rather than being able to intervene in the design so as to reduce costs.

In summary, the pattern of division of labour and professionalisation of occupations at the design end, put the system on a specific trajectory with regard to the competencies developed by each participant, which were not adequate to meet changing client demands. As Powell (1996: 875) comments on the failures of the specialised system, seen from the vantage point of the architects:
Architects have failed to positively deal with project management issues, and have been left behind as the project management concept achieved both greater urgency in client’s mind and wider recognition within the construction industry in general. (Allinson 1993:110)

The problem was that the vertical division of labour, through its shaping of the knowledge bases and capability development processes in the industry, had reached its limits and the emerging demands could not be satisfied by this dis-integrated structure (cf. Jacobides and Winter 2004). So the conditions for re-integration, its ultimate cause, was this latent mismatch.

However, even if we do grant the existence of such a substantive mismatch, the limitations of traditional procurement had been the object of scathing criticisms since at least the 1960s (Bowley 1966; The Tavistock Institute 1966) and had been the instigation for several government-sponsored reviews (Emmerson 1962; Banwell 1964; Latham 1994; Construction Task Force 1998). So the gap between the capabilities of the traditional procurement and changing client demand had been in existence and identified for some time before change took place. We now turn to an examination of the factors enabling change and re-integration.

5.4 The enablers of the process of re-integration: De-institutionalisation and re-institutionalisation

For the new structure to emerge, the stranglehold of the old had to be removed. The restrictions on the professions had to be modified to produce a more permissive institutional environment, which could accommodate and support the emergence of the new “one-stop-shop” solution. Achieving this was no mean feat, given the amount of inertia in the old institutional setup. However, the de-institutionalisation of the traditional division of labour was facilitated by the ongoing process of reduction in the power of professionals, both in society in general (cf. Ackroyd 1996) and in the construction industry in particular.

The professionalisation of the design end of the construction process had been the object of vehement attacks from the 1960s, when it was identified as a major source of resistance to change (Bowley 1966). In particular, professionalisation was accused of making each of the participants in the process representative of a profession and concerned more with the implications of the changing roles within his or her profession than for the success of the project (The Tavistock Institute 1966). During the 1980s, the continued criticism of the system of professions in the construction industry was joined by government in the form of policies aimed at reducing professional privileges (Burrage 1992). As a consequence of the political climate, several changes to the institutional environment in which professions operated
occurred in the early 1980s. In particular, fee scales and agreed terms of employment were abolished, opening these professional services up to competition.

Some additional changes to the institutional environment allowed the institutionalisation of this new form of organisation. By the mid-1980s, compulsory competitive tendering had replaced negotiation in the public procurement of services and was being adopted by a growing number of private sector clients (Latham 1994). These changes contributed strongly to the commodification of the traditional services provided by professionals in the construction industry; and this set in motion the efforts of firms to try out different modes of growth or of business survival, including changes in scope (see Section 5.6).

The opportunity to make changes to the division of labour in the construction industry was further opened by the de-institutionalisation of vertical specialisation. In particular, the ban on the employment of chartered architects by contracting organisations and in limited liability companies was removed in 1986. Furthermore, government action, aimed at dismantling the structure of professional privileges, continued into the early 1990s, when the government commissioned a review of the architectural profession, which recommended that protection of the title of architect should be removed. Government did not implement this report’s recommendation, but the 1997 Architects Act broke the strict control exercised by the Royal Institute of British Architects (RIBA) on the Architect Registration Council and the Council was renamed and reformed in order to serve as a consumer protection body (rather than a body for the self-government of the profession) by inclusion of a majority of lay members (Clarke and Herrmann 2001).

In order for a re-integrated structure to emerge, then, a host of changes was needed on the institutional level. The de-institutionalisation of the old structure, and the institutionalisation of the new one, including the development of an appropriate regulatory and legal framework, was necessary. Yet while re-integration was enabled by these changes, we have still not considered what allowed re-integration to succeed; neither have we looked at what motivated the pressures to institutionalise re-integration in the first place. That is what we address in the final part of our framework, focusing on the drivers of industry re-integration and on firms’ agency in shaping the industry structure.
5.5 The drivers of re-integration and firms’ agency: Leveraging knowledge bases and protecting from commoditisation; accessing new fees

What really drove re-integration? What was the mechanism that enabled re-integration to gain ground? Why was it so successful? We argue that a key factor in the diffusion of re-integration (as well as in the pressures that led to its enabling institutionalisation) was the agency of specific players – in particular, their efforts to shape the new building procurement routes in a way that built upon and expanded the trajectory of competence development, while drawing on parts of the old institutional setting. The final part of our inductive framework explores the strategies of engineering consultants and quantity surveying firms as they tried to re-shape the industry.\(^5\)

We first assess why engineers and quantity surveyors wanted to change, identifying the “drivers of the drivers” of industry change — the set of factors that make firms want to innovate and change their and the industry’s scope. We then move on to how firms change and show that, while both engineering consultants and quantity surveying firms re-integrated in order to provide one-stop-shop consultancy services, they did so in different ways, in a bid to leverage their existing competencies.

Finally, we show that these firm strategies had contrasting effects on the building sector in terms of continuity and change. On the one hand, engineering consultants and surveyors tried to shape their services so that the new institutional setting and their new offerings would include features of the old. This is particularly evident in the case of quantity surveyors and their strategies, which tended to preserve the existence of actors dedicated to monitoring costs, contributing to maintaining a characteristic feature of the organisation of building procurement in UK. However, on the other hand, efforts to bend their existing competencies to adapt to the new setting reinforced the erosion of the old institutional structure and in particular of their professional identities. Thus, it can be seen that vertical re-integration leads to a change in the nature and identity of participating firms (cf. Jacobides and Winter 2004), and not just the transactional attributes of individual firms.

\(^5\) It is interesting that architects seemed almost to have been “left out” of the re-integration race. Their training was such that they could not plausibly try to become integrated providers; and, as a result, many of these changes passed them by. Their share of the fees in the new procurement system was on average half of what they had been under the old system, and a sense of gloom seemed to have enveloped that part of the industry. Indeed, the diffusion of alternative procurement routes significantly threatened the value of the knowledge base of architects as developed in the old institutional framework, as is evidenced in Becher’s (1999) ethnographic study, which documents the gloom pervading the architectural profession in the UK in the 1990s. We do not explicitly consider architects in our analysis both because they did not push towards re-integration, and because they seem to have limited influence on the current evolution of the sector.
The Drivers of the Drivers: What caused firms to want to change

During the early 1990s, engineering consultancy and quantity surveying firms were suffering a severe recession and increasing commodification of their traditional services as a result of the increase in competitive tendering by both public and private clients. During this period much of the expansion in the range of activities derived from efforts to win projects in order to employ idle capacity and to enter higher margin areas—in particular, management consultancy (Ridout 1994; Davis 1994b).

Also, quantity surveying firms in particular wanted to avoid the negative side-effects imposed by technological change. Their role as translators of the architect’s design into quantities against which to evaluate a contractor’s bid had been eroded on two fronts. On the one side, advances in computing meant an increasing automation of this task (Male 1990; Davis 1994a), while on the other, alternative procurement routes such as D&B did not include a formal bill of quantities, as the contractor developed cost estimates autonomously. While this expanded the contractor’s quantity surveyor roles and responsibilities, it removed the need for an independent measurement profession (Royal Institution of Chartered Surveyors 1984).

However, some quantity surveyors considered that this might be an opportunity in disguise. Once the crisis of the early 1990s passed, engineering design consultants and quantity surveyors found that they had developed significant expertise in managing a diversity of services. With newly expanding markets, engineering design and quantity surveying firms saw their diversified operations as a basis from which to meet clients demands for a single point responsibility. As one of the Directors of an integrated engineering firm explained:

By the early 1990s the leadership of the company saw our recent service experience [acquired by running facilities management operations for government clients] and the diversified engineering base as an asset that would allow us to enter the growing market for outsourcing services and provide integrated packages of engineering and support services.

Nevertheless, the way in which engineering design consultancies and quantity surveying firms went about becoming a client’s main point of contact differed; and these differences are of theoretical interest.

Single point responsibility in engineering consulting firms: integrated solutions

Engineering design consultancies moved in the direction of providing integrated solutions and acting as one-stop-shops (see Ridout 1994 and Rubin and Powers 2001 in the US context).\(^6\)

\(^6\) The diffusion of ‘one-stop-shops’ is a widespread trend in the economy, but relatively understudied in relation to the symmetric phenomenon of outsourcing Davies (2001, 2003a,b).
The basis for this expansion had two components. First, unlike architects and quantity surveyors, engineers tended to have experience of both consulting and contracting. Furthermore, they acted as lead designers in civil engineering and industrial settings. Therefore, they could offer themselves as project managers able to deal with both design and construction issues (Hillebrandt 1984). Secondly, engineering consulting firms traditionally were the largest of the professional services firms and, arguably, the more internally diverse because of the proliferation of engineering disciplines that have characterised the profession since its inception (Buchanan 1989; Clarke and Herrmann, 2001; Gann 2000).

Multidisciplinary engineering firms expanded to include architecture, construction management, cost consultancy (typically a quantity surveying activity), and facilities management (mainly in the sense of organising the activities of the subcontractors actually carrying out maintenance operations). The extension to the range of activities offered by engineering design consultancies is illustrated by the increase in the number of fields used by the New Civil Engineer survey to classify the areas of activity of each company, which rose from 25 in 1989 (the first year in which the classification is available) to 53 in 2001. It is notable that the 2001 survey includes, for the first time, fields such as construction methodology (although construction management had been included since 1989), project management, risk management, quantity surveying, facilities management, law contracts and arbitration, management consultancy and economics and development planning, with the top ten companies operating in all of these fields.

The provision of integrated services was seen as a step beyond project management and multidisciplinary engineering in moving away from largely commodified technical services and from “being identified as a cost” to being “considered a strategic value” (Michael Schneider, executive vice-president of Parson Brinkerhoff and president of its consulting arm pbConsult, quoted in Rubin and Powers (2001: p. 51). The successful shift from a technically oriented role to becoming providers of strategic value requires changes in the approach of engineering consultants. What was required in the words of a senior project manager in the Industrial Engineering Division of the integrated engineering firm DE&FM, was:

DE&FM did all its recent acquisitions to enter the market of value added service provision. That means that we are trying to go from providing specialised technical services to providing integrated services. The problem is, that in DE&FM we do that assembling the output of different units. Instead, we need to change our approach to clients... It is here that the premium services are... This is a completely different approach from providing technical services. We need first to understand what makes the business of the client grow and then how this
links to operational requirements. What are the critical operations in the client's business?

The transition to integrated service provision, however, has proved to be far from straightforward, as it implies a downplaying of engineering skills in relation to business skills, a connected adaptation of intra-organisational processes (such as, for instance, the selection of the organisational unit taking the lead in project) and a reshaping of the hierarchies of occupations (Cacciatori 2003, 2004). The difficulty involved in making such a shift is depicted in Figure 5, which shows the evolution of the self-definition provided in the annual *New Civil Engineer* survey of the top ten UK consultancies ranked by fees. Enlargement of the scope of activities of these companies tends to be reported by simply adding the new activities to the list. Not until 2001 did two companies present themselves as providers of integrated or global solutions. Notably, when this shift happens, engineering identity becomes “watered down”, as it gives way to a different identity for an integrated service provider.

*Insert Figure 5 about here*

**Single point responsibility in quantity surveying firms: global cost consultancies**

Building on their traditional role as cost controllers of contractors, quantity surveying firms have expanded their services in order to fulfil the role of broad cost and procurement advisors. While engineers integrated into quantity surveying in order to provide one stop shop construction consultancies, quantity surveying firms did not reciprocate. Their solution to providing a one-stop shop revolves around cost consultancy either at the initial stages of the project when the client is evaluating what is the best procurement solution to fulfil its needs, or at a later stage when the client needs to check on those providing the construction itself. Thus, these one-stop-shops transactually complement the engineering consultancy services, more than just competing with them. In order to be better placed to fulfil this role, major quantity surveying firms have expanded into property development and management consultancies activities.

Through the expansion of the scope of their activities, quantity surveyors have been able to maintain the role of cost controllers of contractors in D&B projects, often being appointed before the D&B firm has been chosen. This broad role of cost consultant is often combined with the provision of project management services and with management consultancy focused on the strategic use of property (University of Reading and DTZ Debenham Thorpe 1995; Davis Langdon and Everest Consultancy Group 1991; Cranfield University School of
Management 2002). As a quantity surveyor in a large surveying firm, remarked at the time the recession was coming to an end:

We are now being brought in earlier on projects and appointed direct instead of being commissioned by an architect. This means that areas apart from construction are now discussed (quoted in Davis (1994b:6))

A recent survey found that, by 2007, 95% of clients want quantity surveyors to perform property related management consultancy roles, with 60% of such consultancy being strategic, rather than transactional (Cranfield University School of Management 2002). So, much like engineering firms, the desire to protect and leverage the knowledge base, as well as to move into more profitable areas has pushed quantity surveyors into re-integration.

Also, much like in engineering firms, the changes in scope triggered a change in identity and the knowledge base. These changes in scope intensified the longstanding debate on the knowledge base at the heart of the quantity surveying profession, which originated in the fact that the traditional measurement function is in fact a largely routine activity that many find ill-suited to the requirements of esotericism typical of professional knowledge (Male 1990). In the 1990s, quantity surveyors seem to have rejected what was their traditional knowledge base even more positively. Davis Langdon and Everest Consultancy Group’s (1991) report cites a study undertaken in 1971, in which the quantity surveyors skill base was described as “measurement and valuation in the field of construction”, and notes that few interviewees mentioned that as a core skill in their study. Quantity surveyors see the way forward in an enlargement and adaptation of their knowledge in procurement and cost management:

The provision of independent procurement advice together with the co-ordination and management of the process is a highly valued service, much in demand. Quantity Surveyors strong presence here has its origin in quantification: part of the rationale for Bills of Quantities is to procure competitively priced construction work. However, Quantity Surveyors have expanded services from the largely technical function of measurement through organising the tendering process and consultancy on the appropriate procurement methods and the management of the process (Davis Langdon and Everest Consultancy Group 1991:22).

5.6 Our Induced Framework, Part II: What Drives the shift between Specialisation to Re-integration.

As was shown in the first part of our induced framework, claims by particular, well-positioned groups of industry participants affect the industry structure which in turn affects the nature of knowledge bases, capabilities, and transactional solutions. In our context, professionalisation, actively sought by architects, engineers and quantity surveyors, played a central role in making
traditional procurement viable by endorsing the claims of designers and quantity surveyors to be working in the interests of the client. The resulting institutionalisation of the division of labour set the system into specific trajectories of competence development, and led to stable transactional solutions, which contributed to maintaining the system in place. This explained stasis. These factors are also important in helping us understand change, and the process of re-integration. The trajectories of capability development already discussed, when contrasted to the shifting needs of the market, also set the limits to what specialisation could offer. Once these limits were reached, there was reason for re-integration to occur. Thus the ultimate cause of re-integration was the discrepancy between the capabilities of the vertically co-specialized architecture, and the needs of the final market (cf. Jacobides and Winter 2004).

Yet this ultimate cause, while necessary, was not sufficient to trigger change, even when it became evident that the dis-integrated structure had become outdated. For the system to make the shift to re-integration, some broader environmental changes undermining the institutional status quo, and legitimising and supporting the new re-integrated structure were needed. The enabling factors were the de-institutionalisation of the old form, and the institutionalisation of the new.

This enabling factor, though, did not appear from nowhere. Changes in demand contributed to making the traditional knowledge bases of the professions obsolete (particularly those of architects and quantity surveyors) while at the same time commodifying their services (particularly those of engineers). These forces, seen both as threats and as opportunities, precipitated institutional change. Industry participants, worried about their survival, precipitated and advocated the change in the industry’s structure, motivated by the prospect of a more competitive position in the new, re-integrated order. Such agency, in addition to the overall crisis in the professions and the changes in government attitudes towards special groups, helped break the deadlock in the sector, opening it up to institutional innovation.

These same competitive forces also drove firms to seek out more options and through their own strategies modify the sector and drive re-integration. The more fluid division of labour gave the traditional professions, in particular engineers and quantity surveyors, the opportunity to build on their existing knowledge bases to meet changed client demands. This has led to the formation of new markets for integrated service provision (engineers) and for broad advisory and project management roles (quantity surveyors), which are different from the markets for professional services under traditional procurement in that they have been conceived in order to present the client with a single point of responsibility. These two new forms adapted to each
other, positioning themselves as transactional complements, the one checking on the other, and thus increasing the attractiveness of re-integrated solutions.

However, if we are to understand what really drove the success of re-integration, we have to look at the agency of engineering design firms and quantity surveyors firms. In their effort to protect their turf and knowledge bases (fight against commoditisation) and gain new ground (access high-margin services) they shifted towards these new re-integrated solutions. That is, firms ratcheted up their capabilities by bundling their traditional services in a way that made them more effective, and also more saleable. This is particular evident in the case of engineering consultancies, which have repackaged their multidisciplinary practices as single packages of services. Thus, integration is seen as a way to continue providing their core services, while appealing to more customers. Also, re-integration has been used as a way to capture higher margin services (in particular management consultancy) through bundling them with existing services.

The different varieties of re-integration attest to the agency of actors who have tried to spread their own particular versions of what integrated service provision entails. Yet all these integrated service provision offers lead to a further devaluation of the traditional knowledge bases of the professions and to a change in professional identities. Quantity surveyors are no longer measurers and valuers, but have become cost consultants and project managers. Engineers have become global solutions providers. The change in the industry structure leads to new firm and industry boundaries, new transactional solutions – and also new (integrated) capabilities, knowledge bases and identities (cf. Jacobides and Winter, 2004: 28-9).

Figure 6 provides a schematic representation of our induced framework. It suggests that the ultimate cause of re-integration is the increasing gap between what the capabilities of the vertically co-specialised structure can deliver, and what are the market demands. The capabilities are themselves affected by the definition of the knowledge base, which in turn is shaped by the vertical division of labour. Given the existence of such a cause for re-integration, the enabling conditions are those of de-institutionalization of the old form, and, more important, the institutionalization of the new form, which itself is motivated by the interests and agency of particular industry players. These enabling conditions allow firms to drive re-integration. The two reasons that mainly determine the extent of the firms’ drive to re-integrate are protection of their particular knowledge bases while combating the commodification of their goods and services and an effort to encompass other, higher margin goods and services through re-integration. Crises, such as a reduction in demand, greatly increased competition,
etc., tend to reinforce the drive to re-integrate as they heighten the need for change: changes in industry structure have often coincided with periods of shock. Finally, this new, re-integrated structure creates a new break-up of the industry, new vertical boundaries, new knowledge bases, identities and actors, which then promote a new capability development trajectory, which restarts the process.

6 DISCUSSION

Much research has examined the make-or-buy decisions of individual firms within a given value chain structure. However, very little research has been devoted to understanding how the “menus” of such “make-or-buy” decisions from which firms choose are developed, or what affects the nature of the “bundles” of goods firms can deliver to final customers. In particular, little attention has been paid to the forces driving entire industries through cycles of integration and disintegration. Such cycles profoundly affect the institutional structure of an industry. To get a better understanding of the processes driving integration and disintegration, we need to have a better understanding of how the institutional structure of an industry evolves. The research described in this paper aimed to do this by exploring how markets and organisations co-evolve with the institutional structure.

Taking the entire value chain and the participants within it over time as the focus of our analysis, we have explored both the inertial forces sustaining and institutionalising vertical specialisation (even when it is less than optimal for the system as a whole) and also the forces leading to a shift from vertical specialisation to re-integration. Our qualitative analysis yielded an inductive framework to explain both stasis and the process of re-integration. Perhaps more importantly, it showed how a focus on the evolution of the entire value chain helps to identify issues not so far directly addressed.

First, by looking at a service sector industry, we can see that re-integration is not a choice variable only for the producers of intermediate goods; that is, firms do not always have the freedom to re-integrate. This is because in the service sector, re-integration also means that the final customer must forego reliance on individual service providers; and that quite possibly an entirely new infrastructure for “bundled”, integrated, “one-stop-shop” solutions, including regulatory provisions, must be set up. In other words, re-integration may require the creation of a whole new type of market with its own new calculative devices (Callon 1998), transactional and institutional infrastructure (North 1986; Baldwin and Clark 2003; Jacobides 2004), and

Insert Figure 6 about here
social infrastructure and legitimacy (Porac et al. 1996). To that, one must add the limitations imposed by regulators that hamper the provision of institutional innovations.

Second, but related to the first point, by looking at why and how the vertical structure of the industry changed, we identified the role of mismatches between capabilities and demand in shifting the structure of the industry. In particular, we show that the emergence of new needs makes the existing division of labour ineffective; indeed, it may be that latent or emerging customer needs require re-integration, as suggested by Jacobides and Winter (2004). Our findings suggest that there are limits to what the co-specialised architecture of an industry can provide: once these limits are reached, the conditions become ripe for re-integration to emerge. This finding also qualifies the argument put forward by Christensen, Verlinden and Waterman (2003), that integration is not always superior: its potential superiority over specialisation depends on the balance between capabilities (and knowledge base evolution under vertical specialisation vs what would emerge under integration), and the demands placed by the market. It is quite likely that specialisation, will for some time be superior to integration. It all depends on the trajectories of capability development, and their appropriateness.

Third, and related to the second point, we identify the role of knowledge bases on the development and the institutionalisation of the vertical structure of an industry; we show that the vertical structure of the industry affects the evolution of the knowledge bases, creating substantial path-dependencies. Thus, our international comparison underlines the fact that the initial vertical break-up of an industry can lead to a set of very different outcomes, and that in each case we see a dynamic process whereby the knowledge base affects industry boundaries – which, in turn, further shape the knowledge base, identity and the process of capability development, leading to a process of capability and scope co-evolution (cf. Jacobides and Winter 2004).

Fourth, and related to the third point, our study shows how professions affect the vertical structure of an industry. This expands the purview of the theory on professions in to a new domain. Professions have been the focus of a large body of research that has analysed their origins, the way in which they are organised and their role in the development of the structures of modern organisations (Gouldner 1958; Perkin 1969, Johnson 1982). Knowledge, and in particular the processes through which certain occupational groups are able to establish a ‘jurisdictional claim’ over a specific body of knowledge and the attendant practice of work, have been one of the central themes in the study of the professions (Abbott 1988; Friedson 1986). Research on professions has extensively studied the power struggles within and across
professions surrounding the establishment of jurisdictional claims over knowledge and its role in creating closed markets (Berlant 1975; Starr 1982; Larson 1979) Yet the role of professions in shaping the institutional environment for firms’ activities, while it has been acknowledged has received far less attention. Our study has addressed this gap, and points to the benefits of integrating an analysis of professions with the analysis of an industry’s structure.\footnote{Recently, Greenwood et al. (2002) attempted to fill this gap by providing an account of the role of professional institutions in supporting change in the scope of the service provision of accounting firms. Our study extends theirs in not only looking at the role of one profession theorising about change, but also at looking at different sets of professions as they work to either maintain or re-shape institutional structure – in addition to their efforts to re-shape the system of professions (Abbott 1988).}

Fifth, and related to the fourth point, our study focuses on the nature and role of agency in re-shaping institutional scope. The central empirical contribution of the paper is to identify the role of industry participants both in supporting stasis (Figure 2) and, even more so, in leading to re-integration. Indeed, the analysis of the factors that lead to changes in industry structure is the core contribution of this research, distilled through our framework, which is depicted in Figure 6. By distinguishing between the factors \textit{ultimately causing}, \textit{enabling} and \textit{driving} re-integration, we provide a structured analysis of how different actors provoke change in the structure of the industry and the markets within it. We also provide a list of specific factors (ie. the effort to protect position or attain superior returns; the attempt to leverage knowledge base and know-how and avoid commoditisation) that make firms proactive in providing integrated services. These factors differ from those analysed by transaction-cost economists, as they are much more related to “strategising” than “economising” (cf. Williamson 1985).

In explaining re-integration, we can see that we eventually obtain different varieties of integrated service providers, each more closely anchored to their own area of expertise. This integration on the basis of existing areas of expertise means that integrated players tend to provide continuity in the institutional environment in the effort to perpetuate their role. This is particularly evident in the case of quantity surveyors, who emphasised their role of cost consultants and in so doing have helped perpetuate the characteristic of the British construction industry to externally monitor costs as a way to deal with the asymmetric information issues involved in construction.

Sixth, and related to the fifth point, the transactional problems we saw in the field were quite different from those that “textbook” analysis had led us to expect. Specifically, viewed from the final buyer’s perspective of the entire building, the procurement of buildings could hardly be a better illustration of transactional hazards: The opportunities are rife for strategic information mis-representation and hoarding (Akerlof 1970), and once a contractual choice is
made, there is significant lock-in, the possibility (indeed, near certainty) of price increases, and inability to specify ex ante exactly what is needed, let alone to provide effective contracting to safeguard the building purchaser’s interests and protect them from opportunism (Williamson 1985). In a possibly counter-intuitive way, vertical specialisation at the industry level, with the elaborate system of cross-checks and balances, was also justified by the need for protection from the greater risks of transactional malfeasance that an integrated service provider might introduce. Thus, whereas in the typical TCE analysis integration aims to reduce transactional risks (of the producer of intermediate good), in our setting, and, we suspect, many others, specialisation might emerge as a means to reduce such dependencies and overall transactional risks.

Furthermore, it is interesting that despite the risk of higher dependence and contractual failure, re-integration did emerge. To support such re-integration, firms tried to provide novel solutions to the transactional issues a “one-stop-shop” procurement mode might entail. The emergence of two integrated sets of solution providers, one emanating from contractors, and the other from quantity surveyors, with this latter performing integrated “checks and balances” on the former, shows how firms co-evolve and try to resolve the collective transactional problems in order to promote their own services and ratchet up their own capabilities. More broadly, we argue that transactional issues are considered to be a constraint, and that this constraint is subject to active strategising by firms that try to change the nature and structure of the industry to solidify their own position, as Jacobides (2004) observed in the symmetrical case of vertical dis-integration.

Limitations, Contribution, and Future Research

This paper has some limitations. First, it provides a very broad overview of the sector. While this broad overview is a necessary evil, if we are to be able to examine the complex co-evolutionary dynamics that we are interested in, it precludes a more detailed, in-depth analysis of each of the constituent parts. We thus hope that this analysis will be complemented by narrower but deeper qualitative, and possibly quantitative work that will focus on parts of the industry and parts of the strategic behaviour of firms and organised groups. Second, we did not look in detail into the relationship between the boundaries of organisations, the boundaries of knowledge, and the boundaries of professions. While we do point to some important connections between professions and stasis/change in the vertical organisation in the industry, much more could be learnt by studying the way in which professions are defined by and in turn shape the institutional structure of production (Coase 1992). The link between the system of
professions (Abbott 1988) and the nature of industries offers much promise for future research. Third, while we allude to the importance of knowledge bases, identity and capability development, we do not present such fine-grained data as would be desired to get a better handle on issues of identity and knowledge base (Albert and Whetten 1985); clearly, more research on how scope changes affect identity would be desirable. Fourth, we do not directly explore the hierarchical nature of relationships in this sector, which is another factor involved in the determination of firm and industry boundaries. Questions of status, power and dependence, which have been relatively ignored by economists, have a substantial bearing on the vertical structure of industries and the nature and functioning of the markets within them; so we can draw further on the literature on professions and the social analysis of industries (e.g. Granovetter and McGuire 1998) in order to understand the boundaries of both markets and organisations in future research. Fifth, we do not focus on the exact nature of the link between firm agency and lobbying and regulation/policy making. While our analysis does suggest that agents try to change the institutional structure of the industry to their advantage, more research is needed in order to understand when and how this happens, and what other factors mediate in this process. Borrowing the tools of political science or political economy (cf. Olson 2000; Olson and Kahkonen 2000) would appear to be a promising subject for future research.

That being said, we do believe that this paper makes an important contribution to the literature. By shifting the level of analysis away from the individual transaction (Williamson 1985) or the broader social system and institutional field (Fligstein 2001), and looking at the meso-level of the evolution of the value chain and the types of players within it, we can identify the drivers both of stasis (in terms of dis-integration) and of change (the shift from dis-integration to re-integration). Our framework, drawing on Jacobides and Winter (2004), constitutes one of the few systematic efforts to explore de novo vertical re-integration, and the creation of “one-stop-shop” solutions, a phenomenon on the increase in the service sector. It thus illuminates an interesting and understudied aspect of industry transformation. Our analysis clearly suggests that institutional form is not technologically determined, and that local conditions play a significant role (Whitley 1992), as does path-dependency and the dynamics of the co-evolution of players and their environment (Djelic and Anaimo 1999; Nooteboom 2001). By suggesting a concrete framework that explains the dynamics and the agency in shaping and changing institutional structure, firms and the markets that connect them, we hope to further the important cause of this special issue, which we welcome as a timely addition and an opportunity to expand our knowledge on key organisational phenomena.
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Figure 1 – Contractual structure of traditional procurement

CLIENT

ARCHITECT  ENGINEER  QUANTITY SURVEYOR  CONTRACTOR

SUBCONTRACTOR  SUBCONTRACTOR  SUBCONTRACTOR

Figure 2: Explaining stasis and vertical specialization

Initial competition for divvying up the industry

Institutional division of labour between industry participants

Knowledge bases and competency trajectories

determines

Institutional framework; social context

Vested interests of key actor groups

drives

Further stabilize

reinforce
Figure 3 – Diffusion of alternative procurement routes by value of projects

Figure 4 – Design and build: Structure of the Relationships
**Figure 5 – Self definition of major engineering consultants 1995-2001**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Name</th>
<th>Description</th>
<th>Name</th>
<th>Description</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WS Atkins</td>
<td>Professional technology based consultancy, support service provider</td>
<td>Brown and Root</td>
<td>Engineering and project management</td>
<td>Brown &amp; Root</td>
<td>Engineering and project management</td>
</tr>
<tr>
<td>2</td>
<td>Halliburton Brown &amp; Root</td>
<td>Engineering and project management</td>
<td>WS Atkins</td>
<td>Engineering, consultancy and support services</td>
<td>WS Atkins</td>
<td>Engineering, planning architectural &amp; man consultancy</td>
</tr>
<tr>
<td>3</td>
<td>Arup</td>
<td>International multidisciplinary engineering consultancy</td>
<td>Mott MacDonald Group</td>
<td>Multidisciplinary engineering and management consultancy</td>
<td>Mott MacDonald Group</td>
<td>Multidisciplinary engineering consultancy</td>
</tr>
<tr>
<td>4</td>
<td>Mott MacDonald Group</td>
<td>Multidisciplinary engineering and management consultancy</td>
<td>Ove Arup Partnership</td>
<td>Multidisciplinary international engineering consultancy</td>
<td>Ove Arup Partnership</td>
<td>Multidisciplinary engineering consultancy</td>
</tr>
<tr>
<td>5</td>
<td>WSP Group</td>
<td>Multidisciplinary management consultant and engineer</td>
<td>Maunsell</td>
<td>Consultancy in civil engineering and related disciplines</td>
<td>Pell Frischmann Group</td>
<td>Multidisciplinary consultancy group</td>
</tr>
<tr>
<td>6</td>
<td>AECOM - Maunsell</td>
<td>Global consultant for the built environment</td>
<td>Hyder Consulting</td>
<td>N/A</td>
<td>Acer Consultants</td>
<td>Engineering and environmental consultancy</td>
</tr>
<tr>
<td>7</td>
<td>Hyder Consulting</td>
<td>Engineering and environmental management consultancy</td>
<td>Halcrow</td>
<td>Consulting engineers, transportation and environmental specialists</td>
<td>Rust</td>
<td>Environmental, engineering design consultancy</td>
</tr>
<tr>
<td>8</td>
<td>Babtie Group</td>
<td>Technical and management consultant</td>
<td>Scott Wilson</td>
<td>Transportation, environmental and management consultancy</td>
<td>Adas Environmental</td>
<td>Food farming land &amp; consultancy</td>
</tr>
<tr>
<td>9</td>
<td>Halcrow Group</td>
<td>Infrastructure based business solutions, consultancy and services</td>
<td>AMEC Construction</td>
<td>Multidisciplinary, design, engineering and construction</td>
<td>Tarmac Professional Services</td>
<td>Multidisciplinary consultancy services</td>
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<td>10</td>
<td>Scott Wilson</td>
<td>Engineering, environmental planning and management consultant</td>
<td>Babbage Group</td>
<td>Multidisciplinary consultancy</td>
<td>The Maunsell Group</td>
<td>International ??? (di photocopy)</td>
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</tbody>
</table>


Note: self-description only available from 1995
Figure 6: Explaining the shift from specialization to re-integration

- Vertical / Value Chain Structure
  - determines
- Knowledge Bases / Capability development trajectories
- Demand attributes / structure
  - affect
- Shifting in external environment (society, technology)

Ultimate Causes:
- Capability / Demand Mismatch

Enabling Conditions:
- De-institutionalization of old / institutionalization of new

Drivers of Re-integration:
- Firm strategies in promoting Re-integration
  -Motivated by
- Further drive
- Protecting knowledge base; avoiding commoditization

Drivers of Re-integration:
- Encompassing new sources of revenue by bundling
  -Motivated by
- Further drive
  -Motivated by