CONTRACT AS ORGANISATION: AN ECONOMIC ANALYSIS OF THE JOINT CONTRACTS TRIBUNAL's STANDARD FORM OF BUILDING CONTRACT 1980

VOLUME TWO

CHAPTERS VI - X
BIBLIOGRAPHY
TABLE OF CASES

NEWCASTLE UNIVERSITY LIBRARY
092 50595 4
Thesis L4043 (V.2)

Gail Antoinette Williams

1992

VOLUME TWO

Table of Contents

VOLUME TWO

Chapter VI. The Building Contract in Context 275

A. The Construction Industry and Its Products 276

B. The Process of Building Production 279
1. The Development of the Contracting System 279
2. The Organisational Characteristics of Building Production 287

C. Introduction to the Joint Contracts Tribunal Standard Form of Building Contract 294
1. History of the Standard Form Contract 294
2. Current Form: Participants and Players 299
   a. The Client 302
   b. The General Contractor 304
   c. The Architect 306
   d. The Quantity Surveyor 312
   e. Domestic Sub-Contractors 314
   f. Nominated Sub-Contractors 315
   g. Hybrid Sub-contractors 321
   h. Nominated Suppliers 322
   i. Local Authorities and Statutory Undertakers . . . 323
   j. Direct Employees of the Client 325
3. Summary of the Allocation of Tasks within Transactions Governed by JCT80 326

Chapter VII Contractual Planning Under JCT80 329

A. The Institutional Structure of Contract Planning . . . 330
1. Product Planning and the Selection of Building Producers 330
   a. Design Planning 330
   b. Selection of Building Producers 332
2. Transaction-Specific Planning of the Relationship between Client and General Contractor 336

3. Standard Conditions of Contract 339

B. Transactional Analysis of Planning as a Response to the Uncertainties of Building Production 344
1. The Uncertainties of Building Production 344
2. Transactional Analysis of Planning Mechanisms 348
a. Bill of Quantities 348
b. Selection Procedures 356
(1) Selective Tendering 356
(2) The Contractual Vetoes 361
c. Standard Conditions 364

C. Transactional Analysis of the Separation of Design and Production 371
a. Separation as a Means of Limiting Clients' Dependence on General Contractors 375
b. Separation as a Means of Maintaining the Accountability of Architects 377

D. Contractual Planning and the Contracting Continuum . . 390

Chapter VIII. Administration and Management of the Building Contract 393

A. The Institutional Structure of Administration and Management Under JCT80. 395
1. Architect's Instructions 397
2. Supervision 402
a. Inspection 402
b. Certification 404

B. Adjustment Machinery 411
1. Fluctuations in Input Costs 412
2. Extensions of Time 414
3. Variations 425

C. Contractual Management of Insolvency Risks 433
1. Insolvency of a General Contractor 433
2. Withdrawal of a Nominated Sub-Contractor due to Insolvency 446

D. Contractual Management and the Contracting Continuum . 460

Chapter IX Enforcement 464

A. "Implementation Dilemmas" 468
1. Apportionment and Accountability 468
2. The Personal Character of the Contractual Sanction . . 472
3. Cost-Pass-Through and the Problem of Consistency . . . 472
4. Concurrent Liabilities 483

B. Quality 491
1. Introduction to the Contractual Regulation of Quality 491
a. Standards and Sanctions 491
b. Classification of Building Defects Under JCT80 493
2. Non-Conforming Inputs 494
a. Production Sanctions 494
(i) Description of the Sanctions 494
(ii) Institutional Analysis of the Sanctions . 498
b. Supervision Sanctions 503
3. Conforming Defects 510

C. Time 516
1. The Nature of the Contractual Sanctions 516
2. Risk-Allocation 520
3. Reasonableness 524

D. Sanctions Against Nominated Building Producers 529

E. The Transactional Implications of Legal Sanctions and the Contracting Continuum 534

Chapter X Conclusions 539

Bibliography 545

Table of Cases 577

Note: The analysis in this thesis is based on the original text of the standard form contract that was published in 1980.

Chapter VI The Building Transaction in Context

This chapter serves as a bridge between the general economic theories of contractual governance and our specific analysis of the Joint Contracts Tribunal Standard Form of Building Contract (1980) (JCT80). It aims to provide a context for analysis of JCT80 and to locate in that context, sources of the transaction costs which shape the governance of building production. The discussion is divided into three main sections. Part A describes the structure of the building industry and the nature of its products. It will be seen that the fragmentation of the construction industry is associated with a distinctive relationship between firms which are involved in building production. Part B focuses on the organisation of the process of construction in the UK. This section describes the development of the Contracting System of building production and highlights some of the problems of co-ordination and governance which arise within this institutional setting. Part C consists of a brief history of the Joint Contracts Tribunal and a description of the transactional roles and relationships of participants in projects governed by JCT80.

A. The Construction Industry and Its Products

> The physical nature of the product, its diversity and often complexity, as well as the wide geographical spread of demand for it and the fluctuations in demand, have together moulded the structure of the industry and determined the process of creating a construction good from the clients need to the production on site[1].

The construction industry and its products pervade our daily lives. The built environment is a container of almost all other economic activities and an expression of cultural values. It structures social interaction and shapes access to essential resources. The construction industry is also an important instrument of economic policy. The state continues to be heavily implicated in managing demand for construction products by means of direct investment in the built environment and through the manipulation of financial incentives for private investment[2].

The outputs of the construction industry are investment goods which generate a flow of production of other goods, services or amenities over a period of time. Products of construction are a means to further production, and they create the physical infrastructure which enables goods and

---

[1] Patricia M. Hillebrandt, Analysis Of the British Construction Industry (London: Macmillan, 1984) at 2.

[2] In 1985, for example, 32 % of all new construction work was undertaken for the public sector, Housing and Construction Statistics (London: HMSO, 1985). Incentives for private investment into building production may be directly manipulated through instruments such as investment allowances on new buildings for construction, and indirectly shaped by policies governing interest rates.

services to be distributed. The construction industry is an integral component of social investment in services such as health care and education, and its output is directly consumed in the form of shelter.

Whatever their precise form or intended use, the products of construction are large and heavy and they normally have a fixed location. Construction outputs are usually custom-built to a particular specification, the production cycle is extraordinarily lengthy and the end product is largely created from labour resources and the outputs of other industries. Furthermore, relative to other manufactured goods, buildings have a high cost of production and are unusually durable[3]. These characteristics are said to have an important effect on the structure of the industry, and in particular, to explain the predominance of small firms[4]. The primary consequence of durability, together with high costs of production, is that there exists a large stock of buildings in use and potentially available for other uses. The industry, therefore, has relatively little power to control its market by generating new demand for its products[5]. The demand-driven character of building production is thought to cause uncertainty about the

---

[3] As noted by Patricia Hillebrandt, the unique character of the construction industry is derived from a distinctive mixture of characteristics. Although many individual features of construction products, or the uses of the outputs or the nature of demand may be found in other industries, they are combined to unique effect within construction: Hillebrandt, Analysis of the British Construction Industry, supra, note 1.

[4] In 1989, for example, 186 391 out of the 201 076 firms in the industry employed fewer than eight employees: Housing and Construction Statistics (London: HMSO, 1989).

[5] D. Bishop, "Productivity in the Construction Industry", in Dennis Turin, Aspects of the Economics of Construction, (London: George Godwin, 1975).

future and hence to inhibit capital investment and deter growth by means of increases in the size of existing firms[6].

The image of an industry responding to fluctuations in demand through the classical market mechanism of entry and exit of new firms can be misleading[7]. Although the construction industry is known for high rates of birth and death of small firms, the production of new buildings and physical structures is dominated by larger enterprises. In 1989, for example, firms employing more than 115 workers constituted less than .3% of the total number of construction companies but their share of new building work amounted to over 40%[8].

Statistics which relate volume of work to the size of a building firm, however, may be an unreliable guide to the participation of different types of firm in the manufacturing and delivery of the industry's products. The Contracting System which dominates building production in the UK has created a distinctive relationship between firms of different sizes. Medium and large construction companies function as general contractors (gc.s), responsible for organising labour resources and managing the process by which materials are assembled into a finished building. These firms maintain

---

[6] Ibid.

[7] C.G. Powell An Economic History of the British Building Industry: 1815-1979 (London: Architectural Press, 1980); Patricia M. Hillebrandt, Small Firms in the Construction Industry, Committee of Inquiry on Small Firms, Research Report #10 (London: HMSO, 1970); Hillebrandt Economic Theory and the Construction Industry (London: Macmillan, 1974).

[8] Housing and Construction Statistics, Department of the Environment (London: HMSO, 1989).

demand for their resources by undertaking a number of projects, and seeking new contracts to replace those which are close to completion. Despite the numbers of workers which they may employ, gc.s rarely supply a full complement of labour resources for any particular contract from their permanent staff, nor do they produce the necessary material components. Both general resources and specialised inputs for individual projects are procured, instead, through sub-contracting. The typical pattern of manufacturing industries, whereby the growth of a firm signifies the internalisation of production[9], therefore, is reversed in building production. In this industry, as the size of the firm increases, so also does the extent of sub-contracting as a proportion of its actual production work on any project.

B. The Process of Building Production

1. The Development of the Contracting System

> Ways must be found to improve the overall efficiency of a unique system of relationships between participants pursuing slightly different objectives but reluctant to admit it, exercising partial control for part of the time but pretending to be fully in charge, suspecting all other participants of unscrupulous practices and therefore barricading themselves behind contractual and administrative defences, the net result of which is to stifle initiative, slow down the pace of work and increase

---

[9] Ronald H. Coase, "The Nature of the Firm" (1937) 4 Economica 386; see chapter V., supra.

uncertainty[10]

The organisation of building production in the United Kingdom is a matter of continuing controversy. Contemporary practice has been criticised in government reports and industry studies and by academic commentators[11]. The process by which buildings are produced is said to inhibit innovation, encourage inefficiency and to be very nearly ungovernable. Despite the persistence and severity of such charges, the "Contracting System" of building production has proven remarkably resistant to change[12].

The Contracting System emerged during the early decades of the nineteenth century. It has been described as the practice which broke the power of independent craftsmen and the building guilds, and interpreted as the building industry's substitute for the class relations of the

---

[10] Turin, Aspects of the Economics of Construction, supra, note 5 at xi.

[11] See, for example, Report on the Management and Placing of Building Contracts (The Simon Report) Ministry of Works (London: HMSO, 1944); Survey of the Problems Before the Construction Industries (The Emmerson Report) (London: HMSO, 1962); The Placing and Management of Contracts for Building and Civil Engineering Work (The Banwell Report) Ministry of Public Buildings and Works (London: HMSO, 1964); The Public Client and the Construction Industries (The Wood Report) (London: HMSO, 1975); Marian Bowley The British Building Industry: Four Studies in Response and Resistance to Change (Cambridge: Cambridge University Press, 1966) Michael Ball, "The Contracting System in the Construction Industry" Birkbeck College Discussion Paper #85 (1980); Michael Ball Rebuilding Construction: Economic Change in the British Construction Industry (London: Routledge, 1988); L. Gordon Bayley Building: Teamwork or Conflict? (London: George Godwin, 1973); Interdependence and Uncertainty, Tavistock Institute of Human Relations (London: Tavistock Publications, 1966) (Report commissioned by the Building Industry Communications Research Project); EDC for Building, Faster Building for Industry, (NEDO) (London:HMSO, 1983).

[12] Ball, writing in 1985, identified a takeover trend within the construction industry that might accelerate the growth of project management contracts in which the gc has full control over the management of the transaction: Rebuilding Construction, supra, note 11. For interesting assessments of the building transactions governed by project management contracts in the US, see, the symposium "Construction Management and Design-Build/Fast Track Construction" (1983) 46 Law and Contemporary Problems 1-180.

factory[13]. The genesis of the system is commonly associated with the emergence of the "master builder" during the massive public building programme of the early nineteenth century[14]. Master builders were an organisational innovation which enabled clients to avoid contracting with craftsmen from each of the individual construction trades. Responsibility for acquiring and assembling labour and materials was assumed by a single firm, the owners of which would rely on a combination of direct employment, manufacturing, and subcontracting to meet their commitments to the client[15].

The organisation of input from different trades by a central co-ordinating agency is only one aspect of the contracting system. Its second distinctive feature - the separation of design and supervision of a project from production - is associated with another nineteenth century phenomenon, professionalisation[16]. Architects moved quickly

---

[13] E.W. Cooney "The Origins of the Victorian Master Builders" (1955) 8 Economic History Review 167; Ball Rebuilding Construction, supra, note 11; L. Clarke "The Production of the Built Environment: Backward or Peculiar?" (1985) 6 The Production of the Built Environment: Proceedings of the Bartlett International Summer School 2-3-2-7; Peter Kingsford, Builders and Building Workers (London: Edward Arnold, 1973); J. McKenna & R. Rodger "Control by Coercion: Employers' Associations and the Establishment of Industrial Order in the Building of England and Wales, 1860-1914" (1985) Business History Review 203; on the decline of the guilds, see R.A. Leeson, Travelling Brothers (London: Allen & Unwin, 1979). These writers challenge the conventional idea that the relative lack of industrialisation / mechanisation in building production indicates that the construction industry did not experience an industrial capitalist revolution. Their point is that capitalist relations and innovations in production took the form of changes which were primarily organisational rather than technological.

[14] For a vivid discussion of this building programme see, John Summerson, Georgian London (Harmondsworth: Penguin, 1962), see, in particular, chap. XV "Public Works after Waterloo"; see also, Cooney, "The Origins of the Victorian Master Builders", supra, note 13.

[15] Cooney, "The Origins of the Victorian Master Builders", supra, note 13; M.H.Port "The Office of Works and Building Contracts in Early Nineteenth-Century England" (1967) Economic History Review 94; Kingsford Builders and Building Workers, supra, note 13; Hermione Hobhouse Thomas Cubitt: Master Builder, (Basingstoke: Macmillan, 1971).

[16] Bowley The British Building Industry: Four Studies in Response and Resistance to Change, supra, note 11; Barrington Kaye, The Development of the Architectural Profession in Britain (London: Allen & Unwin, 1960).

during the early eighteen-hundreds to dissociate their role as designers and advisers to clients from the production operations of the master builders. The Institute of British Architects was founded in 1834, and by 1837 had received charter status. The Institute extended existing informal restrictions on entry to the profession, campaigned for education and training programmes, and regulated relationships between architects and other members of the building industry[17]. Of particular significance to the growth of the Contracting System, was the Institute's insistence that architects remain economically independent of building firms[18]. This practice is said to have developed as a way of encouraging clients to trust architects, who, in their role as overseers of building projects, occupied a potentially ambiguous position between client and general builder[19]. Its primary organisational consequences, however, were to entrench the separation of building design from building production, and conflate the responsibilities of architects and builders for the management of building production.

A third institutional innovation of the nineteenth century concerned the use of contracts to facilitate control over the costs of building production. Under the earlier

---

17 Ibid.

18 In 1887, the formal separation of the economic interests of architects and builders was enshrined in the charter of the Institute. The process of professionalisation was completed in 1931 with the institutionalisation in legislation of a licensing regime: Powell, An Economic History of the British Building Industry: 1815-1979, supra, note 7.

19 Cooney, "The Origins of the Victorian Master Builders", supra, note 13; Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England", supra, note 15.

system of separate contracting, the pricing of clients' contracts with individual craftsmen would normally be based on a unit rate for the input which was in fact supplied[20]. Even if some attempt to estimate quantities had been made in advance, the actual payment to contractors would be derived from measurement of their work after it had been completed[21]. One important consequence of this method of pricing was that realised production costs might have at best a tenuous connection with clients' expectations[22]. Secondly, the "measurement and value" system gave surveyors a vital role in building production[23]. Surveyors were not only responsible for final measurement of each contractor's work, but would also be expected to verify that the quality of materials (and workmanship) supplied, justified payment at the contractual rate[24].

During the early decades of the nineteenth century, the practice of "measure and value" contracting was swept away. The system with which it was replaced, "contracting in gross" on the basis of competitive tendering, was, at first, scarcely less controversial. It was thought that builders who had tendered on an ex ante agreed price basis would be likely to

---

[20] Cooney, "The Origins of the Victorian Master Builders"; David Yeomans "Managing Eighteenth-Century Building" (1988) 4 Construction History 3.

[21] Ibid.

[22] As noted by Yeomans, not only would it be much more difficult to observe and measure quantities on an ex post basis, but there existed enormous regional and trade-based variations in the practices of measurement: Yeomans, "Managing Eighteenth Century Building" ibid.

[23] Ibid., see also, Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England", supra, note 15.

[24] Yeomans "Managing Eighteenth-Century Building", supra, note 20.

underestimate the costs of production, either in a deliberate attempt to beat the competition, or out of fear that clients would be deterred from building if they knew the true cost, or simply because builders did not have sufficient information at the time of preparing their bids. It was argued that builders, having under-priced their bids, would attempt to make up differences between the contract price and the real costs of production by skimping on performance, or claiming that the contract did not cover all of the work required for production. George Saunders, for example, in giving evidence before the Commissioners of Inquiry into the conduct of business in the Office of Works asserted that:

> Contractors ... are frequently not scrupulous about the amount they agree for; and before the building is far advanced will find out what quantity, and what kind of work can be done for that sum to make it a profitable concern, taking advantage [of] as much of the omission in the specification as will answer the purpose, and laying the employer under the necessity of giving orders which will wholly set aside the contract, or allow the contractor to make such extra charges as he shall require[25].

In response to these concerns, it was argued that the economic imperatives faced by the master builders would prevent egregious abuse of ex ante pricing and that any residual problems could be dealt with by ensuring that

---

25 Report of the Commissioners of Enquiry into the Conduct of Business in the Office of Works Parliamentary Papers 1812-1813, quoted in Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England", supra, note 15 at 98.

adequate information was available at the tender stage[26]. The case for economic incentives was built on three main arguments[27]. First, it was thought that gc.s who needed a regular programme of work in order to maintain their establishment of permanent employees would be unlikely to skimp on production for fear of alienating major clients. (This argument was believed to be particularly forceful in view of the volume of government contracting that was underway at the time[28].) Secondly, the permanent workforce of the master builders together with their ability to offer on-going business to sub-contractors, it was argued, enhanced gc.s' power to control the costs of production. These firms, therefore, were thought to be in a good position accurately to predict a large proportion of building costs. Finally, the volume of work available to gc.s, it was said, meant that they had the capacity to bear an occasional loss on an individual contract. As a result, gc.s were believed to be less likely to attempt to recover for erroneous estimates during performance of a contract, especially, where aggressive pursuit of claims might alienate a major client.

The practice of "contracting in gross" with master builders on the basis of a tendering process also appealed to government departments responsible for implementing and

---

[26] See, for example, the evidence of John Nash quoted in the Report of the Select Committee on the Office of Public Works and Public Buildings (Parliamentary Papers, 1828, IV) at 58-9.

[27] Report of the Select Committee on the Office of Public Works and Public Buildings, 1828, supra.

[28] Supra, note 14.

managing the programme of public building[29]. As is apparent from the government reports of the time, the new system was perceived to offer far better control over budgets and accounting than could be obtained by "measure and value" contracting with separate trades[30].

By the middle of the nineteenth century the main planks of the contemporary Contracting System were in place. Client-developers would hire an architect to design their project, advise on potential contractors and act as a supervisor of production. Upon completion of the drawings, the client would hire a Quantity Surveyor to formulate a detailed specification of the inputs which would be required to complete the building project. This specification - the Bill of Quantities - together with the architect's drawings, would be made available to gc.s who intended to bid for the project. Gc.s would formulate tender bids based on the documentary information, and offer both a lump-sum price for the entire project, and a list of prices for each item in the Bill. Upon formation of the contract between client and gc, the priced Bill of Quantities of the successful bidder became part of the

---

[29] Cooney talks about the importance of government reports and the building programme to the organisational innovations in fairly idealist terms. He comments, for example, that: "during the first half of the nineteenth century, the industry's customers, including public bodies, came to believe that the best basis on which to arrange for building was to obtain competitive tenders for the work to be carried out by one builder at fixed cost": Cooney, "The Origins of the Victorian Master Builders", supra, note 13 at 174.

[30] Commissioners of Military Enquiry, 4th Report, (Parliamentary Papers, 1806-7, II); Report of the Commissioners of Enquiry into the Conduct of Business in the Office of Works (Parliamentary Papers, 1812-13, V); Report of the Select Committee on the Office of Public Works and Public Buildings (1828), supra, note 26; Report of the Select Committee on Windsor Castle and Buckingham Palace, (Parliamentary Papers, 1831, IV).

contract documents. The contract between client and gc was in essence a two-part commitment by the builder. Gc.s undertook to procure the quantities of labour and materials resources stated in the Bills for the prices tendered and to co-ordinate on-site assembly of resources to produce the building as defined by the drawings and specification.

2. The Organisational Characteristics of Building Production

The institutional setting of construction projects, as constituted by the structure of the industry and the contracting system, may be viewed as both a source of, and a response to, the costs of organising building production. In order to analyse the specific transactional implications of JCT80, therefore, it is necessary to identify general sources of transaction costs in the process which the contract purports to govern.

Construction is a complex production process which entails the collection and assembly of disparate resources at a fixed location. Three aspects of this process stand out as potentially significant sources of organisational and co-ordination costs: the interactive nature of production, its time-scale, and site-specificity.

The interactive aspect of construction appears in the collaborative nature of building production and also in the extent to which the performance of any one resource-supplier

shapes the conditions under which others perform[31]. Interactive production complicates the process of co-ordinating activities in that building projects cannot be managed effectively as if tasks were wholly discrete and self-contained. Decision-makers must, instead, confront the dependence of each participant on the quality and timeliness of performance by others and recognise that disruption in one part of a project may have complex and far-reaching repercussions.

Interdependence also compounds the costs of reacting to disruptive events and responding to information which emerges during production. Details of the event or the new information must be communicated throughout a network of participants. Moreover, adjustment decisions will need to take account of the implications of different options for a number of actors and changes which are implemented will generally entail widespread revision of plans and operations.

Finally, the interactive nature of production may make it difficult to use ex post observation as a means of locating responsibility for poor quality input. Building production melds the separate contributions of input suppliers into one product with the result that failures in the performance of a building cannot readily be traced to individual actors. The transformative nature of interdependence, in effect, destroys

---

[31] See, generally, the discussion of transactional clustering and "team" production supra, chapter V.

the mechanism of direct accountability upon which ex post monitoring of performance is based[32].

The problems of interdependence are exacerbated by the fragmentation of the construction industry and the resulting economic autonomy of resource suppliers. While architect, gc, sub-contractors, and materials suppliers might be expected to act as if they were a united team, each actor's participation in building production is driven by a distinct profit stream. As a result construction projects are exposed to the risk that an individual input supplier may attempt to improve its own position by shifting some of the costs of participation onto another participant[33]. Such strategic behaviour may be manifested in refusals to co-operate in adjustment of the transaction to take account of new information. Alternatively, an opportunistic participant may take advantage of the client's inability readily to distinguish between interactive performances by "cheating" on the quality of input which it supplies.

Time is another important characteristic of construction projects. The production of "major works" is seldom completed in less than eighteen months[34] and while many participants are

---

[32] Ibid.

[33] Supra, chapter II, see also the discussion of implicit and explicit forms of opportunism in our analysis of relational contracting, supra, chapter IV.

[34] Data on construction times is scattered, and analysis is complicated by differences in the definitions of production times. Some useful tables are to be found in Faster Building for Industry, supra, note 11; How Flexible is Construction, EDC's for Building and Civil Engineering, NEDO (London: HMSO, 1978); Hillebrandt, Analysis of the British Construction Industry, supra, note 1; see, also, RIBA "Inquiry into the Building Timetable" (1958) 65 RIBA Journal 350.

involved for only part of the process, arrangements between client, architect and gc span the entire production phase. The time element of construction creates three main problems of governance. First, relationships between resource suppliers evolve as participants learn to work with one another on the particular project. A structure of governance may be required, therefore, to accommodate significant changes in the basis of association between participants[35]. For example, even if a gc and architect have a history of collaboration, the experience of working together on a specific project for a new client adds to each actor's knowledge of the other. This information provides a foundation for the working relationship between architect and gc, and shapes the possibility of co-operation between them. While the relationship between architect and gc may be enhanced or soured by the knowledge gained during a transaction, successful completion of the project, from the perspective of the client, requires the structure of governance to preserve commitments to co-operate in pursuit of clients' interests.

Secondly, the time-scale of building production is a source of uncertainty for participants[36]. Viewed from an ex ante perspective, the primary effect of uncertainty is to create a risk that changes in the economic environment of building production will increase the costs of executing the

---

35 Supra, chapters IV and V.

36 Supra, chapter II.

transaction. Uncertainty, therefore, forces participants to confront the possibility that the project will not be completed on the terms originally envisaged, and formulate governance provisions for managing risks.

Third, the duration of a construction project compounds the costs of procuring and co-ordinating supplies of input[37]. Decisions about the timing of supplies if taken at the beginning of a project may be highly prone to error. Not only are decision-makers unable to control the environment of production, but they also do not know whether their work will be hampered by other participants. Even the most carefully laid plans, therefore, may be thwarted by uncontrollable environmental conditions or unexpected internal conflicts. Error costs may be curtailed, perhaps, by postponing decisions to procure supplies until close to the time when the input is needed. This approach, however, entails other costs. In particular, a failure to make sufficiently precise arrangements in advance may result in input suppliers not being available when required, or higher prices than had been anticipated[38].

---

[37] See, generally, chapter II, supra, for discussion of this aspect of uncertainty; compare classical and relational mechanisms for managing risk, described, supra, chapters III and IV. Analysis of risk-management under JCT80, is to be found, infra, chapters VII and VIII.

[38] As is apparent from the "firm offer" problem, the costs of making adequate and precise arrangements in advance may be shaped by the governing legal regime. However, the extent to which any particular, legal ground rule, is a source of undesirable and avoidable costs, is more debateable. With respect to the issue of whether the unenforceability of sub-contractors bids which are used by gc.s in preparing their own tender bids, compare, for example, the interpretations of Fritz Schultze, "The Firm Offer Puzzle: A Study of Business Practices in the Construction Industry" (1952) 19 University of Chicago Law Review 237; Malcolm Sharp, "Promises, Mistakes and Reciprocity" (1952) 19 University of Chicago Law Review 286; The Law Commission, "Firm Offers" Working Paper #60 (London: HMSO, 1975) Richard Lewis, "Contracts between Businessmen: Reform of the Law of Firm Offers and an Empirical Study of Tendering Practices in the Building Industry" (1982) 9 Journal of Law and Society

The site-specificity of the construction process is also implicated in the transaction costs of governing building production[39]. Clients supply a fixed resource, land, while other participants are organised around mobile units for the supply of expertise, materials and labour. As a result, a high proportion of clients' costs are dedicated to a specific transaction, located in a particular place, and cannot readily be transferred to another project. The relative immobility of clients' investments opens up the possibility of opportunistic attempts to redistribute shares in the transactional surplus during production.

Locational specificity may also create problems for planning and control of the production process. Some characteristics of a site emerge only after production has started and the information which materialises may create a need for substantial changes to future operations and revisions to plans which have already been acted upon. Similarly, site-based production is vulnerable to environmental conditions which may also force participants to review existing arrangements and expectations.

These specific sources of transactions costs in building production are linked to the problem of uncertainty, a

---

153; and the Alberta Court of Appeal in Northern Construction Co. Ltd. v. Gloge Heating & Plumbing Ltd. (1986) 27 DLR (4th) 264.

[39] See, generally, chapters II and IV, supra, for discussions of idiosyncratic investment. Note that with respect to building production, the uniqueness of a site is defined as much by the institutional framework of public regulation of land-use as by physical characteristics. Building design may be constrained by physical and regulatory limits on the use of a site; and the supply and management of inputs during construction may need to take some account of features of the site and environmental, public health controls and occupational health and safety standards.

pervasive feature of the construction process[40]. Uncertainty undermines planning, inhibits reliance and impedes co-operation. It is manifested in the transaction costs of organising operations, adapting to change and maintaining financial control over production costs.

In addition to uncertainties derived from economic actors' inadequate prior knowledge of a site and lack of control over environmental conditions, the organisation of building production may be impaired by participants' misgivings about one another[41]. The process of construction, as constituted by the Contracting System, is based on the premises that participants share a common objective and accept a common set of "rules" for achieving their objective[42]. Moreover, the Contracting System creates "intimate"[43], interdependent, and potentially unequal, relationships during execution of the transaction. Given these characteristics of building production, participants' doubts about the reliability or competence of others engaged on the project may be devastating. Such uncertainties may provoke a climate of

---

[40] Tavistock, Interdependence and Uncertainty: A Study of the Building Industry, supra, note 11; Turin, Aspects of the Economics of Construction, supra, note 5.

[41] See generally, Tavistock, Interdependence and Uncertainty, ibid., see, chapter VII, infra for a development of this problem of "participant uncertainties".

[42] It is important to recognise that building production is governed by both informal and formal rules, and that informal rules may be at least as important to the success of a project as the formal rules of the contract and governing legal culture. Indeed the Tavistock project suggested that construction projects could not be completed unless the participants developed informal rules which frequently contradicted the formal rules of the transaction, Interdependence and Uncertainty, supra, note 11, see also, Turin, Aspects of the Economics of Construction, supra, note 5.

[43] This characterisation was used by Daintith to describe relationships between participants in iron-ore markets, Terence Daintith, "The Design and Performance of Long-Term Contracts" in Contract and Organisation Daintith and Gunther Teubner (eds.) (Berlin: Walter de Gruyter, 1986).

suspicion, obstruct communication channels and prompt economic actors to engage in transactional practices designed to secure protection against, rather than co-operation with, other participants.

C. Introduction to the Joint Contracts Tribunal Standard Form of Building Contract

1. History of the Standard Form of Building Contract

As stated by John Parris, "the Joint Contracts Tribunal is ... no longer a joint body and has never been a tribunal"[44]. It is, rather, a standing committee, composed of trade associations with interests in the process of building production, which is responsible for drafting and revising standard form contracts. The agency includes representatives of public sector clients, construction professionals, and owners of both general contracting firms and firms which specialise in sub-contracting[45]. Its contracts are, in effect, negotiated standard form arrangements, embodying those

---

[44] John Parris, The Standard Form of Building Contract: JCT80 (London: Collins, 1985) (2nd ed.) at 3.

[45] At the time when JCT80 was drafted, the agency consisted of representatives from 12 constituencies: the Royal Institute of British Architects (RIBA), the Royal Institution of Chartered Surveyors (RICS), the Building Employers Confederation (BEC), the Association of County Councils, the Association of Metropolitan Authorities, the Association of District Councils, the Greater London Council, the Committee of Associations of Specialist Engineering Contractors (CASEC), the Federation of Associations of Specialists and Sub-contractors (FASS), the Association of Consulting Engineers (ACE), the Scottish Building Contracts Committee, and the Building Property Federation (BPF). (Note that CASEC, FASS & ACE, are themselves federations of trade associations). The most significant change in membership since that time was caused by the demise of the Greater London Council and the Metropolitan Counties as local governmental authorities.

compromises of interests which have proven acceptable to the membership[46].

The practice of creating negotiated standard forms of contractual governance for building production grew out of conflict between builders and architects during the middle decades of the nineteenth century[47]. The primary source of friction was the extent of builders' obligations under the new system of "contracting in gross"[48]. This issue involved two related concerns which were collapsed into a single complaint of unfairness. First, transactions between client and builders were treated by courts as "entire" contracts[49], with the result that the risk of disruptive contingencies was presumptively allocated to builders[50]. Secondly, builders complained that clients' consultants seldom prepared a detailed specification and full set of design drawings in time for the tendering process and that in the absence of a uniform system of ex ante measurement, the documents, when available, were not a reliable basis on which to formulate a contract price[51]. Builders maintained that as a direct consequence of

---

[46] Norman Royce, "Producing a Standard Form of Contract" (1984-5) 1 Construction Law Journal 255. Royce is the Chair of the Joint Contracts Tribunal. In this article he reflects upon the process of revising and drafting standard form contracts. He notes that the Tribunal "works on the basis of common consent and no votes are taken" (at 259). He also makes the points that achieving consensus among the representatives is hard, but only the first step. Once provisions have been agreed, the representatives must take proposals back to their associations for approval.

[47] Dennis F. Dolan, The British Construction Industry - An Introduction (London: Macmillan, 1979).

[48] Ibid.; see also, Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England", supra, note 15.

[49] Cutter v. Powell (1795) 2 Sm.LC. 1.

[50] See, for example, Appleby v. Myers (1867) LR 2 CP 651.

[51] Raymond W. Postgate, The Builder's History (London: Labour Publishing, 1923); Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England", supra, note 15.

inadequate information at tendering, they were routinely forced to revise their plans and procure additional input during execution of a project[52]. Moreover, it was alleged that the combination of poor professional practice and the doctrine of entire contracts, led courts to hold builders accountable not only for uncontrollable contingencies, but also for the inadequate preparatory work of clients' consultants[53].

As the pace of construction increased with urbanisation and construction projects developed in size, builders' concerns about the unpredictable nature of their costs became more urgent. In 1866, The General Builders' Association, at its annual general meeting, adopted a report which recommended that all "contracts should be specific and definite in their terms"[54]. The call was taken up by the London Builder's Society, which in 1870 created a model contract in consultation with the Royal Institute of British Architects (RIBA)[55].

---

[52] Ibid.

[53] Some indication of the legal community's lack of sympathy with the builder's concerns can be found in commentary of the time. Writing in 1891, A.A. Hudson, commented that:

> Conditions in building contracts are often called unreasonable and oppressive. Such conditions, as a rule, merely provide that the builder or contractor shall take every risk, and shall abide by the decision of a third party directly interested in pleasing his employer by his decision. All risks and contingencies are capable of being adequately compensated by payment... the builder, therefore, has two alternatives - either to charge for the risk or not to undertake it. An employer or building owner, if he cannot pay the price asked, may take the risk himself, but if he contracts that the risk shall be borne by the builder, it would be very unreasonable to ask him to pay twice over.

Building and Engineering Contracts Alfred A. Hudson (London: 1891) at 3.

[54] Dolan, The British Construction Industry, supra, note 47.

[55] This contract is reproduced in The Architect's Legal Handbook E. Jenkins and J. Raymond (London: C. Kegan Paul & Co., 1880) (3rd ed.) at 224-229. It specifies the standard of gc.s' performance, provided for the architect to supervise building operations, establishes a system of stage payments, stipulates when title to unfixed materials is to pass to the client, and incorporates an embryonic version of the present machinery for adjusting the time constraint. The contract also contains an arbitration clause.

This sixteen-clause package of terms for governing transactions between clients and builders, created by representatives of architects and builders working in the London area, seemed to pave the way for a national contract. However, it was not until 1903 that representatives of the RIBA, the National Federation of Building Trades Employers (NFBTE)[56] and the Institute of Building (IOB) agreed to publish a standard contract for national use. Moreover, even at the point of publication of the standard form, there was dissension between the constituent associations. Differences over issues such as the incorporation of a Bill of Quantities into the contract and the appropriate scope of the arbitration clause, were finally compromised in 1909, when the three associations endorsed what was then known as "the RIBA form of contract"[57].

The rudimentary co-operation of the period did not extend to the institutionalisation of a process for monitoring and revision of the standard form contract. Thus, upon realising that the contract of 1909 would not be adequate for the extensive post World War I building programme, the NFBTE simply gave notice to the RIBA that it intended to withdraw its support. This move gave rise to another process of consultation and discussion orchestrated by an ad hoc

---

[56] Now known as the Building Employers Confederation (BEC).

[57] According to Dolan, the main difficulties arose in working out the appropriate scope of the arbitration clause and in deciding whether to incorporate a Bill of Quantities into the contract: The British Construction Industry, supra, note 47.

committee of contractors, architects and quantity surveyors[58]. Difficulties in gaining acceptance for the draft contract of this Committee prompted the decision to create a standing institution - the Joint Contracts Tribunal - with a mandate to formulate, monitor and revise a standard form of building contract[59].

The contract that was published in 1931 was substantially rewritten in 1939[60], by which time local government bodies were coming to accepted its basic scheme of rights, duties, risks and procedures. The incorporation of local government interests into the drafting agency led to the current bipartite system of Private and Local Authority editions of the main forms of contract. Over the last forty years the agency has expanded its membership to accommodate the proliferation of trade associations representing different groups of building producers[61].

Since the redrafting of the traditional contract in 1980, the JCT has made substantial progress toward its current objective of producing a range of contracts to accommodate variations in construction projects[62]. The analysis in this thesis focuses on the standard "main" form of contract - the

---

58 Ibid.

59 Ibid.

60 The IOB had withdrawn from the drafting agency in 1931, so this draft was prepared by representatives of the RIBA and NFBTE only: Parris, The Standard Form of building Contract: JCT80, supra, note 44.

61 supra, note 45.

62 The agency currently offers 10 standard forms of contractual governance which are intended to take account of differences in size and organisational structure of construction projects.

"With Quantities" edition[63]. This contract is intended to govern large projects, located within the institutional setting of the traditional Contracting System. Such transactions are predicated on a clear separation between responsibilities of professional advisers to the client for design, general supervision, cost control and certification, and gc.s' obligations to procure, assemble and manage the resources necessary to produce the building.

2. Current Form: Participants and Players

The Joint Contracts Tribunal Standard Form of Building Contract "With Quantities" is stated to be a contract between a client (or employer), and a gc. In addition to its provisions for the relationship between the two signing parties, JCT80 attempts to govern some aspects of the participation in building production of persons drawn from eight different classes of construction actors. The contract names as "non-party" participants: an architect, a quantity surveyor, a local authority, other statutory agencies, two types of domestic sub-contractor, work persons directly engaged by the client, nominated sub-contractors and nominated suppliers. All except those directly engaged by the client are

---

[63] The phrase "With Quantities" indicates that gc.s' input to the project is defined by a Bill of Quantities, a document drawn up by the client's Quantity Surveyor on the basis of details and drawings supplied by the design professionals: infra; see also chapter VII.

directly involved in execution of the "Contract Works"[64]; and every participant, apart from the local authority and the statutory agencies, supplies input by way of a contractual relationship with the gc or the client. Under the provisions of JCT80, one class of participants - the nominated sub-contractors - has a contractual relationship with both client and gc. The basic system of contractual relationships is shown in figure 1.

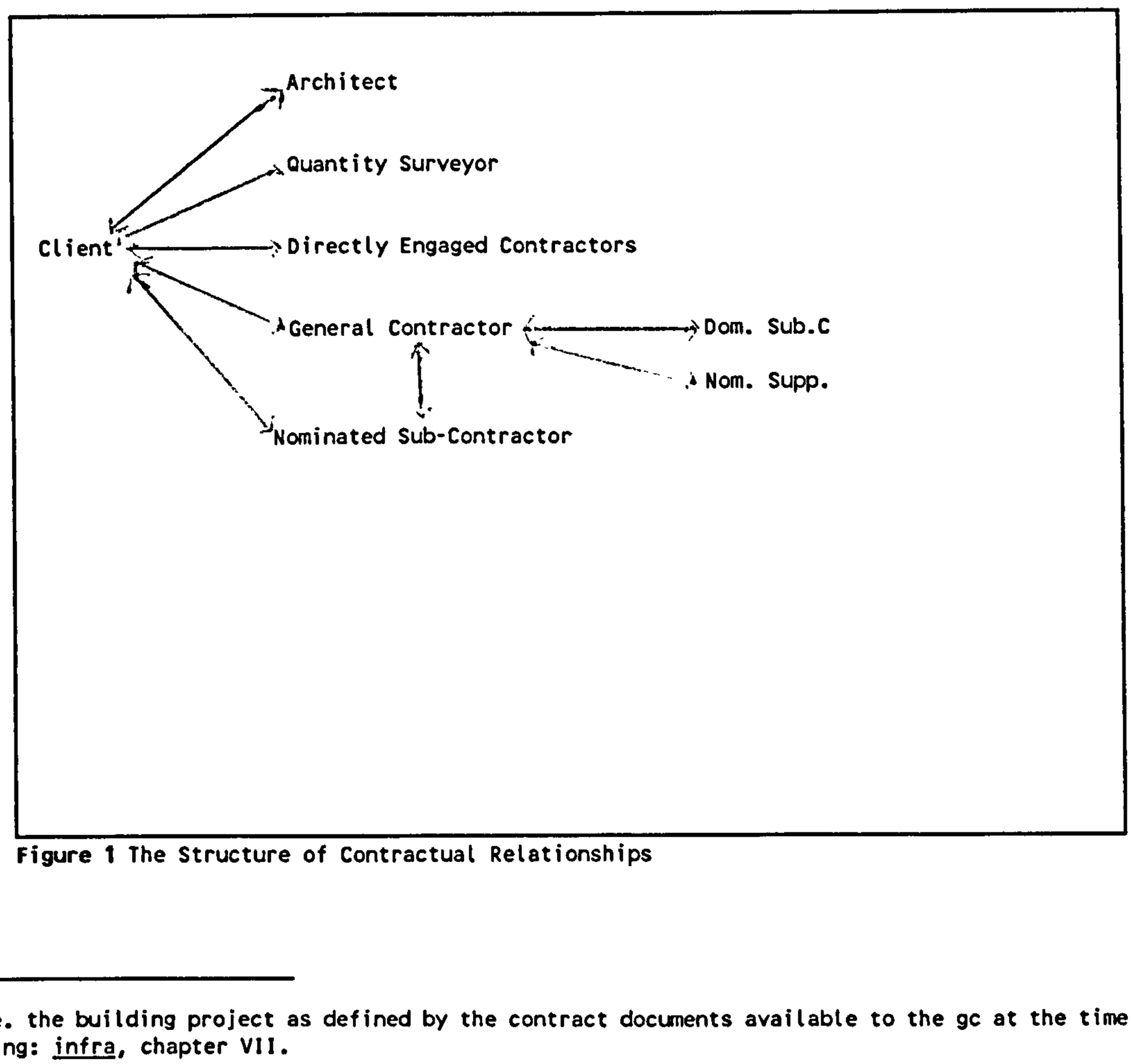

Figure 1 The Structure of Contractual Relationships

---

[64] Ie. the building project as defined by the contract documents available to the gc at the time of tendering: infra, chapter VII.

Of as much significance to our analysis as the system of contractual relationships is the structure of management responsibilities instituted by JCT80. The standard Conditions of Contract consist of a complex package of procedures for co-ordinating the process of building production. These procedures purport to regulate the transaction throughout the process of production on-site. As is shown in figure 2, JCT80 deals with potential co-ordination conflicts by ordering control over building production as a hierarchical system of full and partial relationships of authority to manage.

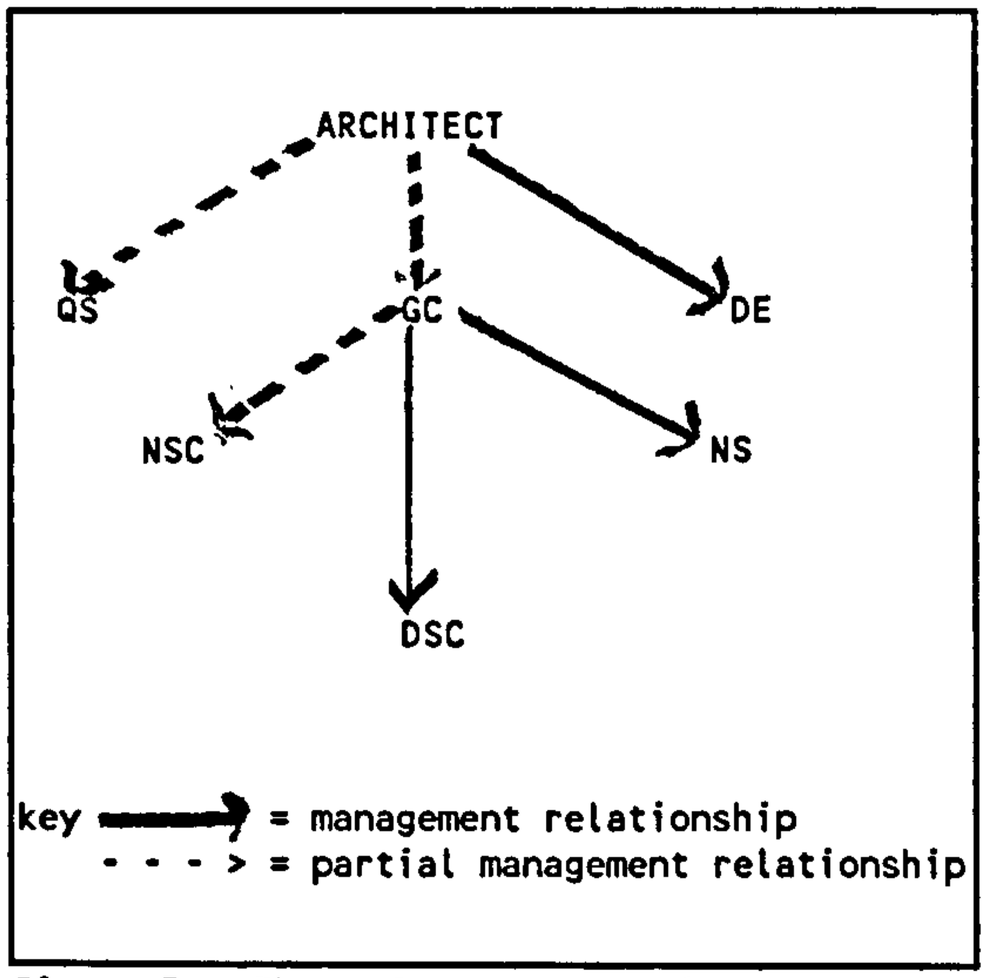

Figure 2 The Structure of Management Relationships.

JCT80 attempts to maintain participants' accountability for the inputs which they supply by integrating the transactional roles of resource suppliers into its network of rights, obligations and powers. In pursuit of this objective the contract relies on two mechanisms to circumvent the doctrine of privity. First, the management roles of the architect, (and the QS) are situated in the institutional context of the legal concept of agency. Secondly, the JCT has developed a "cost-pass-through" strategy which, in effect, uses the client and the gc as conduits for channelling rights, directions and liabilities to other participants with whom each party has a contractual relationship[65].

a. The Client

The client's decision to procure a building triggers the entire process governed by JCT80. The client hires the architect and the quantity surveyor to the project, and is accountable to the gc for the manner in which the consultants exercise their contractual powers and discharge their duties. Clients are also responsible for the operation of the process by which nominated sub-contractors are appointed, and will be liable to the general contractor for disruptions caused by direct employees or nominated sub-contractors.

---

[65] Infra, see also, chapter IX.

Conventional models of the construction process depict clients as heavily involved in the early stages of decision-making before the building contract is let[66]. Clients are expected to generate information for the architect and other members of the design team, participate in modifications of early design proposals and make the final decisions about the building concept. The client is also responsible for securing financing for building production and, in collaboration with the quantity surveyor, is expected to work out a programme for governing expenditure during the project. Finally, although the tendering documents are prepared by architect and quantity surveyor, the client is in charge of the process by which the contract is let, and makes the final selection decision with respect to the gc.

Once the contract with the gc is formed, the client's role is dramatically diminished. Clients may be involved in the selection of direct employees, they may participate in the appointment of nominated sub-contractors and suppliers and in some decisions about adjustments to the transaction during execution[67]. The client, is not, however, expected to take part in management of the production process. Indeed, in a graphic portrayal of a "model" relationship between clients and

---

[66] See, for example, EDC for Building, Before You Build NEDO (London: HMSO, 1974); Preparing to Build: R&D Building Management Handbook, Ministry of Public Building & Works (London: HMSO, 1965); Faster Building for Industry, supra, note 11; EDCs for Building and Civil Engineering, The Public Client and the Construction Industry, NEDO (London: HMSO, 1975).

[67] See, for example, the discussions of changes to the specification during production, under the Variation procedure, in chapters VII & VIII, infra.

building producers working on a site, one industry Report asserted that the client:

> ... must on no account say anything to anybody that might be construed as an instruction. It is fundamental to the efficient management of any undertaking that instructions should come through one channel only, and in a building operation that channel must be the designer. If the client has any point to make he should put it to the designer, who will look into its implications in terms of cost, design and delay and discuss them with him before giving any formal instruction to the builder[68].

b. The General Contractor

The general contractor is the central co-ordinating agent of building production. Its basic undertaking to the client is to ensure that, subject to the contractual provisions for contingencies, those parts of the building which were defined in the documents upon which it tendered, are constructed for the price agreed and within the time stated in the contract. However, gc.s in transactions governed by JCT80 do not undertake to produce the building themselves, nor is it likely, given the working rules of the contract, that the client's financial commitment is limited by the tender price which was accepted[69].

The primary function of the gc is best expressed in the idea of managing the process of construction, subject to the

---

68 Preparing to Build, supra, note 66 at 23.

69 Infra, chapter VIII.

direction and supervision of the architect[70]. Gc.s make arrangements for labour and materials to be supplied to the site, engage in production of some parts of the building and organise assembly of resources supplied by others. In this latter role, gc.s are expected to maintain communication between the architect and other resource suppliers and to notify the client, through the architect, of any problems with the site, execution of the design, or access to resources.

The second role of the gc within construction projects governed by JCT80 is to act as a "cost-pass-through" mechanism. As noted above, this function may be seen as a strategy for integrating autonomous resource suppliers within a single framework of governance. It involves the gc assuming liability to the client for time, quality, and price dimensions of performance by each of the participants with whom it contracts. The theory behind this structure of accountability is that in the event of a problem with any

---

70 The relationship between the supervisory roles of architect and gc is one of the more contentious issues raised by the organisation of building production. The 1939 edition of the main contract is the last version specifically to state that the architect is empowered generally to "give directions" to the gc. Under JCT80 the architect is formally required to issue Instructions in particular circumstances, and the gc has an absolute contractual duty to comply with all but one type of properly issued instruction that the architect is expressly empowered to issue: clause 4.1, (infra, chapter VIII). The dominant view within the legal literature is that apart from the situations where the contract specifically authorises instructions, the architect does not have the power to direct the work of the gc, and that the gc is entirely responsible for the organisation of a project and production methods: Parris, The Standard Form of Building Contract: JCT80, supra, note 44; Ian Duncan Wallace "Anns Beyond Repair" (1991) 107 Law Quarterly Review 228; Duncan Wallace "Defective Work: The New Flavours" (1990) 6 Construction Law Journal 87. By virtue of their contracts with clients, however, architects are required to provide sufficient supervision to ensure that the client obtains a building which corresponds to the decisions that were made during planning. Moreover, gc.s may wish to seek the protection of Architect's Instructions for some or all of the production process. The purpose of so-doing would be to open up the possibility of shifting part of the risks of defects or delay during production from their shoulders. Further complications are raised by the participation of nominated sub-contractors in building production and the role of the Clerk of Works. Chapter IX, infra, addresses some of the problems raised by the JCT's strategy of using contratual duties and sanctions as instruments for implementing supervisory responsibilities.

particular aspect of the building, the client is to seek redress from the gc, who would in turn enforce its contract with the specific resource supplier. The cost-pass-through mechanism also works in the opposite direction. That is to say, JCT80 assumes that the gc is accountable to sub-contractors and suppliers for disruptions caused by actors for whom the client is responsible to the gc, and risks which are allocated to the client. Sub-contractors and suppliers whose connection to the project is based exclusively on a contract with the gc, are expected to make contractual claims against the gc. The gc may in turn make a claim against the client, who would, where appropriate, recover from the actor whose failure caused the problem.

c. Architect

Of the non-party participants in a construction project, the architect plays a dominant role[71]. Architects are hired by clients to be involved at all stages of a project from the initial decision to build until after the completed structure is in use[72]. In direct contrast with the primary construction trend of increasing specialisation and fragmentation, the architect supplies a diverse range of services, incorporating

---

[71] See, generally, Kaye, The Development of the Architectural Profession in Britain, supra, note 16; Andrew Saint, The Image of the Architect (London: Yale University Press, 1983); EDCs for Building and Civil Engineering The Professions and the Construction Industries NEDO (London: HMSO, 1976).

[72] The RIBA publishes a standardised set of Conditions of Engagement which is generally used to govern the relationship between client and architect.

design, managerial and administrative functions[73]. The range and scope of the contemporary architect's responsibilities in building production have led some commentators to doubt the continuing viability of this role. Powell, for example, writing about the increasing demands on the architects profession since 1940, questions "whether any human agency could ever reconcile interests as disparate as those with whom Architects work"[74].

Historically, the architect had sole control over building design. This role entailed the formulation of plans for a structure that would meet as many of the client's requirements as was possible, given technological, cost and timing constraints. The architect was expected to interpret a client's needs and preferences, develop, and assist in the evaluation of, different options and translate the client's final choice into a blueprint for production[75].

Recent trends such as the decreasing supply of land, increasing standards of living, and the development of new methods and materials of construction, have, to some extent, changed the basis of building design[76]. Technology and

---

[73] Kaye, The Development of the Architectural Profession in Britain, supra, note 16; Saint, The Image of the Architect, supra, note 71; EDCs for Building and Civil Engineering The Professions and the Construction Industries, supra, note 71.

[74] Powell, An Economic History of the British Building Industry: 1815-1979, supra, note 7.

[75] Kaye, The Development of the Architectural Profession in Britain, supra, note 16; EDCs for Building and Civil Engineering The Professions and the Construction Industries, supra, note 71; P.A. Stone Building Economy: Design Production and Organisation - A Synoptic View (Oxford: Pergamon Press, 1983); Bowley, The British Building Industry: Four Studies in Response and Resistance to Change, supra, note 11.

[76] Stone, Building Economy, supra, note 75.

engineering, in many instances, are at least as significant as aesthetics to the design decisions of clients who have major building projects. This transformation has been met, in part, by diversification of the design function, with the result that contemporary building projects typically make use of packages of design services, labour and materials supplied by specialists in particular aspects of building technologies[77]. The current role of the architect during the planning phase, therefore, has shifted from pure design development in consultation with the client, to management of a team process. That is to say, architects' traditional responsibility for the basic building concept has been supplemented by the functions of co-ordinating the plans of different designers and managing communications between designers and the client[78].

In addition to their responsibilities with respect to design, architects usually handle the preliminary administration of a project before work begins on the site[79]. This process may involve negotiations with the local planning authority, and will include consulting with the quantity surveyor, organising the tendering process for letting the project and advising the client with respect to the selection

---

[77] Ibid. For development of this point, see the discussion of nominated sub-contractors, infra.

[78] One important question raised by this change is how far architects should remain legally accountable to clients for the quality or performance of the entire building concept which is produced by the team of designers: see, chapter IX, infra, for discussion of this issue.

[79] EDCs for Building and Civil Engineering The Professions and the Construction Industries, supra, note 71.

of a gc and appointments of nominated sub-contractors and suppliers[80].

The architect does not have a formal contractual relationship with any of the building producers. However, JCT80 accords her extensive powers, and sometimes duties, to administer and supervise the Contract Works. The powers are primarily to be exercised on behalf of the client but many of the duties require the architect to make decisions as if she were independent of the client[81]. Architects' authority with respect to decisions involving the gc, and through the gc, its sub-contractors and suppliers, is derived from the working rules of the contract between client and gc. That is to say, the gc's undertaking to ensure construction of the building incorporates a commitment to work within a framework of "direction" and supervision by a project architect[82]. In view of the importance of a good working relationship between project architect and the gc, the premise of JCT80 is that the gc may veto the client's choice of architect to the project[83].

Supervision entails monitoring the performances of input

---

[80] These processes are described more fully in Chapter VII, infra.

[81] This "quasi-judicial" role of the architect, as formulated in Chamberg v. Goldthorpe [1901] 1 KB 624, was originally associated with the view that architects were not legally accountable to clients or gc.s for the manner in which they performed certification duties. In Sutcliffe v. Thackrah [1974] AC 727, the House of Lords laid to rest this fallacy of immunity, and held the architect liable to the client for losses arising from negligent certification, see chapter VIII, infra. At one time it looked as if architects' might also be directly accountable to gc.s for negligent under-certification. Although this avenue of redress may have been closed by recent developments in the area of liability for economic loss in torts, the cost-pass-through mechanism provides a potential means of protecting gc.s' interests and sanctioning architects where improper exercise of certification powers results in loss to the gc.

[82] supra, note 70.

[83] Article 3a & 3b.

suppliers at various stages during the project[84]. The project architect may be required to clarify performance standards and will be expected to verify that contractual standards have been met. In addition, she may be called upon to resolve conflicts between input suppliers over the co-ordination of on-site activity.

As the administrator of a building project, the architect is empowered to direct the gc as to when specific activities should be executed. The architect is also responsible for transmitting information between client and gc and operating the contractual procedures for adapting to contingencies[85].

Formal governance of the relationship between client and architect is based on a contract which is situated in the context of professional norms. Since the Architects' (Registration) Act 1931, the title of architect has been protected and the profession closed to persons who are not registered to practice. Under the 1931 Act the RIBA was the licensing authority, but disaffection with the RIBA led to the creation of the Architects' Registration Council of the United Kingdom (ARCUK) which now performs all licensing functions[86]. ARCUK has powers to discipline those on the register and these powers include the sanction of withdrawal of a license[87]. In

---

[84] Supra, note 70; see also, chapters VIII & IX, infra.

[85] Chapter VIII, infra.

[86] Architect's (Registration) Act 1938; Architect's (Registration) Act, 1969. The Council is made up of representatives from the RIBA, the Incorporated Association of Architects and Surveyors, the Architectural Association and the Association of Building Technicians and representatives of "unattached" architects.

[87] Disciplinary proceedings and their outcomes are reported in the Annual Reports of ARCUK.

addition the professional institutes[88] publish codes of professional conduct, which, in theory, at least, are "designed not only to uphold the dignity and integrity of the professions and to prevent any conflict of interests with professional duty, but also to protect the interests of the public"[89]. To this purported end, the codes regulate conditions of engagement for professional services, the terms on which architects are permitted to compete with each other both before and during a construction project and advertising[90]. The codes also specify the circumstances in which architects may have a business connection with any other parts of the construction or property development industries, and the terms on which architects may adopt corporate status[91].

---

[88] The RIBA, RIAS (Scotland), RIAI (N.Ireland).

[89] Arthur J. Willis & W.N.B. George, in collaboration with Christopher J. Willis & H.P. Scher The Architect in Practice, (London: Granada, 1981) (6th ed.) at 2.

[90] The "public interest" element of such claims is open to challenge: see, generally, The Monopolies Commission, A Report on the General Effect on the Public Interest of Certain Restrictive Practices so far as they Prevail in Relation to the Supply of Professional Services (London: HMSO, 1970); Monopolies and Mergers Commission, Architects' Services: A Report on the Supply of Architects' Services with Reference to Scale Fees (London: HMSO, 1977); The Director General of Fair Trading, The Advertising and Charging Rules of the Professions Serving the Construction Industry, Office of Fair Trading (London: HMSO, 1986); Robert Dingwall & Paul Fenn "'A Respectable Profession'? Sociological and Economic Perspectives on the Regulation of Professional Services" (1987) 7 International Review of Law & Economics 51.

[91] The important prohibition against architects having any financial interest in building firms, supra, was lifted in 1984.

d. The Quantity Surveyor

Quantity Surveyors (QS) are project accountants, responsible for cost-control[92]. Many building firms employ quantity surveyors full-time or on a consultancy basis. With respect to JCT80, however, the only QS who is relevant to the process of building production is the person engaged by the client to monitor financial expenditure during the project[93]. The project QS is normally hired at an early stage in design planning. At this stage the QS's primary role is to assist the client to grasp the production cost implications of the architect's proposals[94]. Upon completion of the design phase of project planning, the QS prepares the Bill of Quantities (the Bill). This document lists the precise quantity of input required for the building(s) defined by the architect's drawings and is sent to all firms who intend to bid for the project.

Once production has started, the QS's general role of cost control is translated into specific responsibilities to measure the Works for valuation. JCT80 expressly requires the QS to assess the cost of any changes to the initial plans on which the gc had based its bid[95] and produce a final

---

[92] See generally, EDCs for Building and Civil Engineering, The Professions and the Construction Industries, supra, note 71; Francis M.L. Thompson, Chartered Surveyors: The Growth of a Profession, (London: Routledge & Kegan Paul, 1968); Dolan, The British Construction Industry, supra, note 47.

[93] As in the case of the architect, appointment of the clients consultant as the QS to the project is expressly made contingent on the contractor's agreement to the candidate: Article 4, JCT80.

[94] Preparing to Build, supra, note 66.

[95] Such changes are governed by Clause 13, the Variations clause of JCT80.

accounting of all such changes and their costs[96]. In other instances, JCT80 empowers the architect to delegate particular tasks of measurement and evaluation to the QS[97]. Under the price variation clauses, for example, the architect may instruct the QS to negotiate adjustments for specified contingencies with the gc. Similarly, the architect may direct the QS to settle contractual claims made by the gc (or a nominated sub-contractor) for disruption caused by events for which the client is contractually responsible.

JCT80 places the QS in a delicate position. In some instances, the QS is expected to negotiate "binding" agreements with the gc on behalf of the client. These agreements fall within the usual scope of a QS's authority as an agent and commit the client to the terms agreed whether or not the client had prior knowledge of the issue[98]. In such situations the QS would be expected to act in pursuit of the client's interests alone. On other occasions, as for example where the gc claims compensation for disruption costs which are caused by a participant for whom the client is contractually accountable[99], the role of the QS is viewed as quasi-arbitral and the decisions of the QS are governed by a

---

[96] Clause 30.6.1.2.

[97] Note that there is no formal contractual relationship between architect & QS.

[98] For example, each of the three alternative fluctuation clauses includes a term which provides for QS and gc to agree how much should be paid to the gc in the event of particular contingencies. This agreement is stated to be "binding for all the purposes of this contract" (the standard JCT formula to preclude arbitration on the issue). As this provision requires the client to accept as binding an irrevocable commitment made without her prior knowledge, one would assume that the QS is expected to act solely in the interests of the client when negotiating with the gc.

[99] Clause 26.

norm of "impartiality"[100].

e. Domestic Sub-Contractors

Domestic sub-contractors (dsc) are engaged by the gc. Some dsc's supply a combined package of labour resources and materials inputs, others are engaged solely for the purposes of obtaining labour[101]. JCT80 constructs dsc.s as a means for the gc to fulfil its contractual undertakings to the client. Selection of dsc's and the terms of their sub-contracts, for example, are treated as issues for the gc and dsc alone[102]. The gc is responsible for co-ordinating the activities of a dsc, accountable to both client and affected nominated sub-contractors for any delay or disruption caused by dsc.s and answerable to the client for the quality of input which is supplied by dsc.s.

---

100 Sutcliffe v. Thackrah, supra, note 81.

101 There is nothing in JCT80 to distinguish between the traditional domestic sub-contractor which specialises in a particular building trade (carpenters, glaziers etc.) and the contemporary phenomenon of labour-only-sub-contracting. In economic terms, however, there are important differences between these two forms of sub-contractor. The traditional sub-contractor is the inheritor of the craftsmen of the building industry, and may be explained in terms of conventional division of labour arguments. The interesting point to recognise is the relative decline in their power and prestige under the organisational innovations of the Contracting System: Port, "The Office of Works and Building Contracts in Early Nineteenth-Century England"; Leeson, Travelling Brothers, supra, note 13. The Labour-Only-Sub-Contractor, by contrast, by contrast, is a recent phenomenon which has developed as a means for gc.s to avoid the costs of employing a permanent workforce: see Ball Rebuilding Construction, supra, note 11, especially, chapter 11.

102 Note that although the client does not have the explicit contractual power to object to the identity of a dsc selected by a gc, the client, through the architect, may veto the use of a dsc for a part of the Works. See chapter VII, infra, for analysis of the contractual veto powers.

f. Nominated Sub-Contractors

Nominated sub-contractors (nsc.s) are a distinct class of specialist input suppliers, selected by clients or consultants to produce particular components of the finished building. Their role in building production evolved as a means of enabling clients to add distinctive details to the basic carcass of a building. Historically, nsc.s were finishing craftspersons who might specialise in external facings or interior fittings. Under the traditional Contracting System nsc.s would be brought into a project during the final stages of construction and the gc would direct the specialist's operations as part of its ordinary functions of management and co-ordination. While clients might have attached great importance to the identity of a nominee, the input supplied under a nominated sub-contract was of the same kind as that supplied by the gc - labour, materials and assembly services[103].

Within this model, integration of the nsc into the building transaction was quite straightforward. Clients, at the time of tendering for a gc, would signal their intention to use a nsc for a defined portion of the project by labelling relevant entries in the Bill "prime cost" items. This designation operated as an instruction to tenderers to ignore

---

[103] Ian Duncan Wallace (ed.). Hudson's Building Contracts and Engineering Contracts: Including the Duties and Liabilities of Architects, Engineers and Surveyors (London: Sweet & Maxwell, 1970) (10th ed.).

these items when preparing their bids. Upon entering into the main contract with the client, a gc implicitly committed itself to procure the labour and material components of the prime cost items by way of sub-contracts with specialists nominated by the client. Once production had reached the stage when the prime cost work was imminent, the client would decide upon the identity of the specialist and make the nomination. The gc and the nominee would then negotiate the terms of their contract.

Traditionally, this transaction between gc and nsc constituted the only connection recognised in law between the nsc and other participants in the project. The formal scheme of nominated sub-contracting, therefore, meant that gc.s who did not participate in the decision to use a nsc, nor in selection, were linked to the specialist by means of a package of contractual rights and obligations negotiated "in the shadow of" the nomination. Whereas the relationship between the specialist and the appointing client was not viewed as a source of any rights or obligations.

The modern function of nominated sub-contracting on many building projects is quite different. Nomination is used as a means of integrating suppliers of specialised building technology and engineering services into the design and execution of a building project[104]. Nsc.s frequently supply a

---

[104] Ibid; see also, Stone, Building Economy: Design, Production and Organisation, supra, note 75, for discussion of the increasingly important role of technological expertise in building production.

package of input which includes project-specific design as well as materials components and labour resources. The input of contemporary nsc.s may be an integral part of the basic building carcass, and their work on-site may commence at an early stage in a gc's programme, or even before a gc is appointed. Selection of the specialist is often made by the architect or another technical consultant to the client and the overriding consideration when making the choice is likely to be cost and technical competence rather than aesthetics[105].

The use of the traditional machinery of nomination to integrate this new breed of engineering specialists into building production has generated governance problems. In particular, the extensive involvement of nsc.s in structural aspects of building production has exposed weaknesses in the contractual regime for maintaining accountability of nsc.s for the quality of inputs and the timing of their operations on the site. The theory which underpinned the JCT's traditional structure of governance assumed that the client's interests in the performance of a nsc would be protected by the use of the gc as a conduit or cost-pass-through mechanism. By 1980, however, a series of judicial decisions had destroyed the conceptual foundations of this approach[106].

---

105 Ibid.

106 See, for example, Gloucestershire County Council v. Richardson, [1969] 1 AC 480 (discussed in chapter IX, infra); T A Bickerton v. North West Metropolitan Hospital Board [1970] 1 WLR 607 (discussed in chapter VIII, infra). For a contemporary example of the same tendency in judicial decision-makers, see John Jarvis Ltd. v. Rockdale Housing Association Ltd. (1987) 3 Construction Law Journal 24.

The judges' hostility to the cost-pass-through mechanism in the context of specialist input suppliers was based on a perception that the machinery of nomination gave the gc very little freedom to negotiate the terms on which it engaged the nsc[107]. It was thought that gc.s might be "trapped" into sub-contracts in which a specialist defined its liability in a much more restrictive fashion than the gc's liability to the client under the terms of the main contract[108]. Courts refused to hold gc.s presumptively accountable to clients for the failures of nsc.s because they believed that gc.s would be unable to pass the costs onto the party at fault. The consequence of these decisions was to establish a zone of freedom from liability for specialist input suppliers. Nsc.s

---

[107] Judicial empathy with the "plight" of the gc appears to be based on an assumption that the machinery of nominated sub-contracting is intended to benefit the client exclusively. In T A Bickerton v. North West Metropolitan Hospital Board, for example, Lord Reid described nominated sub-contracting as:

> an attempt to achieve two objects which at first sight might seem incompatible. The employer wants to choose who is to do the prime cost work and to settle the terms on which it is to be done, and at the same time to avoid the hazards and difficulties which might arise if he entered into a contract with the person whom he has chosen to do the work.

[1970] 1 WLR 607 at 611f-g. Similarly, Parker LJ., in Fairclough Building Ltd. v. Rhuddlan Borough Council, after concluding that part of the loss due to the withdrawal of a nsc ought to be borne by the client states:

> In the result the employer will suffer a loss but ... there is no reason why he should [not]* do so if the contract contains no protective provision. It is he who has chosen the sub-contractor who first did the defective work and then quit the site leaving the contractor no remedy for any delay resulting from the need to find a replacement so long as the delay is not unreasonable.

(1985) 3 Construction Law Reports 38 at 49.
[* this rather crucial word is omitted from the text in the Construction Law Reports version of the judgment.]
Against this position, it might be argued that nominated sub-contracting is of substantial benefit to gc.s. Gc.s are not only relieved of responsibility for production of those aspects of the building which have been assigned to nominated sub-contracting, but are also paid a profit component for the work of nsc.s, see Ian Duncan Wallace, Construction Contracts: Principles and Policies (London: Sweet & Maxwell, 1986) paras. 21-31 to 21-33, for discussion of this aspect of project financing.

[108] See, for example, Gloucestershire County Council v. Richardson [1969] 1 AC 480. (Nb. the specialist in this case had been designated a "nominated supplier" although its role in the project - supply, assembly and fixture of concrete columns on the site - was better suited to the framework of governance intended for nominated sub-contractors).

would not be directly accountable to clients because of the lack of a contractual relationship[109], and their liabilities under the contract with a gc would never be activated because, in the absence of the gc's liability to the client, the gc did not suffer any damage from breach.

The argument that a gc should not be answerable to a client for breaches by a nsc is apparently based on the premise that contracts between client and gc, and between gc and nsc, are to be treated as discrete transactions. Viewed from this perspective, the rights of the gc against the nsc and the obligations of the gc to the client are components of independent relationships. It is important to recognise, however, that the rationale for treating the transactions as distinct is grounded on their shared context. That is to say, the contemporary practice of the courts has been justified on the basis that the relationship between client and gc inhibits the gc's ability to secure adequate protection in its contract with the nsc. This interpretation of the relationship between client and gc as a limitation on the contractual freedom of the gc in its negotiations with the nsc is by no means inevitable. In Mitchell v. Guildford Union[110], for example, Phillimore J. recognised that the transaction between a gc and

---

[109] For a very brief period of time, the House of Lords' decision in Junior Books Ltd. v. Veitchi Company Ltd. [1983] 1 AC 520, appeared to offer a solution to this dilemma. However, the precipitous retreat from tortious liability for economic loss suggests that there remains little scope for the client to bring a direct action in negligence against a nominated sub-contractor: but see, note 116, infra.

[110] (1904) 68 JP 84.

a nsc was connected to the contract between client and gc. However, he situated the gc's obligation to contract with a nsc in the context of a common law norm of reasonableness[111]. According to his view of the machinery of nomination:

> the plaintiff [general contractor] and the plaintiff alone was to make the sub-contracts with these specialists, and it was his business and his business alone to protect himself by making proper contracts with them. If the specialists had made unreasonable terms of payment, or other unreasonable terms, the plaintiff would not have been bound to contract with them. His contract with the building owners was that he should make ordinary and reasonable contracts with the specialist sub-contractors[112].

A second problem which has arisen from the extension of the nomination machinery to engineers and other specialists in building technology is that these actors supply a form of input - design services - which is not part of the gc.'s responsibilities to the client. In this context the mechanism of using the gc to channel liability for the input of a nominated sub-contractor breaks down because the gc is not

---

111 See chapter VII, infra, for analysis of the contractual veto powers afforded the gc under JCT80.

112 Supra, at p.85 (emphasis added). Reliance on a working rule that the terms of a nominated sub-contract should be "reasonable" may appear to be less feasible in transactions where specialists are appointed, and may begin work, before the contract between client and gc is finalised. In this context it seems much more difficult to argue that a gc would be able to exercise its "freedom" not to contract. It is important to recognise, however, that "contract" is not the only basis on which common law forms links between economic actors. One might argue, for example, that gc.s should retain their power not to contract on unreasonable terms, and in the event that it does not reach agreement with a specialist the relations between client and specialist should be regulated according to the "working rules" of reliance and restitutionary obligations: see, for example, the arguments that were accepted in Junior Books v. Veitchi, supra, note 109 and British Steel Corporation v. Cleveland Bridge and Engineering Co Ltd [1984] 1 All ER 504. Naturally, there would be costs associated with using either of these approaches to govern faulty execution of complex transactions. The point, however, is that there is no solution to the problem which is costless. If a reliance or restitutionary approach would increase the accountability of a specialist supplier, and this goal is believed to be important, then it might be preferable to the "gaps" and zones of freedom generated by contractual theory.

accountable to the client for a critical component of the nsc's package of inputs. As the main contract has no provision for design liability, the client cannot bring a contractual action against the gc for design failure in the work of a nsc. The gc who could potentially use legal sanctions as a remedy for designs which do not meet the contractual standard again has no incentive to do so as it is not harmed by the breach.

In an attempt to restore the integrity of the governance structure, the JCT has modified its commitment to the use of "cost-pass-through" as the exclusive mechanism for integrating nsc.s into building transactions. The 1980 version of the main form of contract includes standard forms of nominated sub-contract to govern the relationship between gc and nominated sub-contractor, and a standard form of collateral contract between client and nsc[113].

g. Hybrid Sub-contractors

In 1980 the JCT incorporated a third type of sub-contractor into the governance structure of the main form of contract. These "hybrid" sub-contractors are described as domestic sub-contractors, but are to be chosen from a list of at least three names "in or annexed to" the Bill of Quantities[114]. The work to be carried out by the sub-contractor

---

[113] This change pre-empted the decision in Junior Books v. Veitchi, supra, note 109: see, generally, chapter IX, infra.

[114] The appointment of these sub-contractors is governed by clause 19.3.

is priced in the usual way by the gc who has sole discretion to select from the list. Both client (architect) and gc are entitled to add names to the list at any time before the execution of a binding sub-contract[115]. If the list falls below three names before a sub-contract is agreed, the parties have two contractual options. Either client and gc may agree to add more names, or the work may be done by the gc who is free to sub-contract in the ordinary way.

h. Nominated Suppliers

Nominated Suppliers are specialist manufacturers who supply materials to a construction project. As in the case of specialist sub-contractors, the decision to use a nominated supplier is taken by the client or architect and the machinery of appointment is operated by the architect. JCT80 has chosen not to institutionalise a collateral arrangement between clients and nominated suppliers. Thus, these participants are integrated into the transaction through a contract with the gc alone.

The operative premise of this contractual governance regime - that the gc will function as a liability channel - again raises the issue of ensuring consistent contracts[116].

---

[115] All additions proposed by one party are subject to the other's power to veto on reasonable grounds: clause 19.3.2.1, see chapter VII, infra, for discussion of the veto powers in general.

[116] In Simaan v. Pilkington [1988] 1 All ER 791, Bingham LJ left open the possibility that clients might use the tort of negligence to enforce quality terms directly against a nominated supplier (Conclusion 4 at p.803b). Despite the unremitting hostility of Appellate courts to the Junior Books

The working rules of JCT80 empower gc.s to veto nominations unless the nominee is willing to include in its contract of sale a set of stipulated conditions governing the suppliers liability for the quality of its products and the timing of delivery[117].

i. Local Authorities and Statutory Undertakers

These participants have identical relationships with the primary contracting parties. Their participation in a building transaction is driven by primarily by statutory obligations and powers rather than by contract with client or gc[118]. Utility Suppliers connect the site to network services such as water, sewerage, electricity and gas mains while Local Authorities function primarily as regulatory agencies with powers over planning and qualitative dimensions of buildings[119].

---

decision, some of the comments made in Murphy v. Brentwood District Council [1990] 3 WLR 414 indicate that Junior Books may potentially be used by clients against nominated suppliers. Lord Keith, for example, suggested that Junior Books might be seen as an application of the reliance principle developed by the House of Lords in Hedley Byrne & Co. v. Heller & Partners Ltd ([1964] AC 465), the sole surviving basis of liability for "pure" economic loss (at 427H). Similarly, Lord Bridge was prepared to acknowledge that under some circumstances it may be possible for clients to show that there is sufficient reliance on a building producer that the producer may owe a duty to avoid causing economic loss to the client (at 441E).

[117] Clause 36.4, see chapter VII, infra, for discussion of the contractual veto powers.

[118] Clause 6.3 establishes that neither agency is to be regarded as a sub-contractor to the gc while engaged solely in pursuance of statutory duties. If, however, their presence on a site is only partially governed by the statutory power or duty, the agency may be integrated into production, at least in part, by means a sub-contract of some type.

[119] The Building Act 1984 c.55, enables "privatisation" of the building inspection process which monitors compliance with the building regulations. The Local Authority retains a "default" jurisdiction over such inspections, and is also responsible for approval of plans. It is interesting to note that although the House of Lords has recently eliminated the common law route to a sanction against Local Authorities for negligence in the execution of their monitoring functions (Murphy v. Brentwood District Council, supra, note 116), s. 38 of the Building Act, provides that breach of a duty imposed by building regulations is actionable, in so far as it causes "damage", except where the

The participation of utility suppliers in process of building production raises the issue of the integration of their activities into the programme of the Works. Smooth co-ordination of on-site operations may be difficult to maintain in the absence of a contractual nexus between the statutory body and the parties to the standard form contract. As gc.s do not have the contractual authority to direct this class of suppliers, they are compelled, in effect, to accommodate the activities of the statutory body.

JCT80 responds to the problem of managing the interaction of statutory bodies with other participants by providing for adjustment of the contractual time constraint if the gc.'s progress is disrupted by the actions of a statutory supplier[120]. That the contract does not allocate the entire cost of disruption to the client, however, is indicated by the working rules which do not afford the gc a contractual claim against the client for the consequential costs of adaptation[121].

The standard form contract also recognises the regulatory functions of local authorities and other statutory bodies. Gc.s have specific contractual duties to ensure that input conforms to regulatory standards and comply with relevant

---

regulations provide otherwise.

[120] Clause 25.4.11. For analysis of the extension of time machinery, see, chapter VIII, infra.

[121] Ie. disruption caused by statutory suppliers is omitted from the clause 26 provisions: for discussion of the manner in which clauses 25 and 26 work in tandem to effect allocations of risk, see, chapter VII, infra.

statutory procedures[122]. In the event of "divergence" between regulatory requirements and the standards which were specified in the contractual documents on which the gc had based its bid, the gc is entitled to full compensation for any additional costs entailed by compliance with the statutory requirements[123].

j. Direct Employees of the Client

Clients sometimes use direct engagement as a means of procuring the type of "finishing" input which was traditionally integrated into building production by way of the nomination machinery. Directly engaged suppliers may, for example, provide landscaping services, exterior decoration, or distinctive interior fittings.

The integration of this class of input suppliers into a transaction governed by JCT80 is based on the premise that direct engagement by the client is equivalent to domestic sub-contracting by the general contractor. Clients, therefore, are wholly accountable to gc.s for all co-ordination and organisational costs which flow from the participation of these suppliers. This structure of responsibility is maintained by granting gc.s an extension of time and a financial claim against clients for any disruption to the

---

[122] Clause 6.1.

[123] Clauses 25, 26, and 13.

programme which is caused by suppliers who are directly engaged by clients[124]. Moreover, the gc is afforded contractual power to withhold consent to direct engagement unless the client's decision to use such suppliers for a defined portion of the Works had been clearly signalled in the Bill of Quantities[125].

3. Summary of the Allocation of Tasks within Transactions Governed by JCT80

With respect to the issue of transactional governance, the critical relationships of JCT80 concern the consultants to the project, the general contractor and nominated sub-contractors. Construction projects governed by JCT80 are based on the premise that site selection and decisions about design will have been made before the primary producer - the general contractor - is appointed. Design planning decisions are made by clients on the basis of information produced by professional and technical advisers. Upon completion of design planning, the class of advisers to the client splits into two categories. Suppliers of engineering expertise may have further contractual responsibilities for assembling materials

---

[124] Clauses 25.4.8.1 & 26.2.4.

[125] Clause 29 of the conditions, the basic enabling clause, gives two alternative procedures for direct hiring. The gc is "required to permit the execution of the work" so long as the client had signalled her intention to make separate arrangements in the Bill and given sufficient information about the proposed duties of the direct labour to enable the gc to continue with its own contractual performance. If, on the other hand the client does not make up her mind until production is underway she must obtain the gc's express consent to the hiring of direct employees.

and supplying labour to execute defined portions of the project. They engage in building production as nominated sub-contractors and their participation is governed primarily by the terms of a sub-contract with the gc, and to a lesser extent, by a collateral contract with the client. The second group of design consultants is comprised of two actors - the architect and the quantity surveyor. Both consultants have responsibilities for administrative and supervisory tasks during building production and each participates in the project by virtue of a contract with the client alone.

The process of production on-site involves procurement of labour resources and materials, and organisation of the deployment of labour in the assembly of material inputs. General contractors are wholly accountable to clients for obtaining materials and the services of workers for those parts of the project which they have undertaken to produce and partially answerable for the work of nominated sub-contractors. In addition, the gc is responsible for the co-ordination of supplies and assembly of inputs, subject to the direction and supervision of the client's consultants, in the building operations which are not executed by nsc.s or contractors directly engaged by the client.

Nsc.s, in their role as building producers, have a parallel responsibility to that of the gc for obtaining and organising the resources required to produce "prime cost" components of the finished building. As in the case of the gc,

their work is subject to direction and supervision by the consultants. Accountability to clients for the quality of the nsc's performance is partly direct and partly channelled through the client's contract with the gc.

In effect, JCT80 institutionalises a complex combination of overlapping and discrete areas of responsibility for the tasks involved in building production. As is shown in figure 3, general contractors, specialists and advisers supply similar types of input to the finished product, albeit in different packages. Conflicts between different classes of resource suppliers are managed by contractual instruments which promote horizontal separation between production operations and hierarchical patterns of decision-making authority.

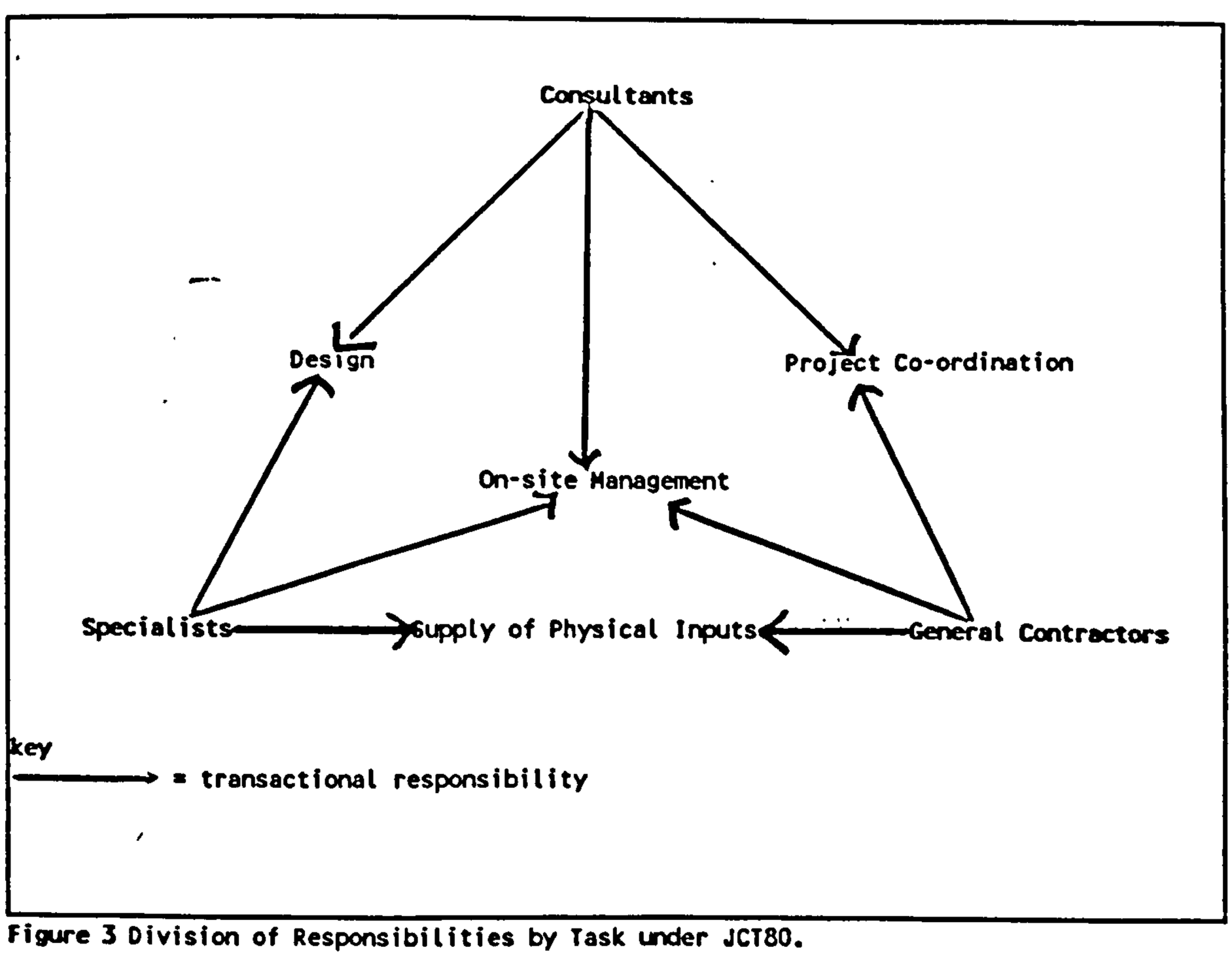

Figure 3 Division of Responsibilities by Task under JCT80.

Chapter VII Planning

This chapter explores the transaction cost implications of the process of contractual planning embodied in the Joint Contracts Tribunal Standard Form of Building Contract (1980 edition) (JCT80)[1]. Consistently with our interest in the use of contractual forms to govern economic activity, the analysis focuses on the organisation of decisions about engaging in building production. Our discussion develops two main points. First, it is argued that distinctive features of the planning process under JCT80 are means of managing uncertainties that arise from the interactive nature of building production, its time-scale and locational specificity. The procedures that are used in planning to build may in this sense be viewed as responses to the transaction costs of organising construction. In the development of this argument, it will be seen that the working rules of contractual planning institutionalise particular patterns of decision-making authority which have their own organisational consequences. The manner in which transactions governed by JCT80 are planned, therefore, may also be seen as a source of transaction costs.

The discussion is divided into four sections. Part A is an overview of the model of contract planning which is contained in JCT80. This section describes the four main

---

[1] The contract itself says little about some important aspects of contractual planning. However, its terms are based on a set of premises about the process by which the parties have arrived at the stage of contract execution. It is these premises which are under scrutiny in this chapter.

components of transactional planning: product specification, selection of building producers, transaction-specific planning of the relationship between client and general contractor (gc) and the standard Conditions of Contract. Parts B and C focus on the management of uncertainties in contract planning. In part B, I use the tools of transactional economics to analyse three specific aspects of planning for building production: the Bill of Quantities, the participant selection processes and the contractual techniques for managing risks. Part C explores the implications of the structural separation between design and production embedded in the Contracting System and institutionalised within JCT80. The concluding section locates the formal system of contract planning on the contracting continuum.

A. The Institutional Structure of Contract Planning

1. Product Planning and the Selection of Building Producers

a. Design Planning

Definition of the subject matter of a building contract entails decisions about the size, cost, quality and location of the finished product. At a general level such decisions are constrained by public regulation of land-use and building

quality[2]. More specifically, product planning is shaped by the intended use of the building(s), availability of materials and labour input, building technology, and clients' access to financing.

Within the framework of the possible and permissible - as defined by financial and institutional constraints - the transformation of a site into a useable building entails a number of conceptual decisions which are to be made before production begins[3]. JCT80 is based on an assumption that issues such as the quantity and quality of material inputs, size and spatial dimensions of the buildings, and design implications of the relationship of individual parts of the building to the whole, are resolved before the builder is selected. This phase of planning is largely orchestrated by consultants to the client who make use of expertise in building design and technology, project appraisal and financial control in the production of transaction-specific plans. Decision-making is driven by clients' needs and preferences, and constrained by potential production costs.

Product planning culminates in the formulation of detailed technical drawings of the clients' choice of building design and an itemised description of labour and materials resources. This latter document - the Bill of Quantities - is

---

[2] See, for example, the Building Regulations 1985 and the Defective Premises Act 1972.

[3] Helpful models of the ideal planning process can be found in Ministry of Public Building & Works, Preparing to Build: R&D Building Management Handbook, (London: HMSO, 1965); EDCs for Building and Civil Engineering, Before You Build, NEDO (London: HMSO, 1974); EDC for Building, Faster Building for Industry, (NEDO) (London: HMSO, 1983).

produced by a Quantity Surveyor who "measures" the product as defined by the architect's drawings in accordance with a standardised formula[4]. In theory, at least, the information contained in the Bill of Quantities is a complete statement of the inputs required to translate the conceptual representation of a project into the reality of a working building.

b. Selection of Building Producers

Appointment of the gc follows after completion of the design phase and clearance from regulatory bodies. Gc.s in projects governed by JCT80 are normally selected on the basis of a tendering process, the foundations of which were laid during the early years of the Contracting System[5].

Traditionally, the tendering process was open to any gc who chose to make a bid. Clients would issue a general call for offers and make their decision primarily on the basis of price. By the middle of the twentieth century it had become clear that the system of full competitive tendering was unsatisfactory. It was attacked on the grounds that the

---

[4] Clause 2.2.2.1 of JCT80 incorporates the premise that the designs were measured in accordance with the Standard Method of Measurement of Building Works 6. Standardisation in the basis on which building work is measured was first agreed between builders and quantity surveyors in 1922. This schedule of work categories an unit measurements is periodically revised an up-dated by the Standard Method of Measurement Development Group: see, Dennis F. Dolan, The British Construction Industry - An Introduction (London: Macmillan, 1979) and Patricia M. Hillebrandt, Analysis of the British Construction Industry (London: Macmillan, 1984). For critical commentary on the concepts underlying this type of measurement, see Ian N. Duncan Wallace, "How Much Measurement?" (1987) 3 Construction Law Journal 3.

[5] Supra, chapter VI.

duplication of effort by several contractors preparing bids that had no chance of success inflated building costs. More seriously, it was apparent that competition alone could not ensure acceptable standards of building production. The Simon Report of 1944, for example, concluded that while indiscriminate tendering may generate low prices it was also associated with bad building and lower standards of honesty and craftsmanship within the construction industry[6].

The Simon Report was the first of a series of critical public reports on contract procurement and management within the construction industry which recommended reform to the practice of open competitive tendering[7]. The primary modification which has been adopted relies on pre-screening to create a short list of potential gc.s thought capable of meeting a client's requirements of competence, local knowledge of the market for input suppliers, availability and financial security[8]. All building firms in this relatively small group are invited to compete for the project.

---

[6] Ministry of Works, The Management and Placing of Building Contracts: Report of the Central Council for Works and Buildings to the Minister of Works (the Simon Report), (London: HMSO, 1944).

[7] See, for example, Ministry of Public Building and Works, Report of the Committee on the Placing and Management of Contracts for Building and Civil Engineering Works (The Banwell Report) (London: HMSO, 1964); Ministry of Works, Survey of Problems Before the Construction Industries (The Emmerson Report) (London: HMSO, 1962); EDC for Building, Action on the Banwell Report, NEDO (London: HMSO, 1967); EDCs for Building and Civil Engineering, The Public Client and the Construction Industries (The Wood Report) NEDO (London: HMSO, 1975).

[8] These screening variables are all contained in the code of practice for selective tendering developed by the JCT: JCT Code of Procedure for Selective Tendering.

Those invited to tender submit a lump-sum bid for the entire project as defined by the drawings and the Bill of Quantities. In general, clients are not under any legal obligation to accept the lowest bid[9] and as offer prices vary for a number of reasons, there may be circumstances where the job does not go to the lowest bidder[10]. However, to the extent that selective tendering is based on the premise that quality concerns are addressed through screening, bids are likely to be evaluated primarily on the basis of price.

Before final acceptance of an offer from the client's first choice, the successful bidder is required to supply a priced copy of the Bill of Quantities (the Bill) in which unit rates are given for every item listed[11]. Clients, together with their consultants, review the completed Bill for errors and omissions and to ascertain individual prices for each input[12]. Under the institutional structure of JCT80, acceptance of a tender denotes that client and gc concur on two aspects of price. First, that the gc will supply individual inputs in

---

[9] Spencer v. Harding (1870) LR CP 561. Note that clients may be under a duty to accept the "best" offer, defined by price, if the tender documents contained such a promise: William Lacey (Hounslow) Ltd. v. Davis [1957] 1 WLR 932, see discussion at 939; Harvela Investments v. Royal Trust Co. of Canada (CI) Ltd [1985] 1 All ER. 261.

[10] Stone suggests a number of reasons for significant variations between tender prices:
a) differences in the efficiency and therefore in the costs of the building firms;
b) differences between firms in terms of the importance of the project to their programme of work: a new entrant, for example, may under-price in order to establish itself in the industry or location;
c) different perceptions of the technical demands of the project;
d) ineffective screening;
e) opportunism - as where a firm puts in a low bid with the intention of inflating the contract price during production.
Peter A. Stone Building Economy: Design, Production and Organisation - A Synoptic View (Oxford: Pergamon, 1983) (3rd ed.) at 121; see also, Michael Ball, Rebuilding Construction: Economic Change in the British Construction Industry ((London: Routledge, 1988) at 86-9.

[11] JCT Code of Procedure for Selective Tendering, supra, note 8.

[12] Ibid.

the quantities and qualities stated in the Bill for the unit prices submitted. Secondly, the parties agree that the "lump-sum" bid is the total contract price for the project as defined by the documents upon which the offer was made[13].

Formal responsibility for selection of input suppliers is split between the successful bidder who becomes the gc and the client. In practice, many of the client's decisions are based on recommendations made by the architect or other design consultants.

Gc.s choose skilled and unskilled suppliers of labour for assembly work on and off-site, off-site suppliers of non-specialised material components, and organise supplies of transportation and plant. Preliminary decisions on many of these matters will have been made before the tender bid was submitted in that gc.s' offers are typically based on information obtained through canvassing the market for resource inputs[14]. In view of the gc.'s contractual obligations to the client, the reliability of this information is entirely a matter for the gc[15].

Under JCT80 the sole restriction on the gc's authority to select input suppliers lies in the architect's power to

---

[13] By virtue of article 2 the offer price becomes a specific term of the contract - the Contract Sum. The Bill of Quantities, containing the unit prices is annexed to the standard terms and becomes a "Contract Document": clause 2.2.1.

[14] See Richard Lewis "Contracts between Businessmen: Reform of the Law of Firm Offers and an Empirical Study of Tendering Practices in the Building Industry" (1982) 9 Journal of Law and Society 153 for an insightful study of the manner in which gc.s organise their "pre-contractual" relations with potential sub-contractors so as to obtain vital information without incurring legal obligations.

[15] Ibid.

withhold consent to the use of any domestic sub-contractor for a defined portion of the project. The power of veto cannot be exercised on the basis of the identity of a sub-contractor, and its use to prevent sub-letting of a particular section of the Works is subject to a contractual norm of reasonableness[16].

Specialist suppliers of inputs are selected by the client or architect. The gc does not participate in the decision to use specialists and it has no contractual authority to oppose this decision. The gc may, however, legitimately refuse to enter into a contractual relationship with a nominated supplier who does not agree to terms that are consistent with the gc.'s liabilities to the client[17], and, on reasonable grounds, veto the appointment of particular nominated sub-contractors[18].

2. Transaction-Specific Planning of the Relationship between Client and General Contractor

Despite the comprehensive character of the standard form contract, the adoption of JCT80 to govern a particular transaction entails some project-specific planning between client and gc. The Articles of Agreement require the parties to set out basic definitional arrangements, such as the

---

[16] Clause 19.2.

[17] Clause 36.4.

[18] Clause 35.4.1.

contract price; identify the documents which were used during tendering and are to be incorporated into the transaction as "Contract Documents"; and select the project architect and project quantity surveyor.

In addition, client and gc are expected to make a number of transaction-specific decisions which connect the particular project to the procedures contained in the Conditions of Contract. For example, the "Date for Completion", as specified in the Appendix, designates the initial time constraint for the gc's work on the site. In the absence of a transaction-specific provision, contractual procedures such as the extension of time machinery or the client's right to compensation for delay, would be inoperable[19]. Parties' failures to make other administrative decisions may have less severe consequences. JCT80 provides for default positions in the event that client and gc do not make explicit plans for matters such as escalations in input costs, the timing of instalment payments, and insurance of the project during production.

As JCT80 is based on the premise that binding decisions about qualities and quantities of inputs, together with price, are made when the bid is accepted, the only outstanding matter

---

[19] For example, in Temloc Ltd v. Errill (1988) 4 Construction Law Journal 63, the Court of Appeal held that where client and gc had specified that the agreed damages sum was to be NIL, the client could not bring any contractual sanction against delay, not even an action for unliquidated damages. See chapter VIII for discussion of the extension of time machinery and chapter IX for analysis of the liquidated damages sanction.

to be finalised after acceptance is timing[20]. Within the constraints established by the Date of Possession and the Date for Completion, the gc has considerable autonomy over the pace of production. In contrast to the planning of quantities and price, where the total figure is broken down into its constituent parts and the parties' agreement governs aggregate and component terms, the time constraint of JCT80 is based on a "lump" specification only. Gc.s undertake to complete the project works by the stated date but do not commit themselves to meeting interim targets.

However, this unilateral authority to determine timing and programming is subject to the condition that gc.s communicate their plans for the timing of production. JCT80 requires gc.s to provide the architect with copies of a "master programme" of the Works, a document which details inputs of time for each stage of the project[21]. The master programme is to be given to the architect at the earliest possible date after the execution of the contract[22], and any changes made in the light of the architect's decision to revise the Completion date are to be communicated within 14 days of the decision[23].

---

[20] Industry models of good building practice all assert that even if clients are unable to incorporate start and completion dates into the documents on which prospective gc.s bid, expected duration should be addressed as part of the tendering process: JCT Code of Procedure for Selective Tendering, supra, note 8; Faster Building for Industry, supra, note 3.

[21] The master programme is expressly stated not to impose any obligation beyond those imposed by contract documents (clause 5.3.2.) and thus it would appear to be significant mainly for information and contract administration.

[22] Clause 5.3.1.2

[23] Ibid.

3. Standard Conditions of Contract

The standard Conditions of contracts drafted by the JCT enable participants in building production to avoid the costs of creating transaction-specific private rules to regulate their economic relationships. These "working rules" of building projects incorporate procedures for directing, adjusting and supervising production and managing conflicts together with substantive norms which allocate responsibility for activities and risks. Taken as a whole, the Conditions of Contracts, Articles of Agreement, Appendix, Contract Drawings and the Bill purport to be a complete formal system for governing the production phase of a building project.

With respect to the planning decisions defining "who-does-what-where-when-and-how", JCT80 holds gc.s accountable to clients for completion of the Works in conformity with the Contract Documents, on or before the date specified in the Appendix and for the price stated to be the Contract Sum[24]. Gc.s are also required to comply with Instructions issued by the architect that are expressly empowered by the Contract Documents[25] and afford the architect reasonable access to the project and to off-site locations where preparatory work is

---

[24] Clause 2, clause 14, and clause 24.

[25] clause 4.1

carried out[26]. Finally, gc.s must contract with sub-contractors and suppliers nominated by the architect or client unless they have reasonable grounds to object to the identity of a nominee[27].

Clients' primary contractual responsibilities are to ensure that the gc has adequate access to the site[28], and promptly to pay in accordance with the contractual arrangements for instalments[29]. Clients are also answerable to gc.s for the manner in which the project consultants exercise their management powers, any changes to the original project specification, and disruptions to the operations of gc.s that are due to performances, or performance failures of the clients' appointees[30].

Responsibility for project management is divided, in a hierarchical fashion, between the gc and consultants to a project. A gc's undertaking to complete the Works entails procuring supplies of the inputs specified in the Contract Documents and co-ordinating the activities of those engaged in on-site assembly. However, execution of these tasks is, to some extent, subject to the direction and supervision of the

---

[26] Clause 11.

[27] Supra, notes 17 & 18.

[28] As from the Date of Possession stated in the Appendix.

[29] See generally clause 30, see, in particular, clause 30.1.1.1.

[30] Within the framework of JCT80, clients' accountability is maintained by the simple device of permitting gc.s' to claim adjustments to the existing terms governing price and time and as a last resort to terminate the contract. For the adjustment provisions see clauses 13, 25, 26, discussed in chapter VIII, infra. For the termination provision, see clause 28.

architect[31]. The project architect is empowered, and sometimes required, to issue instructions in a range of circumstances[32]. Architects are also authorised to monitor the quality of inputs, demand changes in the event that defective or non-conforming inputs are discovered, and certify the progress of the Works[33].

The standard conditions governing risk-management reflect objectives derived from three normative regimes. "Exogenous" events, which may be anticipated in advance but are not controllable by any participant (such as disturbances in the physical or economic environment of the transaction) are primarily handled by cost-sharing between client and gc. By contrast, the costs of disruptions which are (or are deemed to be) caused by the decisions or activities of a participant are presumptively allocated entirely to the client or gc, on the basis that, where necessary, the costs will be passed on to the relevant actor. Finally, the risk of physical injury to persons, or damage to property arising out of the execution of the project is managed by the loss-spreading instrument of insurance[34].

---

[31] As noted in chapter VI, supra, and discussed more fully in chapters VIII & IX, infra, the boundaries between architects and gc.s' duties of co-ordination and supervision are hard to define in contractual language.

[32] See Chapter VIII, infra.

[33] See chapter VIII, infra.

[34] JCT80 requires the gc to maintain adequate insurance for its obligation to indemnify the client against liability for personal injury, death, or damage to any property apart from the Contract Works or materials that are on the site (Clauses 20.2 & 20.3.1.). Physical damage to the building structure during construction or to Site Materials is to be insured against by client or gc, according to the planning decision that was made during formation and stated in the Appendix).

Implementation of the contractual regimes of precautionary and cost-sharing management of disruptive events is complicated by the lengthy and interactive nature of building transactions. Neither ex ante pricing, nor ex post adjustment is ideally suited to such transactions. Whereas the time-scale of building production and the range of potentially disruptive events raise doubts about the potential accuracy of the former strategy, the polycentricity of building production exacerbates the administrative and co-ordination costs of using adjustment[35]. Moreover, with respect to precautionary goals, accountability for disruptions caused by a "non-party" participant may be impeded by inconsistent contracts that block the "cost-pass-through" mechanism[36].

JCT80 compromises the problem of strategy by combining classical contractual techniques of ex ante allocations of risk with relational strategies of revision after the event has occurred. Precautionary incentives are maintained by holding gc.s strictly accountable for the timing of production, price, and exact compliance with the Contract Drawings and Bills, except in so far as the Condition provide for adjustments. The only events which are to be wholly excluded from the gc.s' ex ante pricing decisions, therefore, are those for which the contract attributes responsibility to clients. Where the decisions or actions of clients, or their

---

[35] See text, infra.

[36] Infra, chapters IX.

consultants or nominees increase the production costs of the gc - or its domestic sub-contractors or suppliers - the gc may claim an extension of the contract period[37] and where appropriate a modification of the contract price[38]. GC.s may also recover direct losses and expenses from the client[39], and in some circumstances terminate the contract[40].

With respect to exogenous events for which the risk is shared, JCT80 makes use of both the classical strategy of limiting gc.s' liability for the costs of a contingency, and discretionary adjustment. Contractual "capping" is illustrated in two out of the three alternative provisions for managing increases in input costs[41]. Both clause 38 and clause 39 limit the gc.s' liability for inflation during production by reference to the source of the price rise[42]. Where the increase in input costs stems from one of the named sources, the loss is to be borne by the client. All other costs due to inflation are assumed by the gc.

In contrast to the regime governing events which are "caused" by a participant for whom the client is answerable, the only contractual term which may be adjusted in response to exogenous events of which the costs are shared is the

---

[37] Clause 25, see chapter VIII, infra.

[38] Clause 13, see, chapter VIII, infra.

[39] Clause 26.

[40] Clause 28.

[41] The third alternative, clause 40 requires the client to pay for changes in the contract value of the Works rather than using changes in net costs of input items as its baseline.

[42] Clause 38 & clause 39, clause 40 uses a different formula, see chapter VIII, infra.

Completion Date. JCT80 mandates the architect to extend the production period if the builder notifies her that its progress is being delayed by one of the specified contingencies, and the architect believes, on the basis of evidence submitted by the gc, that the claim is true[43]. Although the architect is required to give an extension, the amount of additional time to be granted is within her discretion[44].

B. Transactional Analysis of Planning as a Response to the Uncertainties of Building Production

1. The Uncertainties of Building Production

The nature of the construction industry and its output, together with characteristics of the environment in which it operates, render planning for a building project an exercise that is fraught with uncertainty[45]. Fragmentation within the industry causes building production to draw on a large number of resource-controllers who take from separate profit streams. Members of the group do not have at their disposal complete information on which to base decisions about their own activity, and relevant information, where available, tends to

---

[43] Clause 25. 4. This category of risks includes contingencies such as exceptionally adverse weather, abnormal site conditions or characteristics, and government regulation of the supply of construction input, taxes and price.

[44] See chapter VIII, infra.

[45] Supra, chapter VI.

be dispersed[46]. Moreover, the operations of group members are interactive and the resulting interdependence between participants is a site of friction and co-ordination costs[47]. As has been noted in studies of the organisation of building projects, relations between those involved in production are highly susceptible to suspicion and distrust[48]. Collaboration between clients' consultants may be impeded by professional jealousies, and the separation of design and production is a breeding ground for antagonism and tension between designers and producers[49].

"Participant" uncertainties, arising from information asymmetry and the risk of opportunism in interdependent transactions, may be a particularly significant source of costs for clients. First, clients take the transactional surplus after all input suppliers have been paid, the surplus depends in part on the quality of performances delivered by input suppliers, and its value is realised in the use of the finished buildings over a considerable period of time. In addition, clients' investments in building production are to a large extent specific to a particular site, and production expenditures, once made, cannot readily be transferred to

---

[46] Ibid., For a useful discussion of the organisational implications of the type of functional fragmentation found in construction, see, Tavistock Institute of Human Relations, Interdependence and Uncertainty: A Study of the Building Industry (London: Tavistock Publications, 1966).

[47] Tavistock, Interdependence and Uncertainty: A Study of the Building Industry, supra, note 46.

[48] Ibid., see also, Survey of Problems Before the Construction Industries (The Emmerson Report), supra, note 7; EDCs for Building and Civil Engineering, How Flexible is Construction?, NEDO (London: HMSO, 1978); Dennis A. Turin "Introduction" in Turin (ed.) Aspects of the Economics of Construction (London: George Godwin, 1975).

[49] Ibid.

other uses. Much of the information that a client purchases during product planning, for example, though essential to the execution of a particular building is of little value to the building sponsor if the project does not materialise.

Finally, it is not unusual for clients to be infrequent purchasers of construction services. Lack of familiarity with the process of building production may hamper attempts to engage in routine planning procedures, such as search and screening. One recent report on the experience of private sponsors of commercial buildings noted, for example, that:

> Customers were surprised and dismayed at the complexity of the task and the uncertainties that procuring a building involved for them. Even sophisticated industrial customers were caught out by the unpredictability of construction, particularly when they compared it with the relatively controlled conditions of their own manufacturing environment. Several first-time customers, who had made efforts to assemble information by talking to other customers with recent building experience, complained about the difficulty and inadequate yield of their efforts[50].

Inexperience also tends to increase clients' dependence on building professionals at the same time as it limits their abilities to make qualitative evaluations of performances by consultants. The Tavistock Report, suggested, for example, that clients are frequently unsure about how far they could trust members of the design team to deliver value for money, or interpret their needs[51].

The idiosyncratic nature of building production together

---

[50] EDC for Building, Faster Building for Industry NEDO (London: HMSO, 1983) at para. 9.12.

[51] Interdependence and Uncertainty: A Study of the Building Industry, supra, note 46.

with the complexity of the finished product impose further demands on contractual planning. That building projects are triggered by the wishes of an individual sponsor causes production planning to entail a large number of highly specific decisions. "Product" uncertainties, such as the correlation between conceptual representations of a building and clients needs, and the feasibility of a project in the light of economic and physical constraints, are shaped by bounded rationality, fragmentation and client inexperience. Bounded rationality limits the range of potential solutions to building needs and may cause failures fully to address technical or financial implications of a project. Fragmentation generates the costs of maintaining open and meaningful communication channels between participants. Decision-making and communication costs may be further exacerbated by clients' lack of familiarity with the processes by which needs, constraints and options are translated into workable decisions.

The duration of a construction project, together with its site-based location render building production an "environmentally" uncertain enterprise. Prior decisions may be upset by site and climatic conditions or changes in markets for labour resources and materials inputs. Environmental uncertainties are associated with transactions costs of negotiating and enforcing allocations of risk, and the co-ordination and communication costs of adapting production to

contingencies that have occurred. These classes of costs may be affected by behavioural characteristics of participants in building production. Whereas bounded rationality precludes reliance on ex ante decisions to govern responses to every possible contingency, on-going revision of plans may be a site for opportunism[52].

Planning for the purposes of JCT80 features two types of responses to participant, product and environmental uncertainties. First, the contract draws on specific planning practices and institutions which facilitate the production and communication of reliable information. Secondly, the structural separation between design and production which underlies the standard form contract creates a basis for mutual monitoring between architect and general contractor[53].

2. Transactional Analysis of the Planning Mechanisms

a. Bill of Quantities

The Bill of Quantities (The Bill) is intended "to put into words every obligation or service which will be required in carrying out the building project"[54]. It is said to:

---

[52] Supra, chapter IV.

[53] Infra, part C.

[54] The Placement and Management of Building Contracts (The Simon Report), supra, note 6 at para. 56.

> facilitate accurate competitive tendering... [and] simplify preparation of valuations, contract planning and financial accounting, so that economic and administrative responsibilities are easier for the builder to control[55].

As the most detailed document available to those bidding for a project, the Bill may be viewed primarily as a response to product and environmental uncertainties. Subsequent incorporation of the Bill into the contract between client and gc, may, in addition, enhance a client's ability to monitor the performance of the architect, and so limit the costs of participant uncertainty[56].

With respect to product uncertainties, the Bill, in the form in which it is presented to bidders, supplements the information about the building concept that is contained in architect's drawings and other design documents[57]. Communication of this information means that individual bidders do not incur (and pass on to clients) the preparation and error costs of formulating their own specifications of quantities. Initial offer prices are therefore thought to be lower than they would be if the tendering process did not

---

[55] Dolan, The British Construction Industry - An Introduction, supra, note 4 at 32.

[56] Infra, part C.

[57] The arguments given in support of the Bill of Quantities were all made to the Restrictive Practices Court in Re Birmingham Association of Building Trades Employers' Agreement [1963] 1 WLR 484. The Court ultimately declared the rule forbidding members of the association to bid for contracts over L8000 unless there was a bill of quantities to be anti-competitive. The court accepted that bidding without a Bill of Quantities would tend to increase builders' costs. However, the evidence was not thought to establish that the increase would outweigh clients' expenditures on preparation of the single Bill or that additional costs to bidders would necessarily be passed on in full.

incorporate a Bill prepared by a consultant to the client[58].

Avoidance of duplication costs is by no means the only consequence of using a single Bill. Comparison of tender offers and selection of the gc, it may be argued, imposes less strain on scarce rationality resources where all offers are derived from a uniform information base. Finally, the completed Bill of Quantities is perhaps the most important source of clients' information about the financial implications of a project. A priced Bill may lead to modifications to ensure that the finished product will fit within a client's cost constraints and it provides a basis for evaluating the consequences of any changes to the initial specification[59].

The role of the Bill of Quantities as a response to environmental uncertainties illustrates the interaction between risk-management by price and by adjustment. In theory, at least, the Bill functions to assign to gc.s the risk that economic or physical conditions will cause production costs to exceed the agreed price[60]. Gc.s' exposure to this risk, however, is also limited by the specification of quantities, in the sense that clients bear the costs of differences between as-built quantities and initial predictions. That is to say, gc.s who demonstrate that completion of the project

---

58 Ibid.

59 Dolan, The British Construction Industry - An Introduction, supra, note 4.

60 Ian Duncan Wallace, "Price Under Common Law Systems" in Peter Gauch and Justin Sweet (eds.) Selected Problems of Construction Law: International Approach (London: Sweet and Maxwell, 1983).

requires more labour or materials than had been stated in the Bill are contractually entitled to a modification of the contract price in line with the unit rates, compensation for their private costs of the change, and an extension of time[61].

Critics of the Bill of Quantities system contend that this limitation on gc.s' liability causes clients realised building costs to exceed planned costs[62]. In addition, it is alleged that actual building costs are higher than they would be if gc.s bore the entire risk of variation between predicted and actual prices[63]. The essence of this argument is that the structure of contractual claims enables gc.s opportunistically to seek out discrepancies or omissions in the Bill in order to assert that the project requires additional inputs of labour and materials. Many such claims, it is said, are spurious[64]. Alleged additions may have been part of the background understandings on which the gc made its offer, or the gc may be attempting to compensate for its own mistakes in initial offer[65].

Similarly, it is argued that allocation to clients of the costs of variations in quantities encourages strategic ex ante pricing of tenders. Industry commentators have noted, for example, that gc.s may gamble that certain items in the Bills

---

61 Chapter VIII, infra.

62 Duncan Wallace, "Price Under Common Law Systems", supra, note 60.

63 Ibid.

64 Ibid.

65 Ibid., see also, Stone, Building Economy: Design, Production and Organisation - A Synoptic View, supra, note 10.

are likely to be varied once production is underway[66]. Such items are given a high unit price, which may be well above the cost of supplying the resource inputs, in the initial offer. As revisions to the contract price are based on the original unit rates, variations in these items will produce a final price which is disproportionately high in comparison with the cost of the additional resources[67].

Clients are not in a strong position to resist such opportunistic manipulations. First, they may lack the experience necessary to identify strategic pricing in the Bill of Quantities. Consultants who have the relevant expertise, but did not perceive the problem before recommending acceptance of the offer, are unlikely to alert a client once production is underway for fear that they will be blamed for poor advice.

Secondly, even if a client recognises that a gc's claim for a variation is opportunistic, she is not well-placed to make an effective response. Opposition to the claim may generate costly conflict over the precise meaning and content of the Bill. Moreover, gc.s' control over a building site generates power to disrupt or delay projects as a means of putting pressure on clients to settle claims. As a last resort, a gc may threaten to abandon a project secure in the

---

[66] Ibid. Items relating to foundations and other aspects of the project that are highly contingent on the physical conditions of the site are thought to be particularly vulnerable to strategic pricing. Bidders would typically compensate by tendering low unit prices for items which are likely to be reduced in quantity or quality.

[67] Ibid., see in particular, Stone, Building Economy, at 122 -123.

knowledge that the costs to the client of contractual failure would substantially outweigh the costs of resolving a spurious variation claim.

That the Bill of Quantities does not entirely protect clients from changes in the contract price during production is indisputable. However, the Bill may yet play an important role in managing the uncertainties of the construction process. First, with respect to the specific issue of environmental uncertainties and opportunism, the Bill, together with the contract terms, generates reliable information about the bases on which price will be adjusted in the light of contingencies. It is also important to recognise that opportunistic behaviour is not caused by the Bill and variations regime but simply afforded a particular site for its expression. Contracts in which gc.s bear the risk of differences between predicted and realised quantities may also be vulnerable to opportunism. Gc.s might, for example, try to compensate for a bad bargain by cheating on quality, adopting production economies that increase clients' costs of using new buildings or taking advantage of technical breaches to escape from the transaction.

Secondly, the transaction costs of environmental uncertainties under the Bill of Quantities system should be evaluated in the light of its function as a response to other types of uncertainty. Thus, the opportunism and adjustment costs that may attend reliance on the Bill should be compared

with reductions in the error, duplication, communication and decision-making costs of managing product uncertainties.

Finally, it is arguable that the Bill, precisely because it shifts to clients the risk that as-built quantities will differ from predicted quantities, functions as a standard against which to measure the performance of clients' consultants during product planning. Under the decision-making structure of JCT80, discrepancies between predicted and as-built quantities are attributable to one or more of three reasons. Boundedly rational and inexperienced clients may not have fully grasped all of the implications of the building at the time of tendering. Upon obtaining access to information in the form of a partially completed building clients may change their minds about some aspect of the project and seek to alter the specification without realising the extent to which such changes are costly and disruptive.

Alternatively, predicted quantities may be inadequate because the architect did not fully investigate the site or the implications of the building concept during the design planning stage. This omission may reflect a calculated decision that the delay and information processing costs of acquiring sufficient information before work commenced on site would be so high that the client would be better off paying for a variation or it may evidence lack of effort, incompetence, or cheating.

Finally, failures in communications between architect,

other members of the design team and client may result in a specification that does not meet the clients needs or constraints, and requires revision during production.

Clients who have little experience of construction practices seldom have the resources adequately to evaluate the performances of their consultants. Furthermore, the construction process is structured to facilitate the development of clients' reliance on architects. Given this context, clients are relatively defenceless against opportunistic decisions by the consultants to deliver a lower quality planning service than that for which they are paid.

The Bill of Quantities, together with the standard Conditions of JCT80, responds to this problem by linking the gc.s' responsibilities under the contract to the quality of information that was available at tendering. By enabling gc.s' to activate the variation machinery if the quantities stated in the Bill are insufficient for the project, JCT80 creates a mechanism that affords clients access to information about the quality of the planning service that they have received[68].

---

[68] See text, infra.

b. Selection Procedures

(1) Selective Tendering

Selective tendering may be viewed as a response to clients' uncertainties about the quality of performance which would be rendered by gc.s appointed solely on the basis of price. The failure of markets accurately to compound pertinent information about quality into prices may be attributed to what are by now familiar characteristics of the industry, its products and process of production. The transformative and interactive nature of the construction process impedes the operation of market mechanisms of accountability which rely on evaluation of individual outputs. Buildings are highly durable and information about quality is largely derived from user-experience. These characteristics delay the process by which information about the performance of building producers reaches the market. Finally, transaction-specific production, and the relationships which it entails, enables gc.s to distinguish between projects where opportunism is unlikely to be spotted, or if identified, sanctioned, and those where the structure of supervision and reporting indicates that such behaviour is likely to be detected and information relayed to the market for construction services.

The distinctive combination of screening and price competition constituted by the selective tendering process,

situates the implicit information contained in offer prices in the context of prior evaluation of the reputation and experience of potential gc.s. Selective tendering may, therefore, enable clients to contain the risk of contracting with a gc who is an egregious opportunist, grossly incompetent or on the verge of insolvency. It would be a mistake to believe, however, that selective tendering eliminates clients' uncertainties with respect to the reliability of gc.s, nor should one overlook the cost implications of the process for other aspects of planning to build.

Pre-tender screening may be of limited value as an instrument for managing uncertainties about gc.s because relevant information is unavailable, or because of weaknesses inherent in the use of ex ante information as a means of controlling performances during execution of a transaction. Clients may have relatively good access to information about matters such as the financial health of building firms or their connections with local markets for input suppliers. Knowledge of opportunistic tendencies, however, is costly to acquire and may be of questionable reliability. Opportunistic behaviour in the performance of building contracts is difficult to observe, and, in many instances, there is no agreed standard against which behaviour can be evaluated. Informal channels of reporting, such as "gossip" and "local knowledge", use industry norms and information, both of which

may be implicated in the problem of quality control[69]. Furthermore, as gc.s do not necessarily perform in the same way on every contract, the record of any firm, even if available, may be difficult to interpret.

These problems of observation, evaluation and interpretation may be illustrated by reference to an item of information that may be available to clients and their advisers during the screening process: the record of building firms with respect to contractual claims. Most standard form building contracts afford gc.s contractual entitlements to adjustments in time and price constraints in a wide range of circumstances. Claims procedures are clearly open to abuse. Gc.s may, for example, assert that a relevant event has caused greater disruption than has in fact occurred, or fail to conform to expectations about mitigating the impact of an event in the knowledge that they are completely protected against its costs.

On the other hand, claims procedures may also provide a mechanism by which gc.s implicitly report to clients on the performance of consultants and other participants for whom the client is contractually accountable[70]. A firm's claims

---

[69] The problem described here has a similar logic to Akerlof's "market for lemons" thesis: George A. Akerlof, "The Market for "Lemons": Quality Uncertainty and the Market Mechanism" (1970) 84 Quarterly Journal of Economics 488. That is to say, if opportunistic tendencies are not properly reflected in the prices which gc.s may command, the industry norms which in part constitute the market standards for gc.s may reflect a "normal" degree of opportunism. Similarly, local knowledge (information) about gc.s may tend to evaluate / rank gc.s against "normal" opportunism. Goldberg's analysis of standard form contracts also addresses the process by which sub-optimal norms may be institutionalised into economic relationships: Victor P. Goldberg, "Institutional Change and the Quasi-Invisible Hand" (1974) 17 Journal of Law and Economics 461.

[70] Infra.

history, therefore, may be an ambiguous indication of its tendencies to behave strategically. Extensive claims on previous contracts may evidence opportunism or signify that the gc was an effective monitor of other participants. A record of failing to make claims may reflect the honesty of a gc, suggest that the transaction was adequately defined during planning and well-managed by the supervising architect, indicate that the gc was unaware of performance failures by the consultants or suggest that gc and architect colluded in more subtle forms of opportunism[71].

The efficacy of pre-tender screening as a mechanism of quality control is also limited by the fact that ex ante information cannot provide absolute protection against opportunism in the course of building production. Information is a basis for prediction, but not, in itself, a means of constraining behaviour during execution of complex transactions. Moreover, gc.s who appreciate the costs to clients of relaying information to the market for gc.s' services are unlikely to be deterred from opportunism by concern for their subsequent reputation. Knowledge derived from screening, therefore, may reduce the probability of contracting with a "lemon" gc, but it does not eliminate the risk. Indeed, in the absence of further transactional

---

[71] For example, gc and architect may easily collude in concealing defective inputs. This may entail express opportunism, as where the architect makes a conscious decision not to respond to evidence of poor quality materials or workmanship. Alternatively, there may be implicit "collusion", as where the gc knows that the architect is providing inadequate supervision and so will not notice if the gc supplies poor quality inputs.

safeguards such knowledge may be dysfunctional in that it could generate a false sense of security in clients and their consultants with the result that strategic behaviour is even less likely to be identified.

Finally, it is important to recognise the potential effects of selective tendering on offer prices. Pre-tender screening creates a "small numbers" context for the appointment of gc.s. This context may facilitate strategic pricing and collusive arrangements between building firms. Industry commentators have noted, for example, that firms which have been invited to tender but whose current workload does not permit an additional contract, may submit a bid which is realistic but has no chance of success, rather than refuse the invitation outright[72]. Such "cover" prices are formulated by contacting "competitors" to obtain a sense of the genuine offers that are likely to be submitted. On the basis of this information, a phantom bidder can ensure that its spurious bid is high enough to avoid the risk that it will be accepted, but not so high that it attracts suspicion of bad faith. This type of phantom bidding reduces the already fragile competitive element of selective tendering and where the practice is formalised by local building firms acting as a "price ring", the notion of competition becomes a charade[73].

---

[72] Stone, Building Economy: Design, Production and Organisation, supra, note 10; Hillebrandt, Analysis of the British Construction Industry, supra, note 4.

[73] Ibid.

(2) The Contractual Vetoes

The provisions of JCT80 which enable architects, acting on behalf of clients, to withhold consent from a gc's decision to sub-contract a portion of the Works and permit gc.s to object to nominees create a decision-making framework for managing participant uncertainties. Client and gc are each compelled to take account of the other's concerns about the identity of those who are to execute the Works. In the case of the gc's power to veto the appointment of nsc, the ground for objection is expressly stated to be the identity of a nominee[74]. Similarly, under the new provisions for "hybrid" domestic sub-contractors, chosen from a list of names agreed between client and gc, authority to withhold consent is related to identity of a proposed sub-contractor[75]. By contrast, an architect's opposition to conventional domestic sub-contracting is to be expressed in terms of the practice, rather than the identity of a particular choice of the gc. Despite the generality of its language, this latter provision may also be viewed as a response to participant uncertainties[76].

---

[74] Clause 35.4.1. Note, however, that objection to the identity of a nominee includes the power to oppose the nomination of a sub-contractor whose programme for the Sub-contract Works is incompatible with the gc.s programme for the entire project: Rhuddlan Borough Council v. Fairclough Building Ltd (1985) 3 Construction Law Reports 38. With respect to nominated suppliers, gc.s may veto nominees who are unwilling to undertake the range of risks and liabilities specified in clause 36.4.

[75] Clause 19.3.

[76] In this instance, the clause may be seen to protect clients' interests in the gc "personally" producing a specific part of the Works.

The requirement of "reasonableness" which constrains the exercise of the veto power may be viewed as a means of limiting the potential for opportunistic abuse of contractual authority. Under JCT80, client and gc are locked into a relationship which is "reciprocally monopolistic" in the sense that premature termination of the contract may cause substantial losses that cannot ordinarily be recouped in a substituted transaction[77]. Clients would lose time and the benefits of the specific expertise acquired by a gc through its participation in the project. In addition, clients face the costs of extending their financing arrangements to accommodate the time that it would take to find another gc.

Gc.s may incur costs of terminating or re-arranging contracts with suppliers and sub-contractors as well as the costs of moving its operations. Premature termination may also mean that gc.s' preparatory costs of tendering are wasted and loss of opportunities to add a particular enterprise to the project portfolio upon which gc.s' market their services.

That the two parties need one another to achieve their economic goals engenders contractual power to impose harm. Refusals to co-operate in the implementation of decisions to use sub-contractors (or nominated suppliers) may result in significant costs for the party whose plans are thwarted. Building firms, whose in-house resources are fully committed to a number of projects, may be unable to comply with their

---

[77] Supra, chapter IV.

contractual undertakings if permission to use domestic sub-contractors is withheld. Whereas, clients, who have invested in searching for specialist input suppliers and are accountable to gc.s for timely appointment, may incur heavy costs if gc.s continually object to their nominees[78].

The importance of these costs lies in their implications for strategic bargaining over the distribution of the transactional surplus. Economic actors who know that the value of a transaction to a contracting partner is partly contingent on their co-operation, may opportunistically threaten to withhold agreement to the other's plans unless the terms of the contract are adjusted in their favour. JCT80 limits the scope for such redistributive bargaining between client and gc over the use of sub-contractors by its incorporation of the "reasonableness" constraint on the right to object. This provision structures the contractual distribution of power so that co-operation may not be withheld arbitrarily. Institutionalisation of this norm within the governance of building production by no means guarantees security against strategic behaviour. However, to the extent that it is internalised within industry practices, and potentially enforceable by legal or industry sanctions[79], the requirement

---

[78] Infra, chapter VIII.

[79] See chapter IV, supra, for general discussion of duties to co-operate. With respect to building contracts, courts have, on occasion, been prepared to recognise that a duty to co-operate, enforceable by legal sanctions, is embedded in particular contractual terms: see, for example, Neodox Limited v. Borough of Swinton and Pendlebury (1958) 5 Building Law Reports 38 (implied term that the client would details and instructions necessary to execute the works would be given within a reasonable time as assessed by reference to the needs of the contractors programme); Holland Hannen & Cubitts v. Welsh Health Technical Service Organisation (1981) 18 Building Law Reports 80 (client under a duty to "do

of reasonableness provides a stronger defence against strategic bargaining than would exist in its absence.

c. Standard Conditions

The standard conditions of JCT80 may be viewed as a response to environmental and participant uncertainties and a means for parties to avoid the costs of negotiating a transaction-specific framework for governing the complex activity of building production. With respect to participant uncertainties, the contract terms provide a formal basis for clients to demand minimum standards of honesty, competence and good faith from gc.s and a corresponding foundation for gc.s' expectations of clients. In addition, terms specifying the responsibilities of clients and gc.s within the privately agreed contractual constraints create a foundation for the "cost-pass-through" mechanism[80].

By way of response to environmental uncertainties, the Conditions specify allocations of the costs of "exogenous events" which impact on prior decisions about inputs of time, labour and materials. The primary consequence of such events is that individuals' expectations of profit, if defined

---

all things necessary to enable the contractor to carry out the work"); London Borough of Merton v. Hugh Stanley Leach Ltd 32 Building Law Reports 51 (client under a duty to ensure that the architect co-operates with the gc in enabling the gc to carry out the Works). However, the notion of a wide-ranging duty to co-operate imposed on clients was rejected in Glenlion Construction Ltd. v. The Guiness Trust (1988) 4 Construction Law Journal 39.

[80] Supra, chapter VI, infra, chapter IX.

without reference to the contingencies, will not be realised. Disappointment may have further implications for the execution of building transactions. For example, gc.s may attempt to shift some of the costs of disappointment onto others by refusing to continue unless the allocation of risks is renegotiated. In the interactive and "reciprocally monopolistic" context of building contracts, threats to withdraw, or withhold co-operation are potentially highly disruptive. Not only may such threats be a powerful means of escaping responsibility for losses, but they also entail transaction costs of conflict and negotiation. While the building contract can do little to affect the likelihood of cost-generating changes in the physical or economic environment of a transaction, its terms may facilitate smooth accommodation of such contingencies, thereby reducing the scope for conflict.

Risk-management under JCT80 operates in two stages. First, clients are expected to indicate at the time of tendering that the contract will be let on the terms of JCT80[81]. This information functions as a signal to building firms that bids should be based on the allocations of risks set out in the standard Conditions. Moreover, because the Conditions address the issue of exogenous events, clients and bidding firms are alerted to risks and encouraged to take account of contingencies when formulating initial expectations

---

[81] JCT Code of Procedure for Selective Tendering, supra, note 8.

and developing transaction-specific constraints of time and price.

Second, the standard Conditions contain procedures for adjusting the original cost and time constraints in the light of events that occur during execution of the Works. With respect to exogenous risks, these adjustment provisions are used primarily to enforce an allocation to clients of a share in the costs of a contingency[82]. The adjustment procedures may in addition serve the function of providing a contractual framework within which client and gc may bargain over the distribution of the costs of a contingency where realised costs are substantially greater than the parties' had anticipated[83].

Underlying the strategy of ex ante discounting there is a premise that once expectations have been defined in the light of environmental contingencies, the occurrence of such events should not disrupt the project or impose unanticipated costs on a contractor. Within complex transactions, such as those governed by JCT80, reliance on this premise may itself generate transaction costs of risk-management.

One important issue is whether the model of rationality upon which discounting depends accurately captures the manner in which expectations are formed. That is to say, if economic

---

82 Supra

83 This function is particularly evident in the fluctuation clauses which specifically provide for quantity surveyor and gc to negotiate settlements in the light of actual changes in input costs: clause 38.4.3, clause 39.5.3 and clause 40.5.

actors do not behave as if contractual obligations were defined by the risks that they have assumed, but instead experience contingencies as if such events were a cause of unanticipated harms, the theoretical advantages of discounting may not be realised. Furthermore, to promote ex ante risk allocation in a context where individuals' decision-making practices, though rational in the view of their experience, do not conform to the model, may engender transaction costs.

Take, for example, the issue of time constraints in building production. Clients, typically, are anxious to have a functioning product in use as quickly as possible, and may indicate their hopes for timely completion in the tendering documents[84]. Building firms may realise that clients' expectations are unreasonable and they know that the pace of production will be affected by uncontrollable events. Yet gc.s may agree to unrealistic time constraints and assume contractual commitments which they realise are unlikely to be met.

At the bidding stage, it is perfectly rational for a gc to seek to please a client. Indeed, if the selection process is in any degree competitive, it may be foolish for a building firm to point out that a client's expectations, developed on the basis of need and professional advice, are infeasible. That a gc accepts a term for the purposes of obtaining the contract, however, by no means signifies that the provision

---

[84] JCT Code of Procedure for Selective Tendering, supra, note 8.

is internalised as a legitimate demand. Thus, in the event of a disruptive contingency during production, a gc may rationally seek to evade the obligation to complete on time, creating transaction costs of conflict and strategic bargaining. Clients' specific investments in building production generate vulnerability to threats that gc.s may make in support of such demands, with the result that clients may incur costs of "betrayal" or "demoralisation"[85] in addition to losses of part of the transactional surplus.

Even if a contract is structured to encourage gc.s to internalise the costs of contingencies which they have agreed to bear, the time-scale and complexity of building production suggests a further limitation on the efficacy of discounting. Ex ante risk-management is based on the assumption that parties have sufficient information at the time of planning to estimate the probable cost implications of contingencies[86]. In the absence of this information, the actual costs may diverge significantly from the expected costs reflected in the private rules of the contract. This divergence constitutes a windfall gain for one party and an uncompensated loss to the other. The distribution of these gains and losses may create yet another site for conflict and (potentially strategic)

---

[85] The concept of "demoralisation costs" was first developed in Frank Michelman's analysis of justifications for compensating holders of property rights for invasions of those rights: Michelman "Property Utility and Fairness: "Comments on the Ethical Foundations of 'Just Compensation' Law" (1967) 80 Harvard Law Review 1165. The concept has been used by Anthony Ogus in a comprehensive analysis of compensation principles in English law: Ogus "Do We have A General Theory of Compensation" (1984) 37 Current Legal Problems 29.

[86] See chapter III, supra.

negotiation.

Suppose, for example, that client and gc agree that gc will assume the risk of market changes in input costs, and that an economic downturn during the 36 month construction period causes the market prices of labour and materials to escalate at twice the rate which the parties had anticipated on the basis of the information available during planning. The market conditions cause the contract to be more beneficial to the client than had been anticipated, but at the same time they may turn what had once been a profitable transaction to the gc into an economic disaster. In such a context, the contractual distribution of costs and benefits is likely to be unstable. Continued participation in the contract with the client on the original terms is at a minimum likely to result in the gc foregoing opportunities to engage in another contract in which it would be paid at current market rates. More seriously, continued participation may threaten the financial health of the gc. To the extent that the change results in the gc believing that it has less to lose from withdrawal than continuation, it creates conditions under which strategic bargaining may emerge.

The combination of discretionary adjustment and ex ante pricing institutionalised in JCT80 may be viewed as a means of alleviating some of the potential costs of discounting alone. First, because the parties, in effect, share the costs of many exogenous contingencies, the cost consequences of such

events are more evenly distributed. One might, therefore, anticipate fewer, and less antagonistic, conflicts over contingencies that do materialise than in an institutional context where risks are wholly allocated to gc.s.

Second, the adjustment procedures create a transactional setting within which conflicts may be managed. The working rules of the building contract establish a framework for negotiations and institutionalise a distribution of bargaining power. As such the contract terms may be seen as a recognition of an inevitable dimension of building transactions, and an attempt to order the unavoidable.

It should not be forgotten, however, that the contractual structure of risk-management is itself a source of transaction costs. In particular, operation of the adjustment procedures creates administration costs, and risk-sharing and adjustment may attenuate incentives that would otherwise exist in a conventional system of ex ante discounting. For example, it is sometimes argued that the provisions of JCT80 reduce gc.s' incentives to mitigate the consequences of disruptive events. Critics of risk-sharing maintain that gc.s who have no control over the incidence of exogenous events may yet profoundly affect the impact of such events on building production[87]. By limiting gc.s' exposure to environmental uncertainties,

---

[87] For example, gc.s may be able to speed up production in response to events which generate delay. The production schedules of different sub-contractors may be synchronised more tightly or the order in which different aspects of the project are assembled may be revised so as to streamline the process. Similarly, the impact of changes in input costs will to a large extent depend on the arrangements which a gc has made for obtaining supplies.

therefore, the JCT may have eliminated an important source of discipline over gc.s' performance of their management responsibilities[88].

An additional site of transaction costs is the adjustment machinery itself. While the creation of a mechanism for adaptation may have the positive effect of providing a structured framework within which change is managed, its existence may encourage contractors to make marginal or spurious claims. Whether or not sharp practice is spotted, and bogus claims are rejected, the mere fact that they are made and must be processed adds to the transaction costs of risk-management.

C. Transactional Analysis of the Separation of Design and Production

Perhaps the most striking feature of planning for building projects is the minimal involvement in product definition of the actor who is to play the central role in production. Indeed JCT80 assumes that the gc will not even have been selected at the stage when crucial decisions about shape, size, quality and location of the buildings are finalised and preliminary cost constraints are established. This separation of design and construction into autonomous phases of production dominates every aspect of planning to

---

[88] Chapter VIII, infra.

build and is one of the most contentious features of the Contracting System. Separation has been attacked on the grounds that it distances architect and gc and makes it more difficult for these actors to achieve a co-operative working relationship. The Emmerson Report, for example, noted that "[i]n no other important industry is the responsibility for design so far removed from the responsibility for production" and commented that:

> ... there is all too often a lack of confidence between the Architect and the builder amounting at its worst to distrust and mutual recrimination. Even at their best, relations are often affected by an aloofness which cannot make for efficiency, and the building owner suffers[89].

Institutionalisation of separation between design and production has also been criticised for excluding gc.s' expertise from the process of project planning[90]. The essence of this argument is that experienced building contractors have a background in practical and technical aspects of construction which is quite distinct from that of an architect or other specialist consultant. Builders' knowledge could be used to expose assembly problems inherent in design proposals and identify potential building economies if it were included at sufficiently early stage in planning. Under the current

---

89 Survey of Problems facing the Construction Industry, supra, note 7 at para. 27.

90 Ministry of Public Building and Works, Report of the Committee on the Placing and Management of Contracts for Building and Civil Engineering Works (The Banwell Report), supra, note 7; EDC for Building, Action on the Banwell Report, supra, note 7; Building Employers Confederation, A Fresh Look at the UK and US Building Industries (London: BEC, 1986); Chartered Institute of Building, Project Management in Building, (London: CIOB, 1982).

structure of building production, however, much of gc.s' expertise is wasted because it cannot be incorporated into the project except through costly revision to completed plans[91].

Finally, it is suggested that separation rests on a false dichotomy between design and assembly and hence compounds the problem of maintaining accountability for the timing of a project and the quality of the finished work[92]. Functional divisions of responsibilities for building production are said to be incoherent and entail designers and producers undertaking ill-defined and often overlapping tasks. Separation is thought to provide fertile ground for attempted evasions of responsibility and costly disputes between the main protagonists both during production and after completion of the project[93].

That the structural separation of design from construction in building production is a potentially significant source of transaction costs is undeniable[94]. What

---

[91] Ibid.

[92] Donald Keating, Building Contracts: including a commentary on the JCT Standard Form of Building Contract (London: Sweet & Maxwell, 1978). Keating points out that design obligations of the gc are implicitly recognised in the standard Conditions of Contract and the governing norms derived from the public legal regime. This issue is touched on in chapter IX, infra.

[93] Chapter IX, infra.

[94] The Banwell Report illustrates the modern interest in strengthening the relationship between builder and architect. It was argued that earlier appointment of a general contractor to work with the design team during the planning process would provide:

> undeniable advantages for the client in solving some of the failures in communication and understanding between designers and contractors and contractors and sub-contractors which have hampered the industry... The contractor appointed at an early stage will be able to develop a close relationship with all the other partners in the design and construction team before work begins on site, to plan the work properly and so ensure speedy and economical working while it is in progress.

Ministry of Public Building and Works, Report of the Committee on the Placing and Management of Contracts for Building and Civil Engineering Works (The Banwell Report), supra, note 7 at para 3.15.

is much less clear, however, is whether integration of builders into the design phase would result in lower organisational costs. Integrated decision-making, together with closer relationships between designers and producers, will entail its own configuration of transaction costs[95]. Although our analysis cannot determine whether separation or integration is the more "efficient" organisational form for building production, the tools of transactional economics provide a basis for analysing the governance implications of the two institutional settings[96].

Viewed from the perspective of transactional economics, the functional separation between design and production, and the relational distance between architect and gc with which it is associated, constitute an institutional context that has two key features. First, clients' specific investments in building production are not as closely tied to any particular gc as they would be were the gc a full participant in product planning. Second, relations between architect and gc working on a project are, to some extent, antagonistic[97]. The former

---

[95] Some of the problems that may arise with greater integration are developed in the essays which comprise the Law and Contemporary Problems symposium on "Construction Management and Design-Build / Fast Track Construction" (1983) 46 Law and Contemporary Problems 1-180: see, in particular, contributions by John B. Tieder & Robert K. Cox "Construction Management and the Speciality Trade (Prime) Contractors" 39; C.A. Foster "Construction Management and Design-Build/ Fast Track Construction: A Solution which Uncovers a Problem for the Surety" 95; Note "Allocation of Risk in the Construction Industry: The Nonprofessional Owner and His Construction Manager" 145; and Walter F. Pratt Jr. "Afterword: Contracts and Uncertainty" 169.

[96] Indeed, to the extent that integration and separation constitute distinct institutional settings, it may not be possible even empirically to compare the two forms of decision-making using a single efficiency calculus: supra, chapter II.

[97] Tensions between architects and gc.s arise because architects are authorised to monitor the performance of gc.s, and in exercising many of their contractual powers, are to act primarily in the interests of clients.

characteristic is associated with limiting a client's dependence on any particular gc and may, thus, indirectly contain clients' vulnerability to opportunism on the part of gc.s. Relational distance between gc and architect facilitates practices in which gc.s report to clients on the performance of the architect.

a. Separation as a Means of Limiting Clients' Dependence on General Contractors

The process of planning to build is lengthy and costly. Although clients initial investments take the form of general inputs of time and money, the purpose for which these resources are used - the production of a building concept - is specific to the needs and constraints of clients and their sites. Moreover, the returns on clients' investments in planning do not begin to materialise until the building concept has undergone a process of transformation - production - that requires the dedication of further resources to the particular project.

As we have seen, transactions in which specific investment creates a link between economically autonomous actors are vulnerable to opportunistic skirmishing over the distribution of the transactional surplus. In the context of building production, the risk to clients arises because they are unable to realise the value of their cumulative investment

until the building is in use, and the resources invested cannot readily be deployed for other purposes. Furthermore, building production entails gc.s acquiring skills and knowledge from their participation on a particular project. Such resources are partly specific to the transaction with the client, and partly redeployable through the market for construction services. However, from the clients perspective, a gc's acquisition transaction-specific knowledge serves to enhance the value of the surplus that is obtainable from the contract with that individual. The evolving gap between a participant gc's specific expertise and the general expertise of the next best alternative is a measure of the portion of the transactional surplus - the quasi-rent - that accrues from specificity[98].

These characteristics of clients' investments in building production shape their relations with gc.s. Clients are highly dependent on the "good-faith" and competence of those with whom they contract and the value of clients' shares of the transactional surplus is partly contingent on the honesty of the building producers. Furthermore, the greater the participation of any individual producer, the larger will be the transactional surplus generated by the contract.

One consequence of the exclusion of gc.s from product planning under JCT80 is that clients' specific investments in the development of the building concept do not create a link

---

[98] See generally, chapters II and IV.

with any particular building producer. As a result, the quasi-rents attached to the eventual relationship with a gc are lower than they would have been had the gc participated in planning. By driving a wedge between design and construction, separation generates a smaller "appropriable" surplus than integration, and may effectively limit clients' exposure to opportunism on the part of a gc. The question of whether the benefits of this aspect of separation, if viewed in isolation, outweigh the costs, entails comparison of the reduced scope for opportunism against the loss of gc.s' expertise during planning together with foregone opportunities for gc.s to develop transaction-specific knowledge and skills from the earliest possible moment.

b. Separation as a Means of Maintaining the Accountability of Architects

Production of the building concept represents a large proportion of the services which a client buys from an architect[99]. The architect's role during this process involves interpretation of the client's needs, liaison between different members of the design team, communication of potential solutions, and translation of the client's decisions

---

[99] Under the RIBA scales approximately 75% of the architect's total fee is to cover work which should have been completed by the time the project is at tender stage: clause 2.11, RIBA Conditions of Engagement (London: RIBA, 1982).

into the language of building production[100]. The centrality of the architect to this phase of a construction project is underlined by the extent to which every other piece of planning information is based on architects' representations of clients' choices. In particular, the Bill of Quantities is taken directly from the drawings, and parties' expectations about the duration of the project are informed by the quality and completeness of the architect's documentation.

Information asymmetry between client and architect may mean that many clients are unable accurately to monitor whether they are receiving the level of skill and effort for which they have contracted. Nor is eventual outcome necessarily a good proxy for the quality of the planning service delivered by an architect. Not only does the architect's performance interact with activities of other participants, but building transactions are situated in an uncertain environment.

Agency theory suggests that this combination of factors may impede the operation of mechanisms of accountability and render clients vulnerable to cheating by opportunistic architects.

Ironically, the very reason which leads clients to resort to the market for architects' services inhibits the operation of the market as an institutional limitation on agency costs. Clients hire architects because they lack the resources of

---

100 Supra, chapter Vi.

information and expertise which are necessary in order to formulate proposals for a building concept[101]. In the absence of a reasonably detailed specification, however, architects appear to be unwilling to compete for the job of building design[102].

Recent reports have shown, for example, that clients usually appoint architects shortly after making the decision to build and that the appointment is normally based on negotiation with one particular firm, rather than direct competition[103]. Moreover, many clients, when making decisions about appointment, do not respond to market signals of reliability, competence and quality, as they are conventionally conceived. A report of the Building EDC found, for example, that:

> [O]ne-time customers often routed their approach through familiar channels like estate agents, local surveyors .... Advice from professional bodies was found to be unhelpful in that they provided lists of local practices without any indication of relevant experience. New appointments were often made for personal rather than professional

---

101 According to one study the main problem with attempting to inject greater competition into the process of engaging professional services is that the client often cannot generate sufficient information about the project to set a framework for open competition. It was suggested that professional architects would not be prepared to bid for a contract without a detailed specification of the job; and that it is usually not possible and may be undesirable to procure such a specification, without the services of an architect. It was further argued that it was unlikely to be cheaper for a client to do work which is normally performed by a professional: Director-General of Fair Trading, Report on Fee Competition in Professional Services in the Construction Industry, Office of Fair Trading (London: OFT, 1986).

102 Ibid.

103 The OFT Report, ibid., found that 79% of all architects commissions were made by appointment, a process where at the time of discussion with the client the practice was the sole contender for the job and in only 12% was there some degree of competition. The statistical breakdown by type of client showed little variation between public and private sectors. Within the central public sector 71% of contracts were based on appointment and 20% entailed some degree of competition; within the rest of the public sector the appointment - competition ratio was 73% : 17%; within the private sector, the distribution between the two modes of engagement was 81% : 10%.

> reasons,.... Only very exceptionally did customers seek references or inspect other work done by the practice and there were few instances of any searching enquiry into the practice's expertise, workload etc.[104].

The degree of information asymmetry between clients and architects also raises doubts about the argument that markets may control agency costs through ex post revisions to the value of the agents human capital[105]. Architects' perceptions of the risk that information about tendencies to cheat will be compounded into the prices which they command may be shaped by awareness that clients' appointment practices typically do not take account of the market concept of reputation[106]. In addition, the threat of economic sanctions may be considerably diluted by architects' knowledge that many clients are unable to detect poor quality planning.

It is sometimes argued that the disciplinary power of market mechanisms may be strengthened by contractual governance of the relationship between principal and agent[107]. Principals may, for example, enhance their ability to evaluate agents by adopting, as contract terms, measurable proxies for unobservable dimensions of the agents performance[108].

---

[104] Faster Building For Industry, supra, note 3 at para. 9.13.

[105] Supra, chapter V.

[106] It is important to recognise that there may exist different conceptions of reputation. Informal reputational standards can be very important, but may not feed into price as accurately as the traditional measures.

[107] Supra, chapter V.

[108] Supra chapters IV & V.

Alternatively, the contract may incorporate "aspirational" norms or standards derived from agencies which regulate the profession of which the agent is a member[109].

Formal governance of the relationship between client and architect is, of course, derived from contract. Moreover the transaction between client and architect is situated in an institutional context that includes general rules of law, legal norms that are specific to professional relationships or construction projects, a licensing regime, and Codes of Conduct developed by the professional institutes. However, the transactional characteristics of building production, together with the information asymmetry between clients and architects suggest that the direct protection against opportunism in the delivery of planning services furnished by contract, may be quite limited.

First, clients face the problem of formulating transaction-specific standards which are observable, and reasonably approximate the dimensions of quality and effort that are of concern. Moreover, in developing contractual standards, the parties will need to avoid constraining the discretion of the architect to such an extent that the client foregoes much of the benefit of architect's expertise[110].

Second, the efficacy of legal constraints hinges upon there being in place a mechanism for reporting failures to

---

109 Supra chapter IV.

110 Supra, chapter IV.

conform to contractual standards. Even if standards are formulated, therefore, the combination of clients' lack of expertise and the ease with which planning failures may be camouflaged suggests that architects who cheat may be able to block the emergence of the information upon which legal enforcement depends[111].

The relational distance between architect and gc associated with the separation of design and production, constitutes a framework within which some of these monitoring problems may be alleviated. Whatever the confusions in production responsibilities that might attend separation, its primary consequence during project planning is to render architects wholly accountable to clients for production of the building concept[112]. In addition, the institutional structure of planning to build clarifies precisely what is required of the architect at this stage, that is, timely production of useable and reliable information which reflects an effective compromise between clients' needs and constraints. Inadequacy at any of these margins has an impact on the ability of building firms to prepare reliable offers and may also affect the costs to the gc of procuring supplies and co-ordinating the production process. That the planning service delivered by the architect shapes the conditions under which gc.s work,

---

111 Infra, chapters VIII & IX.

112 Supra, see also Moresk Cleaners v. Hicks (1966) 4 Building Law Reports 50; Holland, Hannen & Cubitt v. Welsh Health Technical Services Organisation, supra, note 79; Richard Roberts Holdings Ltd. v. Douglas Smith Stimson Partnership (1989) 5 Construction Law Journal 223.

furnishes gc.s with a direct interest in the quality of that service, as measured by criteria of the timeliness, completeness and reliability of information.

Separation, therefore, creates an institutional context for planning which generates measurable standards and promotes convergence of the interests of clients and gc.s in the quality of planning services supplied by architects. This context also provides a basis for the development of incentives which encourage gc.s to use their expertise to monitor architects and notify clients of evidence of cheating or incompetence[113]. Within transactions governed by JCT80, such incentives are to be found in two classes of working rules.

First, the Conditions hold clients answerable to gc.s for the organisational and production costs of working with poor quality design information. Underlying the contract there is premise that the documentation available to gc.s during tendering contained sufficient information that a gc may procure the entire complement of resources necessary to produce the building. Incomplete planning of the building concept is a ground for the gc to claim an adjustment in the

---

[113] it may be argued that this system of monitoring has a more generally beneficial effect. Monitoring by a gc clearly does not directly solve the problem of client inexperience and information asymmetry between client and architect. However, it does provide a mechanism by which some evaluation of the architect's performance may reach the market for architects' services. Builders who have the expertise to assess the adequacy of planning are encouraged to do so by the contractual entitlements to compensation for their private costs of inadequate planning. Clients who receive information from builders are better able to determine whether there is a divergence between the contracted for and actual performance from the architect. Architects who know that information asymmetry may be short-circuited in this way so that the market may in fact receive signals about their propensity to act opportunistically, and who are concerned to protect the capital value of reputation will thus be more inclined to comply with contractual standards.

contract price[114]; an extension of time, if necessary[115]; and compensation for the costs of adapting to the new information[116]. Clients who must compensate the gc for the costs of working with inadequate information clearly have a greater incentive to take action against a cheating architect than if the costs associated with producing on the basis of poor quality information were borne by gc.s.

Gc.s' incentives to use the contractual machinery and report directly to clients are reinforced by the structure of legal norms governing relations between architect and gc. The principle that architects do not owe any duties to gc.s with respect to the preparation of designs, curtails gc.s' access to direct compensation from the architect[117]. Gc.s, therefore, who incur costs from using defective information have no choice but to invoke the contractual cost-pass-through mechanism by bringing claims against the client.

Secondly, gc.s are subject to specific contractual duties to warn the client of particular inadequacies in the building concept, and may, in addition, have an implied contractual duty to warn of design defects in general. Under the express terms of JCT80, gc.s are required "immediately" to notify the

---

[114] Additional or Substituted work is treated as a Variation and processed under clause 13: see, chapter VIII, infra.

[115] Clause 25.4.5, see chapter VIII, infra.

[116] Clause 26.

[117] On the point of negligence duties between participants in construction projects who do not have a formal contractual relationship with one another, but are linked by virtue of separate contracts with a third party, see, Simaan General Contracting Company v. Pilkington Glass Limited (No.2) [1988] 1 All ER 791; on the specific issue of the absence of a duty owed by architect to gc, see, Michael Salliss & Co. Ltd. v. E.C.A. Calil & Others (1988) 4 Construction Law Journal 125.

Architect of inconsistencies between the Contract Documents[118], and discrepancies or divergences between the Contract Documents and statutory requirements[119]. This information, though channelled through the architect who may be responsible for the problem, will eventually reach the client, who is, once again, contractually accountable to the gc for production and organisational costs attendant upon resolving the problem[120].

Gc.s' implied "duty to warn" of defects in the building concept was formulated by Judge John Newey QC in two decisions of the Official Referee's Court during 1984. In each case the conflict between client and building producers centred on inadequate performance of a building feature during use of the completed building and both cases involved earlier versions of the JCT's standard form of building contract.

In Equitable Debenture Assets Corporation Ltd. v. William Moss Group Ltd. and Others[121] (EDAC), the architect had persuaded a somewhat sceptical client that the feature in question - curtain walling - was not only aesthetically desirable but would also withstand the rigours of the climatic conditions to which the development would be exposed. The architect had hired a consultant during preparation of the building concept to advise on design, installation and use of

---

118 clause 2.3.

119 Clause 6.1.2.

120 Clauses 25.4.5.1, 26.2.3 & 26.2.7.

121 (1984) 2 Construction Law Reports 1.

curtain walling. Once the client had accepted the idea, the architect nominated a sub-contractor to design, supply and install a project-specific system of curtain walling. That the system as installed was an unmitigated disaster was found to be due, in part, to defects in design for which the architect and the nsc were accountable under the express terms of contracts with the client[122].

In Victoria University of Manchester v. Hugh Wilson & Lewis Womersley and Pochin (Contractors) Ltd[123], the decision about the design feature - ceramic tile cladding - was again based on the architect's enthusiastic recommendation in the face of some hesitation by the client. The architect had formulated the plans for the cladding, nominating a sub-contractor for the purposes of supply and installation only. The University experienced persistent problems with the appearance and maintenance of the external cladding and eventually replaced the tiles.

As is apparent from this brief review of the facts of these cases, the transaction in each instance was set in the context of the traditional Contracting System. The gc.s had not played any part in the production of the building concept as a whole or in the design of the specific feature. Nor,

---

[122] The architect's obligation, as interpreted by the Official Referee, was to design a watertight building and to revise plans and redesign during production, if necessary. Though the Official Referee did not believe the initial decision to use curtain walling to be negligent, he thought that there was negligence in the selection of the nsc, approval of the nsc's design, and in the haphazard use of the expertise of the consultant during planning.

[123] (1984) 2 Construction Law Reports 43.

under the terms of the JCT contracts, were the gc.s explicitly accountable for the quality of performance of building that conformed to plans and instructions issued by the architect[124]. Nevertheless, the judge accepted the plaintiffs' contentions that gc.s were subject to a duty to warn clients of defects in the designs with which they were working. The primary conceptual basis of the analysis was the implied contractual term[125]. The duty to warn was thought to meet the threshold test of "necessary for business efficacy" on the grounds that int he light of gc.s experience and expertise:

> it would have been absurd for [the gc] to have carried on implementing [a design] ... if on examining the drawings or as a result of experience on site [the gc had] formed the opinion that in some respect the design would not work or would not work satisfactorily[126].

As formulated in EDAC, the gc's duty appeared to relate to design defects which the gc had observed or encountered (or ought to have observed or encountered) during the process of transforming a building concept into a physical structure. In the University of Manchester decision[127], Judge Newey emphasised that gc.s should not wait for evidence of design

---

[124] Clause 2.1. See chapter IX, infra, for discussion of the extent to which sanctions may be available against gc.s who supply and install inputs that meet the contractual specifications but are inadequate.

[125] Note that the Official Referee would also have been willing to hold that there was a tortious duty of care. More recently, however, the courts have taken a strong stand against the "finding" of concurrent tortious duties, particularly with respect to "economic losses", between parties who have a contractual relationship: see for example, Greater Nottingham Cooperative Society Ltd v. Cementation Piling and Foundations Ltd., [1988] 3 WLR 396; see also, the comments of Lord Scarman in Tai Hing Cotton Mill Ltd. v. Liu Chong Hing Bank Ltd. [1986] 1 AC 80. This issue of concurrent liabilities is discussed in more depth in chapter IX, infra.

[126] Supra, note 121 at 31.

[127] Supra, note 123.

defects to materialise, but would be expected to alert architects, as agents of the client, to the possibility of problems. He stated that:

> ... a term was to be implied ... requiring the contractors to warn the architects as the University's agents of defects in design, which they believed to exist. Belief that there were defects required more than mere doubt as to the correctness of the design, but less than actual knowledge of errors[128].

Doubts have been expressed about the desirability of implying terms into detailed contracts such as those of the JCT[129]. Others have criticised the concept of a gc.s' duty to warn on the grounds that it blurs distinctions between design and production. Hilary Nicholls, for example, asserts that it is:

> odd for professionals - who hold themselves out as experts in the design of buildings - to expect contractors, employed simply to carry out the works to point out shortcomings in their own design[130].

Of particular significance to some commentators and judges is the concern that architects would not only rely on the gc's contractual duty to shelter themselves from full responsibility to clients, but might also develop negligence claims to the effect that gc.s were answerable to architects

---

[128] Ibid., at 77.

[129] See generally, Lynch v. Thorne [1956] 1 WLR 303; Tai Hing Cotton Mill v. Liu Chong Hing Bank, supra, note 125; see, in particular, Greater Nottingham Cooperative Society v. Cementation Piling and Foundations Ltd, supra, note 125; The University Court of the University of Glasgow v. William Whitfield (1989) 5 Construction Law Journal 73.

[130] Hilary Nicholls, "Contractors' 'Duty to Warn' following D &F Estates and University of Glasgow v. Whitfield" (1989) 5 Construction Law Journal 175 at 175.

for design inadequacies[131]. Recent restrictions on liability for economic loss in tort have ensured, for the moment at least, that any such suggestions from architects are unlikely to be received sympathetically[132]. However, there remains the argument that an implied contractual term requiring gc.s to warn clients of design defects, may, in the event that the terms is breached, enable architects to avoid being held fully to account for the quality of planning services[133].

Implementation of the gc's duty to warn clients of design defects by way of legal sanctions undoubtedly entails costs, including, conceivably, the cost of attenuating the incentives faced by architects[134]. However, it is important to clarify the basis on which these costs are to be evaluated. Given the unequal relations of dependence in transactions between clients and architects, clients are unlikely to detect many, or even most, qualitative failures in the planning service delivered by architects. Analysis of the incentives of architects in an institutional context that includes gc.s' duty to warn, therefore, cannot assume that in the absence of such a duty, architects believe that detection of cheating or incompetence is certain, and act accordingly. Rather than compare the costs of the duty to warn with a contractual

---

131 See Glasgow University v. Whitfield, supra, note 129, where such a claim was made, and rejected.

132 Infra, chapter IX.

133 Infra, chapter IX.

134 Infra, chapter IX.

context that would produce perfect deterrence, evaluation should engage with the actual operation of markets for architects' services, information asymmetry and client inexperience. In view of this context, the relevant comparison is between transaction and incentive costs of the duty to warn and any increase in the probability that cheating and incompetence in design will be detected if gc.s have a stronger inducement to use their expertise in the monitoring of service delivery by the architect.

D. Contractual Planning and the Contracting Continuum

Many of the issues raised by planning for the purposes of JCT80 involve dimensions of contract management and enforcement that are considered in more depth in the following chapters. However, some general points emerge from the discussion. One important feature of the standard form contract is its dual planning modes. Decisions about inputs to the project and organisation of production are detailed and highly transaction-specific, whereas risk-planning is unfocused and largely expressed in the standard conditions of contract. Because these issues are interdependent, their resolution in this manner creates a tension between two economic models of contractual relations.

The idiosyncratic phase of planning to build is robustly classical. Strict functional divisions between different

participants in construction; the use of ex ante price competition as an important selection criterion; and the attempt to define the gc's input precisely are all indicative of the classical discrete transaction. Turin nicely captures the image of the building process that underpins this phase of the planning process when he speaks of a world of "as if":

> It is "as if" the client knew what he wanted when he commissioned the building from a designer; it is "as if" the designer was in a position to advise the client on the best value-for-money he could obtain in the market; ... it is "as if" the contractor knew how his resources were used, was in a position to control them, and was able to use this experience on his next job[135].

By contrast, contingency planning is quite literally pro forma and is dominated by the relational technique of arranging for ex post adjustment to events that have occurred. In this context the contractual provisions function as a decision-making structure which opens up the prospect of revising most of the transaction-specific decisions.

A further twist is provided by the role of the architect, the most prominent of the "non-party" participants in a transaction regulated by JCT80. The relationship between client and architect is a standard example of the principal-agent transaction, calling for its own system of checks and balances to mediate between maximising agent expertise and minimising agency costs. JCT80's emphatic separation of design and production functions, most visible in contract planning,

---

[135] "Introduction" Aspects of the Economics of Construction, supra, note 48, at xi.

underpins a complex control system which supplements regulation by the market and the law. In addition to limiting the scope for builder opportunism resulting from specific investment by ensuring that investment in product planning is not dedicated to a relationship with a particular builder; separation maintains gc.s' incentives to monitor the architect. The detailed basis of the contract with the gc becomes a measure of the architect's performance.

Inevitably, there are costs to the form of contractual planning reflected in JCT80. Building projects forego some of the benefits of gc.s' inputs during planning, the possibility of co-operation between architect and gc may be reduced, and the probability of friction increased. There is, in addition, a more subtle source of costs. The tension between classical norms of "distance" and the relational practice of interconnection encourages architects and gc.s to define their transactional commitments in a discrete fashion. An important governance implication of this mode of planning is that it increases the risk of what may be perceived as "gaps" in the transactional network of formal duties and responsibilities owed to clients[136].

---

[136] Infra, chapter IX.

Chapter VIII Administration and Management

The administration and management of building transactions entail decision-making processes which regulate the physical process of production. The decisions which are required to transform labour resources, materials inputs and the information contained in design documents into a functioning building fall into two main categories. Co-ordination decisions guide participants' activities, and are used to manage adjustments to contingencies and other relevant information which emerges during production. Evaluation decisions involve monitoring resource inputs for conformity with the contractual terms governing price, quality, quantities and time.

The working rules of administration and management contained in JCT80 create a difficulty for the presentation of our analysis. In a manner which is comparable with many "firm-like" transactions, JCT80 blends decision-making with respect to co-ordination and evaluation into a unified set of procedures. While an institutional perspective may suggest that these processes can be understood only if we respect the integrity of the contractual form taken as a whole, it is also important to clarify the distinct forms of transaction costs to which co-ordination and monitoring decisions respond. Failure to distinguish between the two classes of decisions may lead us to neglect tensions between their objectives, or

overlook the extent to which the working rules of a contract have different implications for the costs of co-ordination and evaluation.

The approach that I have chosen attempts to show the connections between evaluation and co-ordination goals in the working rules of JCT80, and the distinct implications of these rules for the transaction costs attendant on the two processes. To these ends, the analysis of contractual management is divided between this chapter and chapter IX. This chapter describes the principal management procedures instituted in the working rules of JCT80, and, where necessary to the explanation, comments on their role in evaluation; however, the primary focus is co-ordination. The analysis emphasises the management of disruptions and interactions between contractual provisions for responding to change and the execution of transactional tasks. Chapter IX draws on the discussion of the working rules of evaluation provided here, but focuses on their implications for the enforcement of transactional commitments.

The discussion in this chapter is divided into four sections. Part A describes the instruments of administration and management under JCT80. The contractual procedures governing Architect's Instructions, Certification and Inspection are outlined and the architect's management role is illustrated in discussions of Directive Instructions and Interim Certification. Part B focuses on the machinery of

adjustment. This section describes the primary contractual procedures for adapting to changes and analyses the implications of the extension of time machinery and the variation provisions for the costs of co-ordinating building production. Part C deals with the intersection of risk-allocation ideas and transactional governance in the context of the departure of building resource suppliers during execution. This section traces the development of contractual norms to govern two insolvency risks and analyses the implications of these norms for the management of building production. The concluding section compares the governance implications of contractual management, as structured by JCT80, with the economic models of governance that constitute the contracting continuum.

A. The Institutional Structure of Administration and Management Under JCT80.

Responsibility for decisions about the administration and management of a building project governed by JCT80 is organised in a manner which combines autonomy with hierarchy. The general contractor (gc) and nominated sub-contractors (nsc.s) are to procure and co-ordinate the resources required to complete their distinct portions of the project, although nsc.s' management powers are, to some extent, subordinated to the authority of the gc. Within the parameters of the

contractual constraints specified in the Bill of Quantities and agreed between client and gc, gc.s have considerable management autonomy. They select input suppliers, determine the pace of production and make decisions about the organisation and sequencing of building operations. Where the activities of building producers confront any of the contractual constraints, however, the gc's management function is subordinated to that of the architect. Revisions to the parties' original decisions about price or the Date for Completion, or changes to the building specification, for example are managed by the architect, as is evaluation of the performance of building producers against the contractual standards of timing and quality.

The architect's mandate to administer and manage building projects is to be found in a range of contractual powers and duties. This authority is exercised by means of three instruments: inspection, certification, and instruction. Project architects must certify the gc's progress at certain stages of the project and at specified intervals, and are sometimes required to issue directive or adjustment instructions. In addition, architects are empowered to inspect the Works and order rectification or removal of defects and non-conforming inputs.

1. Architect's Instructions

JCT80 empowers or requires the architect to issue Instructions in a wide range of circumstances[1]. The authority to instruct is a unilateral power to direct production in the sense that gc and nsc.s are required to comply with properly issued Instructions which fall within the architect's authority[2]. Only in the case of one type of "Variation Instruction" are building producers afforded a contractual right of "reasonable objection"[3].

The procedure for issuing Instructions purports to ensure that directions are documented, and reach the gc (or nsc) in good time for the activity which it describes to be organised[4]. It is the responsibility of the gc to ensure that the information contained in Instructions reaches other building producers in time for supplies to be organised. To this end, the gc is required "constantly [to] keep upon the Works a competent person-in-charge" who is empowered to

---

[1] The contract distinguishes between imposing a duty to instruct and conferring powers to instruct according to the subject-matter of the direction (see Fig.1). As the architect is not technically party to the contract, enforcement of the duty to instruct is channelled through the client.

[2] Clause 4.1.1 of the main form states:

> The Contractor shall forthwith comply with all instructions issued to him by the Architect / Supervising Officer in regard to any matter in respect of which the Architect / Supervising Officer is expressly empowered by the Conditions to issue instructions...

See clause 4.2 of NSC/4 for the equivalent obligation of a nsc to comply with Architect's Instructions. Note that Architect's Instructions will normally be channelled through the gc to a nsc.

[3] Gc.s and nsc.s may object to Instructions which change terms governing access to the site, and limit working space or working hours: Clause 4.1.1, see clause 4.3 NSC/4 for the equivalent provision in the standard form of sub-contract.

[4] Clause 4. The procedure also affords gc.s the power to request clarification of the architect's authority to issue a particular instruction, and provides clients with a remedy if the gc does not comply with an Instruction that is authorised by the Conditions.

receive Instructions from the architect and liaise with the Clerk of Works[5].

Architect's Instructions are the primary contractual instruments by which the project architect communicates information to the gc[6]. With respect to co-ordination decisions, Instructions are used to give direction and specify adjustments to information which emerges during production. In addition, Architect's Instructions play a role in the contractual system of monitoring and evaluation. JCT80 requires Instructions to be issued before the architect exercises her contractual power to inspect completed portions of the Works[7], and envisages that producers' failures to comply with contractual terms will be recorded in Architect's Instructions[8]. Figure 1, documents the principal contract terms under which the architect is empowered to issue Instructions and the management function of the Instruction in each case.

---

[5] Clause 10. The precise range of functions to be fulfilled by this person is a matter for the gc alone.

[6] Note that the communication envisaged by Architect's Instructions is unidirectional.

[7] Clause 8.3.

[8] See, for example, clauses 8.4 and 17.

Fig. 1 The conditions expressly empower or require the architect to give instructions in the following instances:

Term	Substance	Function
2.3	Resolving discrepancies between contract documents	Supervision
6.1	Resolving discrepancies between private (contractual) provisions and statutory requirements	Supervision
7	Setting out works at ground level	Direction
8.3	Opening up works for inspection	Supervision
8.4	Removal of non conforming goods	Supervision
8.5	Excluding employed persons from the site / Works	Supervision
13.1	Changes to the project defined by original contract documents, or to the conditions under which project is to be executed	Adjustment
13.3	Expenditure of provisional sum items in bills	Direction
17	Rectification of defects that appear within 6 months of practical or apparent completion of the works	Supervision
22C	Removal and disposal of debris where clause 22C insurance provision used	Direction
23.2	Postponement of any part of the Works	Adjustment
25.3	Extension of the contract period	Adjustment
26	Gc's claim for direct loss and or expense	Adjustment
27.4.2	Assignment of the benefits of sub-contracts where the gc's contract is determined by the client	Adjustment
30	Documents to the QS for ascertaining final contract sum	Direction
32.2	Protective work on the outbreak of hostilities	Adjustment / Direction
33.1.2 33.1.3	Removing debris and damaged work and execution of protective work in the event of war damage	Adjustment/ Direction
34	Discovery of antiquities	Adjustment
35.5.2	Changes in the nomination procedures	Direction
35.10.2	Contract with nsc - "basic" procedure	Direction
35.8	Where gc and nsc fail to agree terms	Direction
35.11.2	Using the "alternative" nomination procedure	Direction
35.18.1.1	Re-Nomination	Adjustment
35.24.4.1	Default by nsc	Adjustment
36.2	Nomination of suppliers	Direction

Directive Instructions

Directive instructions describe actions which gc.s or nsc.s must take in order to meet their contractual obligations to "carry out and complete" the Works and are required whenever the information available to a gc or nsc is incomplete, contradictory, or in other respects an inadequate basis upon which to act[9]. Such Instructions operate to shield building producers from contractual liability for defects in the completed building which result from compliance with a valid instruction[10]. JCT80 also protects producers from dilatory performance by the architect of her responsibilities to co-ordinate production. Directive Instructions which are late or non-forthcoming are grounds for a gc or nsc to claim an extension of time and recover its "private" costs of disruption, provided that the gc or nsc had made a specific and timely written request for the instruction[11].

Directive Instructions are also used to facilitate co-ordination of the operations of independent resource suppliers. Take, for example, the nomination procedures

---

[9] A good example of this function is the clause 7 Instruction by which the architect is to direct the gc as to the precise layout of the buildings on the site. In this type of situation, the duty to instruct avoids the costs of the gc duplicating the architect's investigations.

[10] Architect's Instructions would appear not to shield gc.s from accountability for breaches of statutory duties or tortious obligations. The issue may not arise, however, as the courts have severely restricted clients' and subsequent building owners' access to sanctions under these theories, see chapter IX, infra.

[11] 26.2.1 and 25.4.6. In both cases the request is to be made:
on a date which having regard to the Completion Date is neither unreasonably distant from nor unreasonably close to the date on which it is necessary to receive the same.

contained in clause 35[12]. Clause 35 opens with a clarification of the circumstances in which the architect is permitted to appoint a sub-contractor[13]. Once the architect has selected a firm to supply specialist input, she is required to send "a preliminary notice of nomination" to the gc, which notice is to include details of the tender offer made by the specialist[14]. The notice is an Instruction to the gc to "proceed to settle outstanding matters of schedule 2 of the tender forthwith" unless it has reasonable grounds to object to the identity of a nominee[15]. The gc's obligation to negotiate with the nsc is mirrored by the nominee's undertaking (contained in the collateral arrangement between client and nominee), to seek to settle matters with the gc[16].

These provisions establish a framework within which gc and nominee are to bargain over arrangements for their on-site activities. If they fail to come to agreement the gc is

---

[12] The contract provides two primary nomination procedures, both of which are supported by standard forms of sub-contract (NSC/4 & NSC/4a) and collateral warranty (NSC/2 & NSC/2a). The "basic" method of nomination presumes that the nsc is selected on the basis of a tendering process that is governed by yet another standard document NSC/1 (clause 35.6 - 35.10). Under this procedure the transactional relationship between gc and nsc is governed by the tender and the standardised conditions of NSC/4 and the relationship between client and nsc is governed by NSC/2. The alternative procedure assumes that the appointment of the nsc is not managed on the terms of NSC/1 (clause 35.11). In this case the relationship between gc and nsc is on the basis of NSC/4a and the client-nsc relationship is governed by NSC/2a. (Note that JCT80 also recognises the possibility that client and nsc may agree, during tendering, that their relationship will not be governed by either of the standard forms of collateral warranty: clause 35.11.1).

[13] An intention to use a specialist input suppliers for some part of the Works will usually be signalled during initial planning by the device of inserting a "prime cost" sum into the Bill of Quantities, supra, chapter VI. JCT80 also permits the decision to be taken after work has commenced on site. Implementation of a decision which is made during production is governed by the Variation procedure: clause 13.

[14] This specific direction to the architect is part of the basic procedure: clause 35.7.1.

[15] Clause 35.4.1, see chapter VII, supra, for discussion of the contractual veto powers.

[16] Clause 1.1 NSC/2: the matters referred to deal with organisation of the nsc's activities on the site, and integration of these operations with those of the gc.

required to notify the architect, explain the reason for failure, and continue with negotiations until instructed otherwise[17]. Upon receipt of notification that gc and nominee are unable to agree, the architect is required to issue "such instructions as may be necessary"[18] to resolve the deadlock. Once the organisational arrangements have been concluded both gc and nominee are to inform the architect of their agreement, whereupon the architect is to issue the formal nomination Instruction directing the two actors to enter into the standard form of sub-contract[19].

2. Supervision

a. Inspection

The inspection provisions of JCT80 are primarily directed at the transaction-specific constraints set out in the documents which define the building concept and its component inputs. Clause 8 empowers architects to request evidence that materials and goods conform to the standards described in the Bill of Quantities and direct gc.s to open up executed work for testing. More limited provision is made for inspection of preparatory work off-site. The gc is required to ensure that

---

[17] Clause 35.8.

[18] Ibid.

[19] Clause 35.10.2.

the architect has "reasonable access" to its own workshops and those of domestic sub-contractors, and, "so far as possible", to secure similar rights of access to the workshops of a nominated sub-contractor[20].

Although the architect has extensive powers to monitor the quality of input, practical execution of the regime of quality control may be hampered by the terms of the contract between architect and client. This arrangement normally envisages periodic rather than constant attendance at the site[21]. JCT80 compensates for the potentially significant gaps in supervision which may arise by providing for the appointment of a Clerk of Works (CW).

Clause 12 gives clients a right "to appoint a clerk of works whose duty shall be to act solely as inspector on behalf of the Employer under the directions of the Architect". The CW's place in the contractual structure of quality control entails checking that materials and workmanship accord with the contractual specification, Architect's Instructions and "good practice" in the industry[22]. Subject to the significant qualification that the instructions of CW.s are not binding on the gc unless ratified by the architect, CW.s may assume

---

[20] Clause 11.

[21] Contract management and supervision is usually a relatively small component of the architect's fee. Under the RIBA Conditions of Engagement, for example, only 25% of the fee is payable for the services supplied between the end of the tender stage at which the gc is hired and Completion of the project.

[22] Allan Ashworth Contractual Procedures in the Construction Industry (Harlow: Longman Scientific and Technical 1986); Dennis F. Dolan The British Construction Industry An Introduction (Basingstoke: MacMillan, 1979).

any of the architect's monitoring powers[23]. Gc.s are specifically required to facilitate the activities of the CW[24]. This assistance might include affording the CW reasonable opportunities to inspect products before incorporation into the Works and test completed portions of the building for conformity with the contractual specification.

b. Certification

Certification is primarily used to trigger payments under the terms of the contract. The majority of the certificates for which JCT80 makes provision are concerned with the progress of building producers and precipitate release by the client of part of the contract sum. Others function, in effect, as contractually authoritative statements that the gc or a nsc has failed to meet the constraints of time, quality and quantities. With respect to this latter class of certificates, the architect's evaluation activates the obligation of the building producer, under JCT80, to compensate the client for breach. Figure 2 documents the range of clauses under which the architect is to certify performances at various points during the transaction and indicates the direction of the contractual payment obligation.

---

[23] Clause 12, see chapter IX, infra, for discussion of the relationship between architects' and clerks of works' supervisory duties.

[24] Clause 12.

Fig 2. Architect's Certificates

Clause	Subject Matter of Certificate	Party Subject to Obligation
17.1	Practical Completion of the Works.	Client
17.4	Completion of Making Good Defects at the end of the Defects Liability Period.	Client
18.1.1	Estimated value of the Works where the client takes partial possession before the end of the project.	Client / no payment
18.1.3	Defects made good after partial possession.	Client
22A.4.2	Payment of insurance monies after reinstatement of damage.	
24.1	Failure to complete the Works by the Date for Completion.	General Contractor
27.4.4	Expense, Loss or damage incurred by the client arising out of determination of the contract by the client.	General Contractor
30.1.1	Interim certificates for periodic payment during production.	Client
30.7	Interim Certificate for final payment of nominated sub-contractors.	Client
30.8	Final Certificate	Client
35.13.5.2	Contractors failure to provide reasonable proof of payment to nominated sub-contractor.	
35.15.1	Failure of nominated sub to complete the sub-contract by the due date.	Nominated Sub-Contractor
35.16	Practical Completion of the sub-contract Works	Client
35.17	Interim Certificate to complete payments to nominated sub-contractors.	Client

Interim Certification and Quality Control During Production

Many certificates are expressly made part of the quality control system in that the architect may not issue the document unless satisfied that output conforms with the specification in every material respect. The contractual role

of others is more ambiguous. Of particular interest are those certificates which entail assessment of the progress of the Works. The question which has arisen is to what extent should the architect, when evaluating quantities and timing, take account of the quality of input supplied before certifying that an operation has been completed? Certification for interim payments during production raises this issue in a particularly acute form.

JCT80 requires the contract price to be paid in instalments throughout the production process[25]. Interim payments are governed by a system that falls somewhere between periodic payment of equal sums at regular intervals and stage payments as and when production phases are completed. Payments are to be calculated at the intervals agreed between the parties during the transaction-specific planning phase[26]. At the conclusion of each interval the architect measures the quantity of the Works which has been completed during the valuation period and communicates this information to the Quantity Surveyor of the project (QS)[27].

The QS assesses the value of the work in accordance with the rules given in clause 30[28]. These rules stipulate, in

---

[25] Instalment payments are governed by clause 30.

[26] The payment intervals are recorded in the Appendix. JCT80 provides for a "default norm" of monthly intervals.

[27] Clause 30.1.2 mandates the QS to make an interim valuation of the Works whenever it is deemed necessary by the architect.

[28] The "working rules" of valuation itemise the work for which the gc is to be paid. There are four basic categories: 30.2.1 lists the matters for which the gc is to receive a payment from which a percentage is automatically deducted and retained until final accounting (the Retention). Clause 30.2.2 lists items for which the gc is to receive payment without any deduction. Clause 30.2.3

effect, that the interim payment due on each certificate is the difference between the value of the Work which has been completed at the time of assessment and the total that has already been paid. Issue of the priced certificate by the architect triggers the client's obligation to pay the gc who is then responsible for distributing the sum to other input suppliers[29].

This procedure clearly provides a direct pecuniary incentive for the gc and its input suppliers to operate within the time constraint in that cash-flows are made contingent on the rate of progress. Whether the interim certification system also reinforces the quality constraint is a more complex issue. Some argue that the interim payments machinery ought to be interpreted to mean that architects would not certify work for payment unless satisfied that it conforms to the contractual standards in all material respects. Architects who fail to evaluate quality, it is thought, should be answerable to clients for any costs which result from over-certification. Normatively, this structure of accountability is seen as desirable because it connects building producers' incentives with respect to time to the quality of materials and workmanship, and by a simple extension of liability gives

---

specifies two items for which the entire value is to be deducted from the amount due. Clause 30.3 affords the architect limited discretion to include materials or goods for the supply of which the gc. has made contractual arrangements, but which have yet to be delivered to the site.

[29] The client's obligation is to pay within 14 days from the date of issue of each interim certificate: clause 30.1.1.1. Failure to pay on time is one of the grounds on which the gc may invoke the termination procedures of clause 28.

architects an incentive to perform their supervisory duties conscientiously.

Support for the idea that interim certificates should reflect qualitative monitoring can be found in the valuation rules of JCT80. Clause 30.2.1.1, for example, asserts that certificates are to include the value of the work "properly executed by the Contractor". Moreover, the requirement that instalment payments correlate with the value of the Works to date rather than production costs appears to link interim payments to quality. The practical realities of building production would appear to reinforce this argument. Construction operations are cumulative and defective work is quickly covered up in succeeding stages of the project. Poor quality input which is not discovered during interim certification, therefore, may remain hidden until the building is in use, at which point, the costs of correction are likely to be much higher than they would have been during construction.

Professional support for the view that in certifying payment the architect ought to evaluate quality is also apparent in the testimony of some of the independent witnesses before the Official Referee in Sutcliffe v Chippendale and Edmondson[30]. Judge Stabb QC noted in particular the evidence of one architect who:

---

[30] (1971) 18 Building Law Reports 149 (Lexis).

> took the view that the certificate should conform as strictly as possible to the terms of the contract and that, if he was not satisfied with any particular item of work, it was implicit that the value of the work was not to be included in a certificate covering work properly executed[31].

However, specific provisions of JCT80 are also consistent with the competing view that interim certification is a procedure which enables monitoring of building producers' rate of progress but should not play a significant role in quality control. Clause 30.10, for example, states that interim certificates are not to be regarded as conclusive evidence that work, materials, or goods conform to the specification[32]. In addition, the contractual provision for a percentage of the sum due on each certificate to be withheld until the gc has rectified defects suggests that architects are not expected to identify every divergence from the specification during the process of interim valuation. Finally, the formulation of interim payments as the difference between the value of the work completed and the sum which has already been paid, means that over or undervaluation is readily corrected so long as the transaction remains alive.

This interpretation of interim certificates as a rough appraisal of the progress of the Works rather than a means of verifying the quality of inputs was also backed by expert

---

31 Ibid., evidence of Mr Clarke, Lexis page 18.

32 The contract envisages that the architect will have an opportunity to revise a previously held opinion until the Final Certificate is issued: see generally, clause 30.7, clause 30.8 & clause 30.9.

witnesses in the Sutcliffe case. Judge Stabb QC noted that some professional architects had suggested that the certificate should be viewed as:

> an approximation of the value of the work as it progressed, assessed by the quantity surveyor without any detailed inspection of the work, the object being simply to provide a reasonable progress payment for the contractor based upon a comparatively cursory examination of the site[33].

The implications of these conflicting views for the transaction costs of building production may be clarified by distinguishing between the issues of excessive payments and quality control. Provided that the relationship between the client and gc survives until satisfactory completion of the project, overpayment on any individual certificate has little significance in that subsequent payments can always be revised if non-conforming inputs are discovered during routine inspection and testing. In terms of the basic issue of matching payments to the quality of building producers' performances, therefore, an architect's failure rigorously to inspect work prior to the issue of each certificate should not matter so long as the architect at some point conducts a thorough review of quality[34].

There may be differences, however, between the governance costs of linking quality control to interim payments as

---

[33] Sutcliffe v Chippendale and Edmondson, supra, note 30, evidence of Mr Ashcroft & Mr James, Lexis page 19.

[34] Clause 17.2 mandates the architect to conduct a review of the Works for evidence of qualitative defects during the period between Practical Completion of the Works, as certified under clause 17.1 and issue of the Final Certificate under clause 30. See chapter IX, infra, for discussion of the Defects Liability Period.

opposed to maintaining distinct processes for evaluation of progress and quality. It might be argued, for example, that a unified monitoring procedure will entail fewer interventions by the architect and so is likely to be less disruptive than evaluation processes which involve separate assessments of performance against time and quality constraints. Moreover, the predictability of monitoring which is linked to the interim payments machinery may facilitate accommodation of inspection and testing into the gc's programme for the Works.

In other respects, the transaction costs of a single procedure may be higher than the costs associated with separate assessment of quality and progress. The ease with which defective work may be concealed, for example, might suggest that effective supervision of qualitative dimensions of building production requires frequent but unpredictable monitoring. In addition, architects who conduct separate reviews of progress and quality may have a greater number of opportunities to unearth defective inputs.

B. Adjustment Machinery

> In most commercial contracts the fundamental contract terms concern the obligation to be performed, the period for performance and the price. Usually these are stipulated with some particularity. But it is not unusual to find some element of fluidity.... I do not think that there is any class of contract in which the content of these fundamental terms is potentially as fluid as

> in the familiar forms of building and civil engineering contract[35].

The adjustment machinery of JCT80 takes the form of decision-making procedures which become operational when the project is affected by specified contingencies. These procedures enable the parties to modify their initial decisions with respect to timing, quantities and qualities of labour resources and materials inputs, and revise the contract price to take account of such modifications. In addition, JCT80 provides for changes in the contract sum in response to inflation of input prices.

1. Fluctuations in Input Costs

The fluctuations clauses enable adjustments to the price term in response to inflationary changes in input costs, an event which is beyond the control of either party to the contract. JCT80 provides three alternative regimes which vary in their apportionment of increased costs between client and GC[36]. Under clause 38, the default norm, the gc bears the risk of all changes in input rates except for the net cost of changes in statutory rates and charges on labour, materials fuels. Clause 39 allocates a higher proportion of the costs

---

[35] Bingham LJ, Ashville Investments Ltd. v. Elmer Contractors Ltd. [1988] 2 All ER 577 at 591e-g.

[36] The parties are expected to select between the provisions during the planning process. If they fail to make an election, clause 38, which allocates to the gc most of the risk of a rise in input costs, operates as the default norm: Appendix.

of changes in input prices to clients. Clients are to pay for changes in national wages for labour; increases in transportation costs for workers and the net cost of changes in market prices for materials and fuels. Both terms exclude allowance for the gc's profit on higher input costs and both freeze fluctuations on the existing completion date so that the price term will not be adjusted for changes in input rates beyond the date at which the project should have been completed[37].

With respect to both of these clauses the adjustment machinery is activated by the gc who must notify the architect of any changes in the relevant rates within a reasonable time of the change occurring[38] and the change is effected by way of an addition to the contract sum. The precise amount of the additional payment is to be determined by the QS and the gc who are empowered to agree upon "what shall be deemed for all purposes of this contract to be the net amount payable to or allowable by the Contractor"[39].

The third option, clause 40, adopts a completely different approach to price changes. This term provides for adjustments on the basis of the value of the Works rather than

---

[37] This provision reverses the decision in Peak Construction (Liverpool) Ltd v. McKinney Foundations Ltd (1970) 1 Building Law Reports 111. In this case the Court of Appeal held that the gc's right to compensation for inflationary increases in input costs remains alive until the production process is finally completed however late. Although the transaction in the Peak case was not governed by a JCT contract, the decision was assumed to apply to the JCT forms.

[38] This notice is expressly made a condition precedent to gc.s' contractual rights to an adjustment in the contract price: clauses 38.4.1 & 38.4.2; 39.5.1 & 39.5.2.

[39] Clauses 38.4.3 & 39.5.3.

changes in input prices. The contract sum is to be re-evaluated throughout the lifetime of the project by reference to price trends for similar work in the UK. Operation of the clause 40 mechanism requires that input is well defined at the outset so as to correspond with the monthly price indices. As the basis for adjustment is underlying price trends in the UK the clause excludes imported items which are incorporated without processing. Price changes in these commodities are to be dealt with according to the net price adjustment machinery[40].

2. Extensions of Time

The organisation of building production and the environment in which it is situated render parties' initial decisions about the duration of a project particularly prone to error[41]. The time-scale, complexity, and interactive nature of the assembly process, together with participants' inability to control the environments in which they operate create a context in which the fact of delay is predictable although its potential scope is unforeseeable. JCT80 mediates between participants' interests in timely completion and limitations on their power to control the conditions under which

---

[40] Clause 40.3.

[41] Supra, chapters VI and VII.

transactions are executed by means of a combination of contractual sanctions and discretionary adjustment provisions.

Under JCT80, the costs of delay are allocated, initially between client, gc and nsc, according to the cause of the event which disrupts progress. The contract requires gc.s to complete the Works on or before the Date for Completion. If the architect certifies that the gc has failed to meet the time constraint, the client may deduct (or recover) liquidated damages[42], at the rate agreed during planning, unless the delay is attributable to a contingency for which the client is wholly or partially responsible under the contract - a "Relevant Event" (RE)[43]. Where a contingency which induces delay is a RE, the time constraint is to be adjusted.

The RE.s include contingencies of which the costs are shared as well as those for which the client is wholly accountable to the gc or nsc[44]. With respect to the latter class of events the gc or nsc is also entitled to claim against the client for the "direct losses and/or expenses" occasioned by the disruption[45]. For the purposes of clarification, fig.3, which lists the Relevant Events, indicates the grounds on which the gc or nsc may, in addition, recover compensation for direct costs.

---

42 Clause 24, see chapter IX, infra.

43 Clause 25.

44 See chapter VII, supra.

45 Clause 26.

Fig.3 Relevant Events

Clause no:	Event	Loss/ Expense claim
25.4.1 / 11.2.5.1	force majeure	No
25.4.2 / 11.2.5.2	Exceptionally adverse weather conditions	No
25.4.3 / 11.2.5.3	Loss or damage to the Works caused by any of the events covered by the projects "all-risks" insurance policy	No
25.4.4 / 11.2.5.4	civil unrest or local industrial action affecting the trades engaged in on-site production, off-site preparation or manufacture, or transportation of labour or materials.	No
25.4.7 / 11.2.5.7	Delay on the part of nsc., or nominated supps., which the gc has taken all practicable steps to reduce	No*
25.4.9 / 11.2.5.9	Governmental restrictions on labour and / or materials; where the measures were announced after the Date of Tender	No
25.4.10 / 11.2.5.10	Unforeseen and uncontrollable difficulties in securing essential supplies of labour and materials	No
25.4.11 / 11.2.5.11	Actions or inaction of statutory authorities	No
25.4.5.1 / 11.2.5.5.1	Architect's Instructions to vary the original contract plans	26.2.7 / 13.1.2.7
25.4.5.1 / 11.2.5.5.1	Architect's Instruction to postpone part of the works (23.1)	26.2.5 / 13.1.2.5
25.4.5.1 / 11.2.5.5.1	Ambiguity or discrepancy in the contract documents	26.2.3 / 13.1.2.3
25.4.5.1 / 11.2.5.5.1	Discovering antiquities	34.3.2
25.4.5.1 / 11.2.5.5.1	Nomination of sub-contractor or of supplier	If a Variation - Instruction is required: 26.2.7 / 13.1.2.7
25.4.5.2 / 11.2.5.5.2	Inspection under clause 8 unless the inspection reveals non-conforming input	26.2.2 / 13.1.2.2
25.4.6 / 11.2.5.6	Delayed receipt of necessary instructions for which the Contractor specifically applied in writing	26.2.1 / 13.1.2.1
25.4.8.1 / 11.2.5.8.1	Execution of work for the project by the client or any input suppliers directly engaged by the client.	26.2.4.1 / 13.1.2.4
25.4.8.2 / 11.2.5.8.2	Late delivery or non-receipt of materials input which the client had undertaken to supply	26.2.4.1
25.4.12 / 11.2.5.12	Inadequate arrangements for access to and from the site.	26.2.6 / 13.1.2.6
11.2.5.13	Exercise by nsc of its contractual authority to suspend operations if it has not been paid by the gc in accordance with the terms of nsc/4	

During production, the machinery for modifying the time constraint is to be activated by the gc. Gc.s are required to notify the architect of any actual or anticipated circumstances which may cause progress to be delayed[46]. In this written notice, the gc who wishes to claim an extension of time, must specifically identify those circumstances which are believed to constitute RE.s, state the probable effects of such Events, and estimate the period of delay which is likely to result.

On the basis of this information, the architect must decide whether the material circumstances of the delay reveal any RE.s, and if completion is likely to be delayed by any such contingencies. Where both conditions are met the architect must revise the time constraint. On a first application by a gc the architect has no choice but to extend the Date for Completion and in granting an extension the architect is required to state which of the RE.s she has taken into account. The exercise of the architect's discretion is governed by a standard of "fairness and reasonableness"[47] and her decision must be made within 12 weeks of receiving sufficient information from the gc, or by the existing completion date, whichever is sooner[48].

Once extended, the time constraint may be drawn in again at a later point, if the architect instructs the gc to omit

---

[46] Clause 25.2.1.1.
[47] Clause 25.3.1.
[48] Ibid.

parts of the Works. However, the gc cannot be required to meet an earlier deadline than the original Date for Completion, no matter how much work is omitted[49]. This power to "reduce" the contractual time period enables clients to choose expeditious completion by omitting non-essential items but protects the gc against a more onerous contractual obligation than it had originally assumed.

Clause 25 also contains a procedure which enables the architect to grant "retrospective" extensions of time. The Architect is required to conduct a review of the progress of the project "not later than the expiry of 12 weeks from the date of practical Completion"[50]. The purpose of the review is to determine whether the progress of the gc or a nsc was disrupted by any RE.s, for which the gc (or nsc) has yet to present a successful claim. Upon concluding her evaluation the Architect is to notify the gc of her final decision about the Date for Completion. The notice may confirm a previously fixed Date, bring the Date forward (if work has been omitted and an extension previously granted) or extend time to take account of a RE, whether or not the gc had notified the architect of such a contingency.

Retrospective extensions preserve the initial allocation of risks between client and building producers. Their most obvious consequence is to protect the gc (or nsc) from

---

[49] Clause 25.3.2.

[50] Clause 25.3.3.

failures to present successful claims for extensions while the Works are in progress. It should also be recognised, however, that the procedure may serve to maintain the client's contractual power to sanction building producers for failing to meet a specific completion Date. Many of the RE.s are contingencies for which the client is wholly accountable under the terms of JCT80. In the absence of a revision to the contractual time constraint, such contingencies would be viewed as breaches which cause time to be "at large". While clients may still be entitled to completion within a "reasonable time", they would lose the right to insist on a specific Date for Completion, and could enforce the "reasonable time" constraint only by way of the ordinary action for damages[51]. The procedure for retrospective extensions empowers the architect to make ex post adjustments for RE.s, including breaches by the client, which may have been overlooked or underestimated. It therefore enables the client, through the architect, to define what would be meant by a "fair and reasonable" Date for Completion and preserves the contractual sanction of liquidated damages[52].

No guidance is given as to the basis on which the architect is to decide upon a "fair and reasonable" extension of the Date for Completion, either during production or as

---

[51] Holme v. Guppy 1838 3 M&W 387; Wells v. Army & Navy Co-operative Society Ltd. (1902) 86 Law Times 764; Amalgamated Building Contractors v. Waltham Urban District Council [1952] 2 All ER 452; Peak Construction (Liverpool) Ltd v. McKinney Foundations Ltd, supra, note 37.

[52] See chapter IX, infra, for discussion of the contractual sanctions against delay.

part of the retrospective procedure. Some commentators argue quite categorically that it "must mean fair and reasonable in relation to the cause"[53]. For example, a gc who devoted three days to "opening up and testing" of the Works would be entitled to a three day extension of the Date for Completion.

Others maintain that the decision-making criteria should relate to the effect of a RE on the progress of the Works[54]. If, for example, a gc were already 2 weeks ahead of its schedule when it was required to devote three days to "opening up and testing", this analysis would mean that the time constraint should not be changed.

The primary argument for an "effects-orientation" is that gc.s are able to influence the impact of disruptive events. A well-planned programme, it may be argued, ought to anticipate and accommodate predictable events. Gc.s might, for example, plan "float" days into the master-programme, organise building operations in a manner which contains the effects of RE.s, and take steps to recover lost productive time. To the extent that gc.s are able to engage in such pre-emptive and mitigatory actions, the duration of a RE (the cause), would

---

[53] Dennis F. Turner Building Contracts: A Practical Guide (Harlow: George Godwin, 1983) at 53.

[54] See, for example, the judgment of Megarry J. in Hounslow London Borough Council v. Twickenham Garden Developments Ltd. (1970) 7 Building Law Reports 89. He illustrates the point by reference to a strike during production, and comments that:

> If a strike occurs when two-thirds of the work has been completed in half the contract time, I do not think that on resuming work a few weeks later the contractor is then entitled to slow down the work so as to last out the time until the date for completion ... if thereby he is failing to proceed with the work "regularly and diligently.

at 113. (Note that Megarry J,'s example is based on the assumption that the risk of delay due to a strike is allocated to the client. Under JCT80 this position could be argued on the basis of clause 25.4.10.1.). See also Vincent Powell-Smith and John Sims, Building Contract Claims (London: Granada, 1983).

seem to be a misleading measure of disruption (the effect). In such a context, a cause-based analysis may enable the adjustment machinery to be used to weaken the accountability of gc.s and other building producers for the pace of production.

Some support for the idea that architects' revisions to the time constraint are to be based on a "fair and reasonable" estimate of the unavoidable consequences of a disruptive event is to be found in provisions of clause 25. First, an architect's decision to grant an extension is made conditional upon a finding that: "the completion of the Works is likely to be delayed [by a RE] beyond the Completion Date"[55] and the decision as to the amount of additional time is to be implemented "by fixing such later date as the Completion Date as [the Architect] then estimates to be fair and reasonable"[56]. Gc.s, therefore, do not even qualify for an extension unless they can persuade project architects of the probable effect of a RE on their ability to meet the time constraint. Moreover, the focus of the adjustment decision is not the duration of the cause, but the gc's potential progress, given that the event has occurred.

Second, the information, supplied by the gc, on which the architect is to decide whether to grant an extension, and if so, for how long, is not only required to establish the fact

---

[55] Clause 25.3.1.2.

[56] Clause 25.3.1.

of an RE, but must also explicitly address its effects and impact[57]. Finally, in addition to specific norms concerning mitigation of disruptive effects which are built into the definitions of some RE.s[58], the entire set of grounds for adjustment are governed by a working rule which requires the gc (or nsc) to use its "best endeavours" to limit the impact of these contingencies[59].

Even if it is true that an effects-orientation better maintains the accountability of gc.s for timely completion of production the interactive nature of transactions governed by JCT80 suggests that we should be wary of solutions which focus exclusively on one class of participants. Of particular significance to understanding the transaction costs which might be engendered by an effects-orientation, is the fact that some of the RE.s are attributable to actions or decisions of the architect. Moreover, some of these actions by the architect constitute failures to deliver the quality of services envisaged by her contract with the client[60].

As we have suggested, the working rules of JCT80 by which clients are held accountable to gc.s for the actions of the architect may be viewed as a means for the expertise of gc.s

---

57 Supra.

58 For example, clause 25.4.7 defines as a Relevant Event "delay on the part of Nominated Sub-Contractors or Nominated Suppliers which the Contractor has taken all practicable steps to reduce".

59 Clause 25.3.4.1 states that the gc:

> shall use constantly his best endeavours to prevent delay in the progress of the Works, howsoever caused, and to prevent the completion of the Works being delayed or further delayed beyond the Completion Date.

60 See, for example, clause 25.4.5: Compliance with Architect's Instructions .....; and clause 25.4.6: Architect's failure to provide necessary production information in good time.

and other building producers to be deployed in the monitoring of architects[61]. However, analysis of claims provisions as a mechanism which aids evaluation of the architect's performance must be situated in the context of the actual procedures instituted by JCT80. That the architect is responsible for operating the adjustment procedures, such as the extension of time machinery, is not, in itself, inconsistent with the idea that these procedures are a reporting mechanism. After all, an architect can scarcely prevent a client from learning that liquidated damages are not due from the gc despite the fact that the building is not ready at the time originally envisaged. When called upon the adjudicate a gc's claim that its progress has been delayed by her own actions or decisions, however, the project architect is caught in a conflict between interest and responsibility. The architect's role in managing revisions under JCT80 requires her to decide "fairly" in adjudicating the claims of the gc[62], but in doing so she may implicate herself in a breach of the performance norms of her contract with the client.

This context adds another dimension to the choice between "cause" and "effects" interpretations of the decision-making criteria for an extension of time. An effects-orientation affords the architect greater discretion than a cause-based judgment. When using a cause analysis the architect's

---

61 See chapter VII, supra.

62 Sutcliffe v. Thackrah [1974] AC 727.

decision-making authority is primarily directed at the issues of whether a Relevant Event has occurred and its duration[63]. An effects-orientation substitutes for the relatively observable measure of "duration" a more amorphous idea of "impact on the gc's ability to complete by the Completion Date given all of the circumstances". Although the architect's discretion, in either case, is to be governed by the fairness norm, it would appear that the less definite the reference point for her decision, the harder it would be to challenge a parsimonious and self-protective extension.

The power of the architect strategically to manipulate revisions so as to limit her accountability for inadequate performances might be controlled, to some extent, by switching between "cause" and "effects" analyses according to the nature of the Relevant Event. That is to say, the working rules of adjustment could be structured so that extensions for RE.s which are attributable to defaults by architects would be assessed by reference to the duration of the "cause", and the remainder would be processed on the basis of their effects on progress. While such a contractual practice would by no means ensure absolute accountability of gc and architect in all circumstances, it would seem to afford the project architect relatively less decision-making power over the transactional consequences of her own defaults.

---

[63] Note that the architect ought also to have in mind actual or potential mitigatory actions on the part of building producers: clause 25.3.4.

3. Variations

The variation machinery of JCT80 contains procedures for modifying earlier transaction-specific decisions about building components. Incorporation of unilateral authority to make such changes into the structure for governing building production has been described as "both a strength and a weakness of the traditional British contracting system"[64]. Variation procedures facilitate on-going revisions to the building concept with the result that the client / architect does not need to finalise every detail during the ex ante planning process.

Given the complexity of building production, this capacity to postpone some decisions until the consequences of other choices have appeared may be a means of avoiding costly errors[65]. However, the ease with which a variation decision can be made may be a misleading indication of the transaction costs of such changes. Modifications may force the gc to revise or terminate existing arrangements for procuring inputs and leave insufficient time for the gc to negotiate favourable terms to obtain the supplies required to implement the changes. Variations may also compel the gc to revise its

---

[64] EDC for Building, Faster Building for Industry, NEDO (London: HMSO, 1983) at para. 3.3.

[65] See chapter IV.

programme for the Works, and cause interruptions in the production process.

The modifications envisaged by clause 13, the Variations clause, fall into three categories. First clients / architects may alter the specification of the building concept which is contained in the Documents created during planning. This provision envisages changes to prior decisions about quantities or qualities of labour resources, materials and goods, and alterations in the design of the building[66].

Second, a Variation Instruction may modify certain provisions that were included in the Bill of Quantities and which shape the conditions under which building producers are to work. Clause 13.1.2 enables changes to "obligations or restrictions" which affect access to the site[67], limit working space or working hours[68] and specify the sequence in which building operations are to be executed or completed[69].

Finally, the architect must issue a Variation Instruction to communicate her decisions with respect to any parts of the project which had not been specified in detail in the Bill of Quantities, but had simply been described as "provisional sum items"[70]. This type of variation does not so much express a change to a previous choice, but is, rather, an instrument

---

66 Clause 13.1.1.

67 Clause 13.1.2.1.

68 Clauses 13.1.2.2 and 13.1.2.3.

69 Clause 13.1.2.4.

70 Clause 13.3.

for making decisions which have been postponed from the initial planning period.

The variation power grants authority to make unilateral decisions in sense that gc.s who do not participate in decision-making are obliged to comply with variation instruction[71]. Gc.s are protected from the cost consequences of their lack of control over variations by the contractual provisions for adjustments to other terms. The value of any additional work is to be added to the Contract Sum[72], and the gc is entitled to claim an extension of time and its "private" costs of adjusting to the change[73].

The primary governance function of the variations machinery is to enable boundedly rational and imperfectly informed clients to avoid the potential error costs of complete ex ante specification. As we have seen, however, decisions "not to decide just yet" may also generate transaction costs. Of particular significance to complex transactions situated in an uncertain environment and involving specific investments are the costs of securing co-operation to changes. Absent a procedure for making unilateral

---

[71] This obligation is strict with regard to changes in design, quality or quantity of the works (13.1.1 variation) and Instructions respecting expenditure of provisional sums (13.3 variation), but qualified with respect to changes in restrictions concerning working conditions (13.1.2 variation). With respect to this last category of variations, the gc does not have to comply if it has 'reasonable' objections: Clause 4.1.1.

[72] JCT80 anticipates that work executed pursuant to a variation instruction will be valued by the quantity surveyor on an ex post "measure and value" basis wherever possible, using the same principles and unit rates as were used to develop the tender offer: clause 13.5.3. If the nature of the work is such that it cannot be properly measured in accordance with the principles used to prepare the BQ, the valuation norm is "prime cost" plus a percentage addition for profit: clause 13.5.4.

[73] Clause 25 and clause 26.

decisions, clients who wished to modify earlier choices about a project in the light of information which emerges during production would have no alternative but to negotiate changes with the building producers. Negotiation is in itself a transaction costly exercise, particularly when located in an institutional setting such as that which shapes building production. The interactive nature of construction, and the number of separate resource suppliers who are involved in the process may cause modification to entail revisions to many distinct contracts. In addition, changes to the specification of a complex product are multidimensional. One consequence of the connections between the definition of inputs and other contract terms under JCT80 is that negotiations would need to address a range of issues. Timing, disruption, the prices of additional or substituted inputs, and the implications of product and programming changes on one project for building producers' commitments to other transactions, are all relevant factors in settling the terms of producers' co-operation in altering plans upon which they have relied.

In addition to the direct process costs of bargaining for changes, negotiations during production may open up the possibility of strategic behaviour. Differences between clients and building producers' specific investments in a transaction create unequal relations of dependence[74]. Whereas provisions for interim payments enable gc.s and other

---

[74] Supra, chapter IV.

producers at least to cover preparatory costs and perhaps realise returns on their early investments during the production process, the benefits of clients' investments in the transaction do not materialise until the completed building is available for use.

Moreover, the construction process generates transaction-specific knowledge about the site and idiosyncratic relationships between producers and clients' consultants. These resources may serve to increase the gap between the value to the client of the relationships entailed by a transaction with a particular gc and the value of a substituted transaction. Within such a setting, a process of negotiating changes during production may expose clients to redistributive bargaining by opportunistic gc.s. Gc.s, for example, might refuse to co-operate in revisions to the specification of a building unless the client makes compensatory concessions which far exceed the costs to the gc of implementing the changes.

Building producers' power to "hold-out" against modifications as a means of appropriating part of the client's share of the transactional surplus may be of relatively little significance if the change in question is trivial. However, by no means all revisions during production would fall into this category. Clients may find, for example, that as a result of changes in input costs or delays, they are compelled to omit work in order to remain within financial and time

constraints. Alternatively, information about the site which emerges during production may reveal that substantial changes to structural plans are needed if the building is to be safe to use. With respect to this type of essential revision, a practice of bargaining for changes may render clients highly vulnerable to opportunistic manipulation by gc.s. who know that clients have little alternative but to agree to their terms.

By enabling the client to make what are in effect unilateral decisions about alterations in the building concept, JCT80 limits the scope for redistributive bargaining. In addition, because the variations machinery provides for adjustments to other terms of the transaction, it forces clients to confront the full costs of changes during production.

However, these provisions, like other aspects of JCT80 which may be analysed as potential responses to one class of transaction costs, generate their own organisational costs. One issue which arises is the accountability of the architect for the co-ordination costs of restructuring production to accommodate changes, where changes would not have been required had the architect conducted more extensive inquiry before work began on the site. In some instances, the failure to engage in prior investigations may constitute opportunistic "cheating" by the architect. While JCT80 protects gc.s' expectations of profit from transactions by pricing unilateral

changes in accordance with the total co-ordination and production costs, it cannot pass these costs to the architect.

If the claims procedures are a means by which gc.s act as surrogate monitors for clients with respect to the quality of planning services delivered by an architect[75], it might also be argued that they enhance clients' knowledge of the co-ordination costs attributable to the architect's decisions. Whether clients are able to use this information to strengthen the accountability of the architect, however, depends on the institutional structure of the transaction between architect and client.

The primary issue which arises relates to the costs to the client of interpreting and processing information. The information contained in a gc's contractual claims is inherently ambiguous. Variations may result from a number of factors, by no means all of which are evidence of cheating by the architect. Even a deliberate choice to postpone a crucial decision until production is underway may be shown to be a justifiable exercise of the architect's professional judgment, under certain circumstances. To the extent that the information contained in a gc's claims is a relatively crude indication of how far an architect's decisions were a source of avoidable disruption costs, therefore, the efficacy of the claims machinery as an instrument for maintaining architects' accountability may be quite limited.

---

[75] Supra, chapter VII.

Take, for example, a common source of variation claims, the design and specification of the foundations of a building. Architects, and structural engineers, might be expected to draw upon their expertise, and knowledge of comparable projects and similar sites to develop an educated appraisal of the needs of a client's particular project. Given the costs of introducing changes after the building contract has been let, it would seem to be desirable to maintain the incentives of building professionals to conduct adequate investigations before tendering and produce a complete specification of inputs. This structure of accountability might be achieved relatively easily by holding building professionals presumptively liable for the co-ordination costs occasioned by every technical change in the building concept.

However, much of the information which may be relevant to decisions about foundations is quite literally buried in the site. One consequence of this feature of building production is that plans cannot be developed with absolute certainty unless the designers engage in a full investigation of the specific conditions of the particular site. That such an investigation might entail costly excavation, could justify a judgment that it would be cheaper to delay final decisions on the design of foundations until after the gc has commenced work on the site rather than to attempt to acquire the necessary information in time for the tendering process. Clients, presumably, would prefer not to pay for prior

investigations where the information could be obtained more cheaply at a later stage. A governing norm which exposed architects to the risk of liability in every situation where it had seemed feasible to delay decision-making would seem to be inimical to this goal. Those architects who do not disclaim responsibility may develop defensive practices to control their vulnerability, but such practices may contribute little to production economies. The alternative strategy available to architects - exclusion or limitation of liability - reproduces the original problem. That is to say, an opportunistic architect may take advantage of the variations machinery to shift to the client some of the costs of meeting the contractual standards.

C. Contractual Management of Insolvency Risks

1. Insolvency of a General Contractor

Insolvency of a gc during execution of a building transaction is an event which may have widespread repercussions for the relationships between clients and other building producers[76]. JCT80 governs this contingency by

---

[76] The analysis in this section focuses on just one aspect of gc.s' insolvency. For a thoughtful discussion of the implications of gc.s' insolvency for unpaid sub-contractors, see Deborah Trenner, "Sub-Contractors' Rights upon the Main Contractor's Insolvency" (1987) 3 Construction Law Journal 94; for economic analysis of some the risk-allocation issues which arise when the gc becomes insolvent after receiving payment for materials, but before passing the payment on to a supplier, see G. Antoinette Williams, "Reservation of Title in the Construction Industry: Who Wants It - Some Economic Perspectives on Risk-Allocation" (1987) 3 Construction Law Journal 252.

providing for automatic determination of contracts between the client and the gc and between gc and nsc[77]. In addition, the gc is specifically prohibited from assigning to the client the benefits of its domestic sub-contracts with other input suppliers. The primary consequences of this provision are that the receiver of the gc is neither entitled nor required to continue with performance and the client is relieved from further payment obligations under the specific terms of the Conditions of Contract.

Quite apart from the settlement of accounts between client and receiver, contractual governance of this contingency has implications for transactions which do not break down before completion. That is to say, the allocation of insolvency costs between those who would remain involved in building transactions, may shape the behaviour of these actors on all construction projects. The ramifications for "healthy" transactions of norms derived from the governance of "terminal" projects are particularly significant with respect to the role of the architect in certifying work for payment[78].

Sutcliffe v. Thackrah[79] illustrates the manner in which the issues of over-certification and quality control may be shaped by the allocation of the risk that a gc will become

---

77 Clause 27.2 main form and clause 31.1 NSC/4.

78 Supra.

79 Supra, note 62.

insolvent before completion of its performance. The client, Sutcliffe, had been unhappy with the performance of the gc. Thackrah, the project architect, knew that Sutcliffe was thinking of terminating the building contract. Thackrah included on two interim certificates work which he knew to be defective, but due to a breakdown in communication did not tell the QS that certain items should be omitted from the valuation. After the gc had been paid on the overvalued certificates, Sutcliffe terminated the contract and engaged a substitute. Shortly afterwards the original gc went into liquidation. As the prospects of recovering the excess payments from that actor were remote, Sutcliffe sued the architect for negligent supervision. The House of Lords confirmed that the role of the architect in the certification process was "quasi-arbitral" in character, but held, nevertheless, that architects were potentially liable to clients for negligent over-certification[80].

This decision created the possibility of shifting, from clients to architects, the risk that a gc.s' insolvency would preclude recovery of an overpayment. The effect of the ruling is that the costs of this contingency are to be borne by client or architect according to the "care" with which the

---

[80] The House of Lords, thus overruled the "fallacy" developed in Goldthorpe v. Chambers [1901] 1 KB 624 in which it was held that because the architect performed a "quasi-arbitral" function, by which she would be expected to decide "fairly" as between the interests of client and gc, she could not also be held accountable for negligence in making evaluation decisions.

architect discharges her responsibilities for evaluating the performance of the gc at the time of certification.

Economic analysis of this working rule as part of the institutional structure for governing building transactions involves two issues. First, there is the question of the potential repercussions of the norm on the price of a specific input in construction projects - the certification services of a professional architect. Secondly, the decision may have implications for the transaction costs of monitoring and evaluation during production.

At first glance the problem of allocating the costs of the insolvency of a former participant in a construction project at a point when it has been overpaid might appear to be amenable to the "creditors' bargain" analysis. Economic theorists have argued that losses caused by insolvency should be allocated between loan and trade creditors of an insolvent debtor so as to replicates a multipartite transaction in which the costs of insolvency are minimised[81]. Both the institutional context and the contours of the hypothetical "creditors' bargain", however, are quite distinct from the relationship between client and architect.

First, the architect does not have a creditor-debtor relationship with the gc. Insolvency of a gc which has

---

[81] Thomas H. Jackson, "Bankruptcy, Non-Bankruptcy Entitlements, and the Creditors' Bargain" (1982) Yale Law Journal 859; Jackson, "Avoiding Powers in Bankruptcy" (1984) 36 Stanford Law Review 725; Douglas G. Baird, and Jackson, "Corporate Re-organisations and the Treatment of Diverse Ownership Interests: A Comment on Adequate Protection of Secured Creditors in Bankruptcy" (1984) 51 University of Chicago Law Review 97.

received excessive payments would not be a source of costs to the architect unless it were thought desirable to hold the architect accountable to the client. The building transaction, therefore, differs from the creditors' bargain in which every participant in the hypothetical transaction is contractually linked to the insolvent debtor, and each incurs a loss as a direct result of the debtor's breach of contract with the individual creditor.

Second, the relationship between client and architect is a real contract rather than a hypothetical transaction. Responsibility for the losses caused by insolvency of the gc at a point when it has been overpaid, is an issue that the parties could address in negotiations over the ordinary terms of the transaction[82].

Third, the architect, who has the power to verify the quality of input supplied by a gc before certification, controls the contingency (over-certification) which causes insolvency of the gc to generate the costs of an unrecoverable payment. Liquidation of the debtor in the multiple creditor context of the creditors' bargain is usually precipitated by the decision of an individual creditor. However, it will rarely be the case that one creditor might have prevented

---

[82] Thus the problem here is more analogous to that raised in the "default rules" literature, where there is an emerging scepticism over the possibility of developing simple efficiency norms to govern contractual silences: see, for example, Ian Ayres & Robert Gertner, "Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules" (1990) 19 Yale Law Journal 87. Jules Coleman, Douglas D. Heckathorn & Steven Maser, "A Bargaining Theory Approach to Default Provisions and Disclosure Rules in Contract Law" (1989) 12 Harvard Journal of Law and Public Policy 639; see, generally, chapter IV, supra.

losses accruing to another creditor by direct precautionary actions at an earlier point in time.

Finally, whereas insolvency of a gc ends the connection of that actor to the client and architect on a particular project, it does not necessarily result in termination of the project, nor will it affect the formal terms of the relationship between client and architect. The "creditors' bargain" model, however, envisages that the implicit transaction between those with an economic interest in the holdings of the insolvent debtor concludes with the distribution of assets[83].

Deterrence arguments provide an alternative lens through which to view the transaction between client and architect with respect to the risk of insolvency of a gc at a point when it has been overpaid. Comparative analysis of the choice between allocating this risk to client or architect suggests, first, that the accountability of architects for the performance of supervisory functions may be strengthened if they bear the risk[84]. However, this allocation may increase the market price of professional services in building projects as architects seek compensation for the increase in their potential liability. If, on the other hand, the risk is presumptively allocated to clients, architects may face marginally lower incentives with respect to precautionary

---

[83] Jackson, "Bankruptcy, Non-Bankruptcy Entitlements, and the Creditors' Bargain", supra, note 81.

[84] See chapter IX, infra.

supervision, but clients will avoid the risk-bearing premium in contracts for architects' services.

It should not be forgotten, however, that relationships between clients and architects are contractual. The significance of a "default" legal norm, therefore, lies in its implications for the distribution of bargaining power in the process of formulating the allocation which is to govern any particular transaction, and the costs of making changes to an undesired "default" allocation. That is to say, within the confines of the Unfair Contract Terms Act, and subject to the costs of transacting, client and architect could alter courts' allocations of a contractual risk. The price of the parties' bargain, however, is likely to differ according to whether the default norm constituted by law assigns the risk to client or architect.

Suppose, for example, that the parties decide to allocate to the client the risk that an overpayment will not be recovered, together with all of the other costs of the insolvency of a gc. Given the working rule formulated in Sutcliffe v. Thackrah, implementation of such a decision in the terms of the contract between client and architect occurs in a context where the client is in a relatively strong position to bargain for a discount of the price for the architect's services[85]. If the House of Lords had held that

---

[85] Bargaining power is obviously not a function of contract law alone. However, to the extent that law is implicated in the distribution of bargaining power, it would seem to be important to explore the implications of alternative default rules. See, generally, chapter II.

the architect was not accountable for negligent supervision, the parties in my example would avoid the transaction costs of changing the rules, but the client would be dependent on the market to discount the price of professional services[86].

Analysis of the governance implications of using a negligence norm to reinforce the accountability of the architect for evaluation services involves revisiting the issue of quality control and disruption costs[87]. Architects who are legally liable for over-certification face a greater risk of costs if non-conforming work is wrongly included on an interim certificate than those who are not liable. In seeking protection against these costs, architects might adjust their certification practices in two ways. First, they might routinely under-certify the quantity of work for which payment is due. Alternatively a project architect may attempt to include within her evaluation procedures careful monitoring of the project for conformity with the specification. While each of these strategies may limit the architect's exposure to liability for excessive payments, neither form of precaution is transaction costless.

Under-certification is a relatively easy precautionary strategy for architects to implement. It simply requires the development of a consistent practice by which architects make a conservative estimate of the value of the work completed

---

[86] See chapter VII for discussion of why the market for architects' services may not accurately compound pertinent information into a form in which it is accessible to clients.

[87] Supra.

during each measurement interval. Architects who choose this strategy would not incur the monitoring costs of refining evaluation procedures so as to reduce the risk of errors, nor would there be any increase in the disruption costs due to inspection and testing.

At first sight, under-certification would not appear to harm the gc and its input suppliers. After all, under-certification would not preclude building producers eventually receiving the full contract sum to which they are entitled, but merely shift a larger proportion of the payments to the end of the project. If the building transaction is viewed "in its entirety", however, it appears that the implications of an accumulating shortfall during production may be more complex and transaction costly.

As we have seen, the institutional structure of the construction process may be viewed as a response to producers' inability to control the demand for their products[88]. The resulting uncertainty in the economic environment of production is associated with distinctive adaptations in the transactions by which building production is organised. Under the Contracting System, the main producer assembles the resources required for production on the basis of contracts which involve minimal long-term commitments. Capital equipment is hired instead of owned, materials are bought not made, and labour is obtained through sub-contracting rather than full-

---

[88] See chapter VI, supra.

time employment. That gc.s maintain little by way of capital assets may limit their exposure to the vagaries of the business cycle, but it renders producers highly dependent on cash-flow to fund their participation in individual projects. Cash-flow has been described as "the very life-blood of the industry". It has become the primary means by which gc.s finance Head-Office costs, the costs of unsuccessful bidding, preparatory investments on tenders which are obtained, and, of course, the procurement of inputs during production.

Within this institutional setting under-certification by an architect may have serious repercussions and potentially provoke the very event which it is sought to avoid - liquidation of the gc. Gc.s who are consistently undercompensated for the value of the work produced may be unable to cover their production costs. That the shortfall is temporary and will be corrected at final accounting may provide little comfort in view of the length of construction projects, and the number of factors which may intervene during production and reduce profitability. Under-certification for the purposes of interim payments, therefore, is a practice which is likely to be fiercely resisted by gc.s and a site for conflict where it is imposed.

Moreover, the working rules of building transactions would tend to support the position of the gc. JCT80 permits gc.s to apply for immediate arbitration of the issue of whether certificates which under-estimate the value of the

work completed are in conformity with the provisions of clause 30[89]. With respect to general norms of law, losses sustained by the client as a result of an arbitration may be grounds for an action against the architect. In addition the architect may also be vulnerable to direct claims by the gc based on tortious principles[90].

The alternative precautionary strategy of greater investment by the architect in monitoring the performances of building producers may avoid many of these costs of under-certification. In addition, careful supervision by project architects may increase the probability that incompetence of a gc or its suppliers will be detected at an early stage,

---

[89] Clause 5.2.2.

[90] The liability of architects to gc.s for under-certification is in a state of flux. In overruling the fallacy of immunity against negligent certification, the House of Lords in Sutcliffe v. Thackrah, supra note 62, indicated that architects could potentially be liable to gc.s. See also Arenson v. Casson [1977] House of Lords. The Court of Appeal in Lubenham Fidelities & Investment Co. Ltd v. South Pembrokeshire District Council (1986) 2 Construction Law Journal 111 held that architects' were subject to a duty of care owed to gc.s in the exercise of certification, although on the facts, breach of the duty was held not to have been a cause of the loss: see also Michael Saliss & Co. Ltd. v. E.C.A.Calis (1988) 4 Construction Law Journal 125. In Pacific Associates Incorporated and R.B. Construction Limited v. Halcrow International Partnership (1988) 4 Construction Law Journal 131, by contrast, Official Referee Judge John Davies QC in adjudicating the same issue on the basis of a standard form civil engineering contract held that the supervising engineer (the project equivalent to the architect under JCT80) owed no duty of care in interim certification to the contractor. The contractor's action lay against the client. In a Scottish case based on a previous edition of the JCT contract, Farrans (Construction) Ltd v. Dunfermline General District (1988) 4 Construction Law Journal 314, the Inner House (Second Division) held that under-certification by an architect could not ground an action against a client for wrongful withholding of money. More generally, it would appear that the courts' recent retreat from liability in negligence for economic loss has restricted if not curtailed gc.s access to sanctions against an architect who carelessly under-certifies, see, generally chapter IX, infra. However, as was recognised in the Lubenham decision, a gc who could demonstrate a practice of under-certification might have a claim against the architect for intentional interference in the execution of the contract between client and gc. In Lubenham, the Court of Appeal, while rejecting the gc's claim on the facts (because the gc did not prove intent), stated that:

> We would not accept the broad contention that an architect, in effecting an interim valuation ... could never in any circumstances, expose himself to a claim under this head of tort. It seems to us, for example, quite possible that he could expose himself to an actionable claim that he had interfered with the building contractor's contractual rights, if, in effecting a clause 30 valuation he deliberately misapplied the provisions of the clause with the intention of depriving the contractor of the larger sums to which he would otherwise be entitled.

at 132.

deter building producers from opportunistic cheating, and merge producers' incentives with respect to speed and quality. However, inspection and testing procedures are costly. Not only do such procedures entail the "opening up" and subsequent restoration of completed portions of the Works, but they also consume time that might otherwise have been devoted to production.

Moreover, as noted above, the linkage of quality control to certification increases the predictability of evaluation processes. As such it may facilitate the development by building producers of opportunistic practices designed to conceal poor quality work. Quality evaluation tied interim certification, therefore, may result in a less effective regime for discovering non-conforming inputs than if monitoring were instituted in the form of spot checks at unpredictable intervals.

Comparison of evaluation procedures in terms of their potential efficacy with respect to the identification of defects is particularly significant in the light of the adjustment machinery of JCT80. As we have seen, the Conditions enable gc.s and nsc.s to claim an extension of time and their private costs of interruptions, where progress is disrupted by inspection and testing, unless non-conforming inputs are discovered. This distribution of the co-ordination costs occasioned by monitoring applies whatever the architect's

practice with respect to the issue of quality control, but it creates a dilemma for those who would use a unified procedure.

Careful evaluation of quality at the time of interim certification may be sufficient to protect an architect from liability under the Sutcliffe v. Thackrah principle, even if a gc who subsequently goes into insolvency had successfully concealed non-conforming materials, goods or workmanship. However, by institutionalising quality evaluation at the time of over-certification, the architect may, in effect, facilitate opportunistic concealment. Furthermore, to the extent that a unified procedure simplifies such practices, thereby reducing the chances that non-conforming inputs will be discovered, a client is likely to face more contractual claims for disruption from building producers.

Separate processes of monitoring against time and quality constraints may, as a result of the element of surprise, facilitate identification of non-conforming inputs supplied by opportunistic gc.s. If, however, the architect does not evaluate quality at the point of certification, she faces the risk of liability for excessive payments should it prove impossible for the client to recover the payment from the gc.

An evaluation regime which combines routine monitoring with spot-checks for quality would appear to provide greater protection against opportunistic building producers who supply non-conforming inputs, while safeguarding the architect from liability for negligent certification. The benefits of

stronger deterrence against opportunism, however, may be offset by the increase in costs to clients of building producers' claims under the adjustment provisions.

2. Withdrawal of a Nominated Sub-Contractor due to Insolvency

Insolvency of a nominated sub-contractor during its operations on the site is a matter which the JCT has found difficult to incorporate into its framework of governance. This event will almost certainly disrupt the progress of the Works, creating delay and exacerbating the costs of project management. In addition, the production costs of obtaining replacements may be substantially higher than under the transaction with the original nsc.

Allocation of the costs of nsc.s' insolvency between client and gc is a complex issue. In terms of incentives, there seems to be little to choose between equally "innocent" clients and gc.s. As neither party controls the events which precipitate insolvency of the independent nsc[91], it is hard to imagine that one would be better placed to prevent withdrawal than the other. As is apparent from economic analysis of law, however, power over a costly event is not the only mechanism for controlling risk. Risks might be reduced by ex ante screening and managed by loss-spreading.

---

[91] Although note the possibility that because payments are made by clients and channelled through gc.s both parties may be implicated in a cash-flow crisis which precipitates insolvency of a nsc.

A screening analysis might suggest that the client should bear the risk of the insolvency of a nsc before it has completed its work on the site. The essence of this argument is that a client who selects the nominee is in a better position to verify its financial health than a gc who is simply directed to contract with a nominated specialist. Allocation of the risk of insolvency to the client, therefore, appears to be more likely to encourage precautions in the form of ex ante screening than if the gc were to bear the expected costs.

An alternative approach to risk-management might suggest that the risk of insolvency of a nsc should be borne by the gc. Gc.s, it may be argued, usually have more knowledge and experience of the market for construction inputs than clients. This experience should give gc.s an advantage in calculating the probability and the potential costs of an insolvency. Armed with such knowledge, gc.s ought to be well-placed to build the expected costs of specialist insolvency into their prices and, perhaps, diversify the risk across the range of contracts which they hold at any one time.

While it may be difficult to make a theoretical choice between these competing arguments some of the ramifications of each position are clear. A rule which allocates the entire cost of specialist insolvency to gc.s is likely to entail higher prices for their construction services than one which allocates the risk to clients. The premium for risk-bearing

on each contract may be small, but is likely to be charged on all transactions, unless the allocation is varied by express bargain. In addition, allocation of the risk to gc.s may result in a situation where neither clients nor gc.s make meaningful investments in specific ex ante financial screening of potential nsc.s. Apart from its contractual veto, the gc has little control over the appointment of specialists, and a client who is insured against the expected costs of insolvency, lacks the incentive to incur heavy screening costs.

If, on the other hand, the risk is allocated to clients, one might predict that the market prices for gc.s' services ought to be marginally lower. Clients' savings on the prices of the main contract, however, may be offset by the costs of searching the market for specialist input suppliers in order to reduce the chances of selecting a nominee who is likely to become insolvent during the transaction.

Analysis of the allocation of this risk becomes more complex when viewed from a governance perspective in that the disruptive effects of unanticipated withdrawal may provide a site for opportunism. The primary management consequences of the departure of an insolvent nsc are, first, that the part of the project which was to be executed by that participant will be delayed until alternative arrangements are in place. Secondly, operations which depend on completion of the work which had been delegated to the nsc may have to be postponed.

In addition, the re-programming of remaining portions of the project in order to reduce the loss of productive time may be a costly exercise.

The transactional functions of architect and gc, as constituted by the Contracting System, suggest that while each has a role to play in managing the consequences of the departure of a nsc, neither has complete control over the entire package of adjustments. Whereas gc.s are responsible for procuring non-specialised inputs, and co-ordinating on-site resource use, they do not have the contractual authority to select an alternative nominated sub-contractor[92], omit work, or make other compensating changes to the building concept.

Architects, on behalf of clients, may direct alterations to the building concept, but cannot intervene in the organisation of the building programme, except to the extent that a gc fails to perform in accordance with its undertakings. Whether architects were entitled, or required, to make a substituted nomination, was traditionally thought to depend upon the terms of the contract between client and gc, and prior to the 1980 edition of the contract, the JCT had made no explicit provision for re-nomination.

One consequence of this division of responsibility between architect and gc for the management of building

---

[92] This would not necessarily preclude the possibility that gc.s were responsible for ensuring completion of the nsc's part of the project: see discussion infra.

production is that allocation of the entire risk of the insolvency of a nsc to client or gc is likely to attenuate someone's incentives to mitigate disruption costs. Such a limitation on the accountability of a decision-maker for avoidable costs may, in addition, create scope for opportunism. For example, where clients are insulated from the disruption costs, architects, whose responsibilities for contractual administration are channelled through clients, will not be legally answerable for failure to give appropriate directions as required[93]. Opportunistic architects may find, therefore, that they are in a stronger position implicitly to shift to gc.s some of the costs of delivering the quality of management services defined in the architect's contract with the client than if legal liability were part of the institutional matrix of the transaction.

Allocation of the risk of withdrawal of a nsc by reason of insolvency may eliminate some of the potential for architects to cheat, but does not eradicate the possibility of opportunism within the transactional framework of building production. Gc.s, who are fully protected against the costs of the contingency, may attempt to exaggerate its effects. Given the complexity and interactive character of building production there may be considerable scope for inflating claims against clients.

---

[93] See chapter IX, infra, for discussion of problems of accountability.

In addition, the transaction-specificity of clients' investments in building production may create scope for more explicit forms of strategic behaviour. Armed with knowledge of clients' dependence on their continued participation, gc.s are in a relatively powerful position to engage in redistributive bargaining directed at appropriation of part of clients' shares in transactional surpluses. For example, gc.s might refuse to co-operate in interim arrangements designed to ensure continuity of the production process[94] or resist integration of new arrangements into the established programme for the Works, unless the contract price is revised in their favour. Such strategic behaviour may be contractually ambiguous in the sense that it would be difficult to establish that the threat, however inconsistent with the "spirit" of a building contract, is a breach of its terms[95]. In any event, clients who incur the costs of financing production before obtaining any material return on this investment, may be unlikely to perceive legal sanctions, even if available, as a useful defence against this type of threat[96]. The costs of obtaining a remedy and /or replacing a gc during production, are likely to exceed by far the immediate costs of acceding to the gc's demands.

---

[94] Such as hiring a specialist on a temporary basis.

[95] On courts' reluctance to imply general duties of co-operation into detailed building contracts see Glenlion Construction Ltd v. The Guiness Trust (1988) 4 Construction Law Journal 39; Rosehaugh Stanhope (Broadgate Phase 6) plc v. Redpath Dorman Long Ltd. (1990) 6 Construction Law Journal 309.

[96] Supra, chapter IV.

The working rules of JCT80 governing allocation of the disruption costs arising from insolvency of a nsc may be viewed as an attempt to curtail the scope for opportunistic behaviour by architects and gc.s. In order to grasp the transactional implications of the contract-specific norms, however, it is necessary to situate their development in the context of the working rules formulated by the courts.

In T.A Bickerton v. North West Metropolitan Hospital Board[97], the House of Lords considered the issue of allocating the costs of insolvency of a nsc within a transaction governed by the 1963 edition of the JCT's standard form. Bickerton, the gc, had used its own specialist heating division to execute work that had not been completed by an insolvent nsc. The conflict centred on the client's payment obligations with respect to this work. Bickerton maintained that in its role as the nsc it should be paid as if it were a replacement hired after a new bids had been received and a re-nomination had been made by the architect. Bickerton also sought compensation, as the gc, for some of the disruption costs occasioned by the architect's failure to make an effective nomination.

The client insisted that the gc's obligation to "carry out and complete" the Works, as defined in the Documents comprising the main contract, included the responsibility to ensure that specialised inputs were supplied by those

---

97 [1970] 1 WLR 607.

originally nominated by the client and at prices stated in the original sub-contracts. In the event of withdrawal by a nsc, for any reason at all, the gc, it was argued, in reasonable mitigation of its loss, should make alternative arrangements for the execution of the Work entailed in the sub-contract. Any difference between the price of the original sub-contract and the actual costs of procuring a substitute were to be borne, in the first instance by the gc, who would normally recover these costs from a solvent nsc[98].

In the absence of any explicit contractual provision for withdrawal of a nsc, the House of Lords used an implied term analysis to develop a governing norm. The Court held that the express terms of the contract neither required nor entitled the gc to carry out any part of the works that were subject to a "prime cost" sum in the Bills and stated to be the province of a nsc. Rather than infer that the building contract imposed on the gc the type of residual or default liability which had been suggested by the client, the House of Lords focused on the responsibility of the client / architect for the initial nomination. It was thought that the architect's contractual "duty" to issue an Instruction governing expenditures of a prime cost items should be interpreted as an on-going obligation. This obligation would

---

[98] The client's argument was intended to preserve the integrity of the "cost-pass-through" mechanism by which nsc.s are held accountable for conformity with the contractual standards. In the absence of liability of the gc to the client for the performance of a nsc, nsc.s could repudiate sub-contracts and supply defective work with impunity. This issue is discussed more fully in chapter VI, supra.

be re-activated if, at any point during the transaction, the gc lost its only means of complying with the instruction - its sub-contract with a nominee. The client, therefore, was held contractually accountable to the gc for the costs of withdrawal of a nsc, on the basis of an implied obligation to ensure that the architect re-nominates if an earlier appointment fails[99].

The House of Lords acknowledged that to protect gc.s against the consequences of architects' failures to re-nominate might enable defaulting nsc.s to escape accountability for breach of contract[100]. However, it was thought that a gc's responsibility to the client for the performance of a nsc should not materialise until there was a nsc in existence. The "cost-pass-through" function of the gc, therefore, was to function only in the context of a "live" and currently operational nomination.

The specific conflict in Bickerton was primarily concerned with allocation of the risk of changes in the prices for inputs which were to have been supplied by a nsc. However, the "duty to re-nominate", as formulated by the House of Lords

---

[99] There was some doubt expressed as to whether this interpretation accurately reflected the intentions of the contract drafting agency. (See in particular Lord Guest at p.621c-d, and Lord Hodson, at p.616c-f and 617e). The judges were particularly concerned with the implications of their ruling. That is to say, one consequence of the decisions was that:

> a sub-contractor who had put in too low a tender or found himself offered more lucrative work might promptly disclaim and would at most have to pay the contractor nominal damages knowing that the main contractor was under no liability to the employer in the circumstances which he himself had created.

Lord Hodson at p.616 e-f.
However, such misgivings were not sufficient to outweigh the intuition that it would have been unjust to hold the gc accountable for costs occasioned by the departure of an insolvent nsc.

[100] Ibid.

appeared to be capable of grounding gc.s' claims for all production and disruption costs attendant on withdrawal of a specialist. The extent of the implied duty to re-nominate has been clarified a little by two decisions during the 1980's.

In Percy Bilton v. GLC[101], the House of Lords considered the specific issue of liability for the costs of delay attendant on withdrawal of a nsc, in the context of the client's decision to deduct liquidated damages for late completion by the gc. Upon learning of the withdrawal of a nsc, the architect had immediately made emergency arrangements for the sub-contract works to be continued on a "day-work" basis. Difficulties in reaching agreement on the sub-contract price, slowed the process of making an effective re-nomination and resulted in disruption to the gc's programme. The gc argued that the client was not entitled to liquidated damages because its progress had been delayed by an event for which the client was wholly accountable under the contract. The architect's failure to effect a speedy re-nomination, it was alleged, had invalidated the Date for Completion, causing time to be "at-large".

The client accepted that the gc.s failure to meet the Date for Completion was partly attributable to the time which had been lost before the Architect re-nominated[102]. It was argued, however, that the gc should not be able to rely upon

---

101 [1982] 1 WLR 794.

102 The parties had agreed that this period amounted to 14 weeks.

this event to escape responsibility for the period of delay which was attributable to its own tardiness. The court was urged to preserve the integrity of the contractual structure of governance for delay by incorporating the duty to re-nominate into the extension of time machinery[103].

In deciding in favour of the client, the House of Lords held that while clients were answerable for tardy re-nomination, they could protect themselves against loss of the liquidated damages remedy by extending the Date for Completion. Clients' liabilities were further limited by the ruling that architects were to be afforded "a reasonable time" in which to make a re-nomination. Within that time period, the costs of any disruption to the Works occasioned by withdrawal of the original nominee were to be borne by the gc.

The question of what constituted a "reasonable time" within which to effect a re-nomination was further considered by the Official Referee in Fairclough v. Rhuddlan Borough Council[104]. Judge David Smout QC decided that a "reasonable

---

[103] The transaction in this case was governed by an earlier edition of the standard form of contract. This contract did not include an explicit working rule to govern the contingency. The client argued, therefore, that the architect's delay in making a renomination should be viewed as a late instruction, for which the gc would be able to claim an extension of time.

[104] (1985) 3 Construction Law Reports, 20; (1985) 3 Construction Law Reports 38 (Court of Appeal). The nominated sub-contractor terminated its contract because the project was seriously delayed by a strike. The gc immediately applied for re-nomination, but it took almost 5 months for the architect to name a replacement. To make matters worse the substitute was not acceptable to the gc. The gc rejected the first replacement, partly because the architect refused to grant an extension of time to take account of the fact that the programme of the proposed nominee was longer than the gc's remaining schedule. An additional factor was the refusal by the substitute nominee to rectify the defects in the work of the first specialist. Both the Official Referee and the Court of Appeal held that, given these conditions, the gc was entitled to reject the proposed nominee. The dispute between client and gc centred on the gc's right to an extension of time for the delay entailed in making an effective renomination, and as a corollary, the client's claim to deduct liquidated damages. The decision of the Court of Appeal does not revisit the question of "reasonable time", but concentrates on the issue of the contractual authority of the gc to reject a re-nomination.

time" may protect what might appear to be a slow re-nomination, so long as the delay is not attributable to procrastination, negligence or unreasonable behaviour by the architect[105]. The Official Referee specifically stated that the Architect should take account of the client's financial interests when searching for a replacement and that this interest in the production costs of the substituted work must be balanced against the interests of both client and gc in timely completion[106].

JCT80 introduced machinery for adapting the transaction between client and gc to accommodate withdrawal of a nominated sub-contractor. The Conditions set out procedures for the implementation of the architect's duty to re-nominate in three situations, including insolvency of a nsc[107]. In addition, the gc is entitled to claim an extension of time for delay to its progress which is attributable to compliance with Architect's Instructions relating to the nomination (or re-nomination) procedure[108]. Dilatory performance by the architect of her

---

[105] An important consequence of the decision is that it set ground rules for securing the general contractor's consent to a replacement specialist. The Official Referee emphasised that the crucial date against which to assess disruption is the existing contractual completion date rather than any earlier date by which the general might have hoped to finish: it may therefore, be necessary for the general contractor to forego the "float" time in its programme. This aspect of the decision is significant in so far as it prevents subtle shifts in the distribution of gains from the project. If the client bears the risk of delay in re-nomination, the general contractor may have an incentive to be recalcitrant over accepting substitutes in the hope of appropriating some of the clients expected benefit from the transaction. By emphasising that the general contractor will not be compensated for losing the "float" within its programme, the Court maintained incentives for the general to co-operate in the re-nomination process.

[106] He further held that the gc was justified in rejecting the first substitute on the grounds that its work programme was incompatible with that of the general itself, so that the rejection did not mean that the general contractor was the cause of the delay.

[107] Clause 35.24.

[108] Clause 25.4.5.1.

obligations to issue a re-nomination Instruction would be caught by the ordinary provisions for changing the time constraint and compensating the gc in the event of late Instructions[109].

Under the contemporary working rules of contractual governance, therefore, the disruption costs attendant on withdrawal of a nominated sub-contractor are shared between clients and gc. Although this apportionment of costs does not eradicate the possibility of opportunism, it may, to some extent, limit the scope for architect's to cheat and gc.s to engage in redistributive bargaining. As clients are now accountable to gc.s for securing a replacement and "unreasonable" delay in re-nomination, it may be more difficult for the delivery of poor quality administration services by architects to escape undetected. Gc.s, one might anticipate, have a substantial incentive to use the claims machinery as a means of reporting tardy execution of the duty to re-nominate by the architect. Whether or not the client can use this information in a formal sanctioning procedure, the relative ease with which it may be interpreted by clients enhances its "embarrassment" value, as a means of reinforcing the accountability of architects.

That the gc is answerable for some of the disruption costs of withdrawal of a nsc preserves its incentives to take steps to limit the impact of the event on the progress of the

---

[109] Clause 25.4.6 and clause 26.2.1.

Works. Furthermore, the nature and the extent of gc.s' legitimate claims for disruption are controlled by the contractual procedures[110].

Finally, although gc.s retain the transactional power to engage in redistributive bargaining over a replacement for a departed nsc, they may be less likely to expend resources on strategic threats in a context where disruption costs are apportioned, than if the client were wholly responsible for such costs. Not only do the working rules of apportionment reduce the ambiguity of strategic threats by a gc, but they may also enable clients, through the architect, to retaliate[111]. Even if the gc remains in a position where it can inflict greater damage on a client than it would suffer in reciprocal action, that the client is able to respond at all may reduce the bargaining power of the gc in strategic attempts to force redistribution of the contractual surplus.

---

[110] Note that this is another situation where conflicts may arise between the gc.s contractual rights to adjustment and architects' interests in concealing their own failures to respond to events in a timely fashion, supra.

[111] Thus the architect's power over extensions of time may also function as a valuable means of disciplining gc.s.

D. Contractual Management and the Contracting Continuum

Our analysis of the formal system of contract management has demonstrated two important characteristics of transactional governance under JCT80. First, it is apparent that the project architect plays a central role in the administration of the contract between client and general contractor. Secondly, we have shown that it is difficult for JCT80 to maintain strong norms of accountability for both architects and building producers. Both of these characteristics are attributable to the interactive, lengthy and complex nature of building production, together with the uncertain environment in which it is situated.

In some respects the transactional role of the architect resembles that of the specialised manager / co-ordinator of "firm-like" clusters of transactions[112]. The architect is expected to gather information and direct members of the building team, adjust prior decisions in the light of new demands and supervise production on behalf of the "owner" of the residual profits. The issue of the accountability of the architect also resembles problems which were encountered in our discussion of contractual theories of the firm. Building transactions separate "ownership" of the transactional surplus from control over the deployment of productive resources. The

---

[112] Chapter V, supra.

relationship between the residual beneficiary and the central decision-maker may be vulnerable to "cheating" by the agent-architect as she seeks to escape the costs of performing to the standards entailed by her contract with the principal-client.

Within the institutional setting of JCT80 the problems of observation and monitoring which attend principal-agent transactions are complicated by the interaction of relationships between client-architect, client-general contractor, and client-general contractor-nominated sub-contractor. Architects' powers over critical transactional decisions may enable opportunistic shifting to other participants of the costs of performing administrative and supervisory duties. Working rules which attempt to strengthen the accountability of the architect may attenuate the incentives of gc and nsc.s and provoke costly defensive practices by architects.

With respect to relationships between client and building producers, the architect may be seen to serve three main transactional functions. First, as a specialised decision-maker, the architect provides a facility for client and building producers to make important decisions during execution. As such, the architect may be seen, in general, as a relational alternative to the ex ante irrevocable decision-making practices of classical contract, and a means of reducing error costs. More specifically, this aspect of the

architect's transactional role represents an alternative to evolutionary decision-making by client and building producers, or reliance on unilateral decision-making governed by "aspirational" norms.

Second, the architect may function to protect clients' shares of the transactional surplus from appropriation by building producers. This aspect of the architect's role is evident in the supervisory powers of inspection and testing, and is also an important dimension of the adjustment machinery. That JCT80 provides an integrated framework of any kind for ordering changes to time, quantity, quality and price constraints restricts the scope for building producers opportunistically to threaten to withhold co-operation during execution of the transaction. The fact that decisions about adjustments are made in an institutional setting which does not entail negotiations between client and gc constitutes a further limitation.

Third, the architect may serve to reduce, or aid in the resolution of, conflicts between building producers. This part of her role may be particularly significant with respect to the interactive, but quasi-autonomous relationships between gc and nsc. In the event of conflicts between these actors over contract terms or management of their separate on-site operations, an architect may issue Instructions and make contractually authoritative rulings.

Notwithstanding these benefits, the distinctive combination of relational and "firm-like" governance instruments which is embodied in the role of the architect is undoubtedly transaction costly. In addition to the direct costs of the fee for supervisory and management services, the presence of the architect may create new sites for friction and opportunistic behaviour. Whether the working rules of JCT80 represent the best feasible accommodation to the exigencies of building production is unclear. However, this analysis of contractual management has clarified two issues which would be important to subsequent research. First, we have identified relevant comparisons between alternative working rules of contractual management. Secondly, interrelationships between the norms governing the activities of different participants have been highlighted. A third theme, which is as yet implicit in our discussion but will be an explicit focus of the next chapter, is the relationship between "public" norms of contractual governance and the private rules of JCT80.

Chapter IX Enforcement

Enforcement is at once the simplest and most complex dimension of the Joint Contracts Tribunal Standard Form of Building Contract, (1980 ed.) (JCT80). Viewed solely from the perspective of instrumental goals, institutional analysis of legal enforcement would seem to be straightforward[1]. Sanctions and remedies, one might suggest, ought to function to protect individuals' shares in the transactional surplus from the opportunism or incompetence of other participants. Within the interactive setting of building production, however, implementation of this goal raises difficult issues of accountability, governance costs and the distribution of transactional power.

At the heart of the "implementation dilemmas" of JCT80 are the public rules which constitute the legal-cultural setting of the building contract. This institutional setting determines access to sanctions and shapes enforcement possibilities. As is evident from the dramatic changes in negligence liability over the last twenty years, courts' definitions of the appropriate scope and limits of theories of liability are critical to the availability of legal

---

[1] Note that a complete institutional analysis of enforcement would also confront interrelationships between different sources of sanctions. Economic context, legal culture and commercial morality may each supply their own brand of transactional glue. Each shapes economic actors' accountability for their decisions and influences the distribution of transactional power within building contracts. These distinct forms of governance may or may not work in concert. The sanctions of law, commerce, and industry morality may transmit clear signals or mixed messages: infra, part E.

sanctions[2].

Relationships between public norms and the private rules of building transactions are also significant to the operation of enforcement instruments. Access to legal remedies, for example, depends on there being in place a nexus between public and transaction-specific rules. Transactional understandings which do not conform to models of legally enforceable terms therefore are not amenable to legal sanctions[3].

More specifically, the institutional setting of the building contract influences the potential form of some private remedies and their costs. Some transaction-specific remedies are reinforced by the public regime[4], while in other instances reliance on one type of enforcement instrument precludes access to another[5]. The private provision may be

---

[2] Infra.

[3] This aspect of availability is particularly significant to co-ordination of the construction process. As is apparent from our discussion in earlier chapters, building production demands co-operation between independent resource suppliers and requires flexibility in adapting to change. Unless a participant's interests in on-going collaboration can be formulated as a term which courts will endorse, breach of such relational norms is not subject to legal sanctions: see supra, chapter IV, for general discussion of duties to co-operate, see, chapter VII, supra, especially at fn.79 for discussion of "duties to co-operate" in the context of selection of participants during contract planning.

[4] For example, Clients' contractual power to withhold payment of the contract price (a "private" or "self-help" sanction), is reinforced by the public norm which endorses such "self-help" actions up prior to the stage when the building is "substantially completed" in accordance with the specification: Hoenig v. Isaacs [1952] 2 All ER 176 (nb. withholding payment was held not to be justified in this case); as applied in Bolton v. Mahadeva [1972] 1 WLR 1009; Ibmac Ltd v. Marshall (Homes) Ltd. (1968) 208 EG 851. The Law Commission was critical of the public norm which enables clients to withhold payment on the grounds that it was unjust, particularly in view of the fact that builders probably would not understand the drastic implications of agreeing to a contractual provision which postponed payment until completion of the work: Law Commission, Report of the Law Commission, No. 121: Pecuniary Restitution for Breach of Contract (London: HMSO, 1983) at para 2.32. The powerful dissent to this Report by Commissioner Brian Davenport explicitly addresses the transactional security and accountability rationales for using the public regime to reinforce the position of clients.

[5] For example, the incorporation of a liquidated damages clause as a sanction against breach of a particular contract term prevents the non-breacher from using the ordinary unliquidated damages remedy where the loss occasioned by breach is greater than the sum stipulated: Cellulose Acetate Silk Co. Ltd v. Widnes Foundry (1925) Ltd. [1933] AC 20. (Although note that if the agreed damages clause is thought to be penal, when assessed by reference to what was contemplated by the parties at

used to overcome shortcomings in the public remedy or it may seek to mould a public sanction to transaction-specific ends[6].

The analysis in this chapter focuses on institutional limitations on the power of legal sanctions in the governance of building production. The discussion does not attempt fully to analyse every aspect of the building contract which may be viewed as part of the machinery of enforcement. It aims, rather, to use in-depth analysis of a selected enforcement issues as a means of illustrating wider problems of governance and accountability. Underlying our particular focus on specific examples, there is a general argument that problems associated with the implementation of legal sanctions are largely attributable to an uneasy relationship between the polycentricity of building production and the working rules of legal remedies intended to protect economic interests.

The analysis is divided into five sections. Part A focuses on the institutional context of legal sanctions. It identifies four specific "implementation dilemmas" and discusses their implications for transactions governed by JCT80.

---

formation, a non-breacher who can show that its realised loss in fact exceeds the sum stipulated may be able to invoke the penalty clause in its favour: Wall v. Rederiaktiebolaget Lugudde [1915] 3 KB 66. On this point the English jurisprudence may be contrasted with the position articulated by the Supreme Court of Canada in Elsley v. J.G. Collins Insurance Agencies (1978) 3 DLR (3d) 1, where it was held that such a penalty clause functioned in the same way as a liquidated damages clause, ie., it would limit the breaching party's liability).

[6] For example, under clause 26 of JCT80, the gc is empowered to claim compensation from the client for its "direct loss and/or expense" occasioned by breaches for which the client is accountable. While the sanction - compensatory damages - is identical to that which would be available under the public regime, the contractual provision circumvents doctrinal and process cost limitations on gc.s' access to the damages remedy. By bringing a contractual claim under clause 26, the gc avoids the risk that its loss will be viewed as too remote, and the costs of invoking legal proceedings against a recalcitrant client.

Part B describes and analyses the particular sanctions which may be invoked against building producers and professionals whose performances fail to conform to contractual decisions respecting quality. This section addresses the problems which arise from the interactive nature of different participants responsibilities with respect to production and monitoring. It will be seen that it is difficult if not impossible to accommodate the complex system of discrete and overlapping duties institutionalised by JCT80 within the traditional normative framework governing access to legal sanctions.

Part C focuses on the issues raised by the transactional sanction against delay. This section explores conventional justifications for judicial policing of agreed damages clauses and considers how far these rationales are applicable to transactions governed by JCT80.

Part D addresses the isse of clients' legal power to sanction nominated participants. It examines the structural changes to the network of contractual relationships which were introduced by JCT80. The discussion goes on to illustrate the manner in which the JCT's attempted resolution of the accountability costs associated with the cost-pass-through mechanism has engendered new costs of transactional fit.

Part E explores the transactional implications of formal legal sanctions in the light of insights derived from the contracting continuum.

A. "Implementation Dilemmas"

1. Apportionment and Accountability

Legal sanctions are subject to a range of procedures and doctrines which function to apportion liability between contributing participants[7]. Such institutional practices meet many of the enforcement needs of complex and polycentric transactions. They permit recognition that time, quality or co-ordination failures within building transactions may be due to a combination of inadequate performances by two or more participants. Working rules which enable such "compound" breaches to be addressed within a single process would seem to entail lower administrative enforcement costs and lower risks of error than rules which treat the contractual obligations of each participating individual as discrete.

On the other hand, the legal instruments by which apportionment and contribution are secured may reduce the weight of the sanction confronted by each defaulter[8]. Law defines penalties for breach by reference to the loss to the client rather than the bad faith or incompetence of the

---

[7] The Civil Liability (Contribution) Act 1978 now provides a basis for direct apportionment of liability and contribution between participants in building production who are found to be in breach of their contractual obligations. Quite apart from this Act, theories of concurrent tortious and contractual liabilities and contributory negligence, doctrines such as remoteness of damage, and the idea of causation, have all been asserted as a basis for what would in substance amount to apportionment: see discussion, infra.

[8] This problem is particularly acute in the context of accountability for breach of qualitative standards: infra.

defaulter. There is no difference between the penalties attached to breaches which are compound in character and those stemming from the actions of a single participant. Although the total remedy available to a client is the same whether a loss is attributable to breach by one or several participants in building production, the implications for a defaulter are very different. Whereas a sole defaulter is held accountable for the entire loss and thus subject to the full penalty for breach, apportionment doctrines and contribution procedures divide the single "penalty pie" into liability shares. These shares are then distributed between different actors in according to the degree to which each person is implicated in causing the loss. Apportionment therefore reduces the weight of the sanction faced by a defaulter who can show that others are implicated in the loss to the client, relative to the sanction faced by a sole defaulter.

Outright rejection of apportionment, however, is not a solution to this problem of accountability. Doctrinal and procedural bars to double recovery prevent clients invoking full damages sanctions against every participant implicated in a compound breach. In the absence of apportionment, therefore, there would be no legal power to maintain the accountability of each individual defaulter.

Viewed solely from the perspective of protecting the economic interests of clients, the distribution of liability for breach may be of relatively little significance. If, on

the other hand, the primary objectives of legal sanctions are to maintain accountability, prevent cheating and deter risk-shifting, it is important that the sanctions available against one participant do not attenuate the incentives of others.

The dilemma of apportionment and accountability is well illustrated by the House of Lords decision in East Ham Borough Council v. Bernard Sunley & Sons Ltd[9]. In this case the defendant-gc used a combination of mitigation and remoteness ideas to raise the issue of apportionment of liability between itself and the contract supervisor. Having conceded liability for breach of the specification, the gc argued that damages should be assessed by reference to the cost of repair around the date when it supplied defective input rather than the actual cost when the repairs were carried out[10]. This contention was based on an arbitrator's finding that the defective input would have been revealed by the type of inspection that an architect should normally make on a site visit. The gc maintained that as it could not reasonably have foreseen the architect's failure to notice non-conforming inputs at or shortly after delivery, its liability should be limited to reinstatement costs at that time.

---

[9] [1966] AC 406. In this case the defendant's failure to conform to contractual quality standards resulted in serious defects in a new school building. The building had been occupied by the plaintiff since handover in May 1954 although the Certificate of Practical Completion was not issued until November 1, 1954. (The clients, presumably, wanted to use the building for the new school year and so went into occupation before the practical completion of the building). The architect had issued the Final Certificate in July of 1957, and essential repairs had been carried out during the winter of 1960-61.

[10] This issue was not simply a question of mitigation in that the House of Lords accepted that the plaintiff had not been dilatory in effecting the repairs: see, in particular, Lord Pearson's opinion: ibid, at 449.

The implication of this argument was that the portion of the client's loss due to inflation in building costs during the five or six year delay between discovery and replacement of defective inputs should be used to hold the architect accountable for his failure to live up to the contractual standards of supervision. While this strategy provided a means of sanctioning both gc and architect for their individual breaches, the effect of using the remoteness principle in this way would have been to reduce the weight of the sanction against the gc.

In finding for the client, the House of Lords firmly rejected the apportionment argument. The transaction between client and gc was treated as discrete and bilateral. Underlying the opinions, there is a premise that the client should not be prejudiced by the architect's failure[11]. Nor should the gc, itself in breach, be permitted to point to the breach of another participant as a means of evading its responsibilities under its contract with the client[12].

This decision maintained the heaviest possible financial sanction against the gc. The dilemma which it poses, however, is that the elimination of residual costs to the client left no basis on which to ground a legal sanction against the

---

[11] For example, in response to the remoteness argument, Lord Upjohn, while not explicitly rejecting the arbitrator's findings commented that: "[t]he parties must have contemplated that the architect might fail to notice some defective work.... it was surely 'on the cards' that he might fail to notice the defective work", ibid., at 445.

[12] For example, in response to the defendant's argument about the responsibility of the architect for poor quality supervision, Lord Upjohn commented that: "I am at a loss to understand why the negligent builder should be able to limit his liability by reason of the fact that at some earlier stage the architect failed to notice the defective workmanship": ibid.

architect for supervisory failures.

2. Personal Character of the Contractual Sanction

Recent decisions of the House of Lords have curtailed subsequent building owners' access to legal sanctions where building defects do not result in consequential damage to persons or property other than the building itself[13]. Subsequent owners may be able to use legal sanctions against surveyors and other building professionals who were involved in the exchange transaction by which the building was acquired and failed to warn of a defect which results in economic loss to the purchaser[14]. However, they no longer have the legal power to bring equivalent sanctions against those who participated in the production process, unless the building is a residential property[15].

The implications of this development are profound. It means, in effect, that producers and professionals involved in transactions governed by JCT80 are immune from liability for a large class of defects once the client sells the building. That part of the risk of qualitative defects which result in economic loss is to be assumed by building professionals associated with the purchase transaction may

---

[13] D. & F. Estates v. Church Commissioners for England [1989] 1 AC 177; Murphy v. Brentwood District Council [1990] AC 414.

[14] Smith v. Eric S. Bush; Harris v. Wyre Forest District Council [1990] 1 AC 831.

[15] If the building is residential, a subsequent owner's interests may be protected under the Defective Premises Act 1972 if it is not already covered by an approved statutory insurance scheme.

serve to protect the economic interests of some subsequent building owners[16]. However, this strategy of protection entails an arbitrary transfer of risk away from producers and a significant reduction in the power of legal remedies to promote accountability for the quality of producers' performances[17].

3. Cost-Pass-Through and the Problem of Consistency

The cost-pass-through machinery of JCT80 relies on there being in place a set of consistent contracts and it assumes that there are no blockages in the system. At first sight, the problem of consistency appears to be difficult but not insurmountable. The process of formulating an integrated package of bilateral contracts to govern a complex and polycentric process such as building production would undoubtedly strain scarce rationality resources, and incur heavy transaction costs. However, the standardised contracts

---

[16] Note that the principle of negligence liability developed in Smith v. Eric S. Bush & Harris v. Wyre Forest District Council, supra, note 14 was intended to protect purchasers of "modest homes". The premise underlying the opinions in the case was that purchasers of less modest homes would buy contractual protection against economic loss through the direct purchase of the services of a surveyor before committing themselves to buying a home. Of course, this solution also entails shifting risks from producers and production professionals to exchange professionals. It should also be recognised that where subsequent owners do not have grounds for a sanction against exchange professionals, the risk which has been shifted away from building producers and professionals is assumed by owners (or more likely their insurers).

[17] The position which has now been achieved by the courts with respect to subsequent owners' access to legal sanctions where they have acquired a defective building is close to that advocated for clients in a recent report of the construction industry's Insurance Feasibility Committee, "Build: Building Users' Insurance Against Latent Defects", (NEDO) (London: HMSO, 1988). This report recommended that building producers' and building professionals' liability to clients for defective work ought to expire at the end of the contractual period for rectifying defects. For a critical comment on this Report, see, Ian Duncan Wallace, "Defective Work: The New Flavours" (1990) 6 Construction Law Journal 87.

of the JCT enables individual actors to avoid, or at least drastically reduce, such demands on resources. Even if the JCT failed to achieve complete harmonisation between the main form and the array of sub-contractual relationships involved in building transactions, that the JCT produces a model contract at all ought to facilitate the creation and / or adjustment of sub-transactions.

However, there are both theoretical and practical obstacles to harmonisation. At the simplest level, the (standardised) contracts of some important participants in building production - the professional consultants - are not under the auspices of the JCT. Thus, delicate decisions about risk-allocation, negotiated by the Tribunal, may be undermined by the decisions of other individuals or agencies.

Second, although the standard form contract may be structured to encourage the use of other contracts from the same family in all related transactions, there is no legal mechanism of compulsion. Moreover, the power of market forces and other economic pressures to induce conformity is likely to be highly variable. For example, gc.s may be in a relatively strong position to ensure that the terms on which a "labour-only-sub-contractor" participates in a transaction are consistent with the gc's undertakings under a main form. It may be more difficult to ensure conformity where the Bill of Quantities specifies components for which there are few suppliers. In this context, the fact that the gc is required

to use the specified components, together with the small number of potential sources, may afford the supplier relatively greater transactional power to secure advantageous terms.

There is, in addition, a substantive problem in drafting contract terms that will provide a baseline for cost-pass-through. This machinery of accountability requires the gc to perform two roles that are to some extent incompatible. As an autonomous input supplier, the gc is responsible for procuring inputs, assembly of some building components, and co-ordination and supervision of the production process. With respect to this aspect of their participation in building transactions, gc.s are "personally" accountable to clients and sanctions are directed at failures by gc.s to conform to the contractual standards.

The cost-pass-through machinery requires that the gc also perform a purely procedural function. As the only building producer bonded to the client by contract, it is the latter's point of entry into the network of transactional relations between building producers[18]. In this guise, the gc exists only to channel sanctions against opportunism and incompetence to the relevant actor. Discharge of this function requires the gc to undertake formal contractual responsibility for matters over which it has no control, and for which it has not "personally" assumed the risk.

---

[18] Supra, chapter VI.

Tensions between personal and procedural aspects of the gc's role are illustrated by those provisions of JCT80 which seek to protect gc.s against the disruption costs of breaches by specialist sub-contractors and suppliers. The extension of time machinery, for example, protects the gc from the impact of "delay on the part of" nominated sub-contractors (nsc.s) and nominated suppliers (ns)[19]. However, there is a difference between the risk that a breach of the time constraint by a nsc will cause the gc to be late in completing the gc's portion of the Works, and the "pure" delay due to breach by a nsc[20]. A contractual objective of reducing opportunism and incompetence would entail holding nominated participants accountable for failures to meet the time constraints contained in their sub-contracts.

The cost-pass-through mechanism as currently instituted in JCT80 seems incapable of meeting both of these transactional objectives[21]. If the gc, who has a direct contractual link with a nsc or ns, is sheltered from the impact costs of a breach by one of these actors, it will not incur any recognisable loss. Whereas the client, who bears the

---

[19] Clause 25.4.7.

[20] Suppose, for example, that a nominated sub-contractor is appointed to install and erect the pre-stressed concrete columns which constitute the skeleton of the building and the period of the sub-contract is five weeks. The sub-contractor arrives on the site two weeks later than the date when it was due to start and takes 7 weeks to complete the sub-contract Works. The delayed start causes the gc to adjust other parts of its programme and result in a delay to the gc's part of the project of five days. The tardiness of the nsc in execution of the contract results in a further ten days delay to the progress of the gc. The breach by the nsc has therefore resulted in 15 days delay to the gc. The gc may readily be sheltered from the impact risk by the extension of time machinery. However, there remains the problem of holding the nsc accountable for breach of two terms of the sub-contract - delay in starting (two weeks) and taking longer than stipulated (another two weeks).

[21] See Westminster City Council v. J. Jarvis & Sons [1970] 1 All ER 943.

cost of delay as manifested in extensions of time and the claims machinery, would not have a contractual nexus on which to ground a claim[22].

Viewed from the perspective of accountability and contractual "discipline", there is a further problem. Even if there exists a theory of liability on which clients might base a claim sanctions would be limited to the loss to client rather than the conduct of the defaulter[23]. The more effectively a gc or architect managed to limit the impact costs of delay "on the part of" a nominated participant, therefore, the smaller would be the financial sanction against the defaulter[24].

These pragmatic problems of term-formulation, timing and bargaining power, are exacerbated by the approaches of appellate courts to the cost-pass-through device. When confronted with building contracts, these agencies have responded with contradictory "intuitions of justice", the net effect of which have been to undermine the contractual machinery.

---

[22] In the light of the Jarvis decision, ibid., the JCT has to some extent abandoned cost-pass-through as the mechanism for holding nsc.s accountable for breach to time obligations: infra. However, the problem remains significant because clause 25.4.7 also covers delay on the part of a nominated supplier, and the contractual regime makes no provision for a collateral warranty between client and nominated supplier.

[23] It appears from the comments made in some of the opinions given in Murphy v. Brentwood District Council, supra, note 13 that the negligence theory developed in Junior Books Ltd. v. Veitchi Company Ltd. [1983] 1 AC 520, might remain available to clients: see, in particular, the comments of Lord Bridge at 441E.

[24] Under the extension of time machinery, the gc is required to use its "best endeavours" to mitigate the disruptive effect of all "Relevant Events". With respect to the specific risk of "delay on the part of" a nominated participant, the definition of the contingency contains an internal mitigation norm. That is, the extension is only available to the gc who can show that it "has taken all practicable steps to reduce or avoid" disruption to its progress: clause 25.4.7.

One such intuition of justice appears in a tendency to treat individual contracts within the system constituted by building contracts as discrete transactions between competent business actors. The contract under review in any particular conflict is assumed to be a complete expression of the parties' intentions, and only those involved in the particular contract are assumed to be implicated in the outcome. One consequence of this perspective is that implied or default terms which would exist primarily to engage the cost-pass-through machinery are viewed as "terminal" allocations of responsibility[25]. Thus courts have tended to reject arguments that such a term ought to be read into the relationship between client and gc on the basis that it would be unjust to hold gc.s accountable for losses due to default on the part of another producer[26].

In other instances, judges confronted with competing interpretations of building contracts have reacted to intuitions that transactions between client and gc are part of a wider network of contractual relations. These responses are shaped by perceptions that gc.s are unduly restricted in their contractual decisions, and have been particularly visible in interpretations of the nexus between clients, gc.s

---

[25] That is, it is assumed that the loss will be borne by the party held accountable by the Court.

[26] Good examples of this intuition at work can be seen in T.A Bickerton v. North West Metropolitan Hospital Board [1970] 1 WLR 607, (HL), discussed, supra, chapter VIII; Gloucestershire County Council v. Richardson [1969] 1 AC 480, (HL), discussed infra, and John Jarvis Ltd. v. Rockdale Housing Association Ltd (1987) 3 Construction Law Journal 24. Ian Duncan Wallace has described this intuition in terms of judges having "given way to immediate and insufficiently analysed instincts of sympathy for main contractors": Ian Duncan Wallace "The Bickerton Albatross Once More" (1987) 3 Construction Law Journal 274 at 274.

and nominated participants. Judgments are influenced by concerns that gc.s have insufficient "freedom" to negotiate terms with a nominated sub-contractor or supplier, and fears that practical realities or procedural obstacles may prevent gc.s channelling a sanction to the defaulter[27].

On several occasions these "intuitions of justice" have disrupted or blocked the operation of the cost-pass-through mechanism. Take, for example, the majority opinions of House of Lords in Gloucestershire County Council v. Richardson[28]. In this case, the conflict between client and gc centred on defective concrete columns which had been supplied and erected by a nominated supplier. Significantly, to the majority in the House of Lords, the nominated supplier was the only manufacturer of the product, the price of the sales contract was lower than had been anticipated[29], and the contract included a term limiting liability for defects to replacement of defective items[30].

The client brought an action against the gc based on the latter's "procedural role" in the cost-pass-through machinery. The complicating factor was that the concrete columns met the specification given in the Bill of Quantities. As the supplier, and hence the gc, had complied with the express

---

[27] Supra, chapter VI. Note that this construction of the building contract as part of a wider matrix of contractual relations is also informed by an "instinct of sympathy" for gc.s: ibid.

[28] Supra, note 26.

[29] The Contract Bills had allowed £7000 as a prime cost sum for concrete columns and the price of the sale contract was £4941: ibid.

[30] Clause 4 of the sellers standard conditions of sale: ibid.

quality standards of the contract, (conformity with the Contract Documents), the decision centred on the possibility of implying into the main contract, the quality norms of the Sale of Goods Act[31].

There were two interpretive strands to the majority opinions in favour of the gc. Lord Pearce, and to a lesser extent, Lord Wilberforce, believed that the main contract implicitly excluded the possibility of incorporating the merchantability standard where the gc obtained input on a "supply only" basis rather than a contract "to supply and erect". This inference was drawn from a difference between the terms of the main contract with respect to the appointments of nominated suppliers and nominated sub-contractors. In particular, the main contract afforded the gc a veto against the nomination of a nsc, but not in the case of a materials only suppliers. According to Lord Pearce:

> This ommission cannot be unintentional. It seems ....to point to an intention that the contractor is not undertaking liability for materials provided by a nominated supplier. Otherwise he must surely have been given, as in the case of a nominated sub-contractor, an opportunity of making reasonable objections, and a right to insist on an indemnity from the supplier[32].

On the basis of this difference in drafting, it was thought that the gc ought not to be held presumptively accountable to the client for defects in the performance of a nominated

---

[31] In a case decided just before the Richardson decision, the House of Lords had held that building contracts were governed by the implied conditions of the Sale of Goods Act: Young & Marten Ltd v. Mcmanus Childs Ltd. [1969] 1 AC 454.

[32] Supra, note 26 at 495E.

supplier, although it would have been liable if the columns had been supplied and erected by a nsc.

The second strand in the majority decision appears in the reasons given by Lord Upjohn. He rejected the idea that different provisions in the main form had any real significance:

> The truth is that this complex agreement ... made no provision for the parties' intentions in this matter at all. It was quite unnecessary that the contract should do so, for this was not a matter that had to be dealt with once and for all at that stage unless the parties chose to do so. If the point ever occurred to them, which is unlikely, they did not provide for it in their contract.... Normally it seems to me that the usual rule of implied warranty must apply to the goods to be supplied by the contractor through the nominated supplier[33].

In this instance, however, it was thought that the warranty should not be implied. Lord Upjohn was concerned that the gc had been excessively constrained in its bargaining with the supplier by the latter's prior agreement with the client on price and liability terms. It would thus be inequitable to hold the gc accountable for the whole of the client's losses from breach when the gc's recovery from the supplier would be restricted by the terms of the limitation clause.

An important premise underlying Lord Upjohn's analysis was the belief that judges lacked the legal tools by which to reach the ideal solution. In the absence of the legal power

---

[33] Supra, note 26 at 502F-503A

to imply into the main contract quality terms which were co-extensive with the input supplier's limitation on its liability to the gc, it was thought preferable that the client should bear the entire loss, and the nominated supplier should escape without any liability[34].

The cost-pass-through mechanism is a particularly intriguing implementation dilemma. In practical terms it may be feasible for the JCT to clarify specific terms in the light of judicial decisions, and where necessary supplement cost-pass-through with direct contractual warranties. However, the underlying dissonance between the nature of the building transaction and judicial conceptions of contractual relations is much harder to address. Every attempt to redraft contract terms generates the possibility of litigation over interpretation and contemporary decisions of appellate courts reveal similar "intuitions of justice" as were evident in the Richardson case[35].

---

[34] Compare the dissenting judgment of Lord Pearson. He started with the premise that suppliers of defective inputs, whatever their label, should be held accountable for the quality of their products. In the absence of express contractual provisions which would achieve this end, the only machinery for securing accountability "gap-filling" by judicial implication of the necessary quality terms into the main contract. Recognising that this strategy functioned only as a procedural device, Lord Pearson saw that it was necessary to restrict the scope of the term to be implied in the contract between gc and client, to the scope of the liability contained in the contract between gc and supplier. The analytical methodology used by Lord Pearson is similar to that subsequently adopted by the Privy Council to deal with the analogous problems generated by the doctrine of privity in the context of international shipping cases: New Zealand Shipping Co. Ltd. v. A.M. Satterthwaite & Co. Ltd. (The Eurymedon) [1974] 1 All ER 1015; Port Jackson Stevedoring Pty Ltd. v. Salmond & Spraggon Pty (Australia) Ltd. (The New York Star) [1980] 3 All ER 257. In these decisions, the Privy Council explicitly acknowledged the importance of implementing the commercial objectives underlying the contractual provision. This goal was achieved despite the highly uncertain "fit" between the transactional purpose of the Himalaya clause and classical conceptions of contractual relations.

[35] See, for example, John Jarvis Ltd. v. Rockdale Housing Association Ltd, supra, note 26.

4. Concurrent Liabilities

Recent judicial developments have not only limited the use of negligence principles as a basis for sanctions where the relationship between plaintiff and defendant is not part of a single contractual setting, but also restricted concurrent liabilities under contractual and tortious theories of recovery. A working rule which limits access to legal sanctions in this fashion has implications for procedural and substantive aspects of participants' remedies against one another.

At the time when JCT80 was drafted, the practice of relying on concurrent but independent duties in contract and tort to overcome limitations on the availability of contractual sanctions was commonplace[36]. During the early 1980's this practice continued and was further encouraged by the decision in Junior Books Ltd. v. Veitchi Company Ltd[37]. More recently, however, the Court of Appeal, in two important decisions, has cast doubt on the possibility of concurrent liabilities in tort and contract between participants in a

---

[36] These arguments had been developed primarily to take advantage of differences between the treatment of contract and negligence theories in statutory regimes governing time limits on commencement of actions and contribution. Note that before the Civil Liability (Contribution) Act 1978, the courts' power explicitly to apportion damages was limited to actions involving joint tortfeasors: Law Reform (Married Women and Tortfeasors) Act 1935).

[37] Supra, note 23. Note that the decision in this case was predicated on the assumption that the Veitchi, in its role as nominated sub-contractor, could simultaneously owe contractual duties to the gc, and tortious duties to the client, where the three individuals were part of a single transactional network.

building transaction[38].

The issue in Simaan General Contracting Company v. Pilkington Glass Ltd (No.2) (Simaan)[39] was whether the gc could use negligence as a basis for sanctioning a nominated supplier where there was no formal contract between gc and supplier, but each was contractually linked to the same sub-contractor. The Court held that economic relationships between individuals who had failed to undertake contractual obligations towards each other, would not be governed by a negligence norm where the individuals concerned were situated in a shared context and had, by contracts with another actor, formulated the risks and liabilities which they were prepared to assume.

In Greater Nottingham Co-operative Society v. Cementation Piling and Foundations Ltd (Cementation)[40], by contrast, the parties to the action, client and nominated sub-contractor, had adopted a contractual framework of governance.

---

[38] See also the comments of Lord Scarman, speaking for the Privy Council in Tai Hing Cotton Mill Ltd. v. Liu Chong Hing Bank Ltd [1986] 1 AC 80. In response to the argument that tortious obligations ought to be inferred to make up for failures of the contractual relationship to protect the plaintiff's economic interests, Lord Scarman stated that:

> Their Lordships do not believe that there is anything to the advantage of the Law's development in searching for a liability in tort where the parties are in a contractual relationship. This is particularly so in the commercial relationship. Though it is possible as a matter of legal semantics to conduct an analysis of the rights and duties inherent in some contractual relationships ... either as a matter of contract law when the question will be what, if any, terms are to be implied or as a matter of tort law when the task will be to identify a duty arising from the proximity and character of the relationship between the parties, their Lordships believe it to be correct in principle and necessary for the avoidance of confusion in the law to adhere to the contractual analysis: on principle because it is a relationship in which the parties have, subject to a few exceptions, the right to determine their obligations, and for the avoidance of confusion because different consequences do follow according to whether liability arises in contract or tort.

at 107.

[39] [1985] 3 ALL ER 705.

[40] [1988] 3 WLR 396.

The collateral contract contained qualitative standards which were to govern the defendant's performance with respect to design and the selection of goods and materials. However, there was no express term dealing with the quality of workmanship. When negligence in the execution of the sub-contract caused damage to an adjoining building, revealed the unsuitability of the original design[41], and resulted in a 33 week delay to the project, the client sought compensation for its economic losses on the building transaction[42]. Curiously, the plaintiff did not pursue a contractual claim in the Court of Appeal, but based its argument on the negligence theory advanced in Junior Books.

Faced with a precedent which had been thoroughly discredited, and contractual "silence" on the issue of quality of workmanship, the Court of Appeal found unanimously in favour of the nsc. The existence of a contract which said nothing about the relevant risk was held to exclude the possibility of an independent tortious route to a legal sanction. In this case, therefore, it was the fact of a contract between the parties which barred the way to a direct

---

[41] The Official Referee had found as a fact that there had not been any breach of the design obligation in that it had been reasonable to believe that the original plans would be suitable, given the information available at that time: Ibid.

[42] There were three main heads of loss:

a) the additional costs under the main contract entailed by the revised piling scheme amounted to L68 606;

b) the costs of meeting the gc.s contractual claims' for direct loss/ expenses and fluctuations during the 33 weeks amounted to L79 235; and

c) the consequential economic losses to the client attributable to delayed completion amounted to L282 697.

Ibid.

claim in negligence[43].

The return to a sharp separation between tortious and contractual liabilities has important practical consequences for building transactions. First, it curtails the possibility of using negligence principles to circumvent privity, or supplement the cost-pass-through mechanism. Participants in building transactions have no choice but to use the contractual conduits. If there is a blockage or a gap in the liability channel due to insolvency, the expiry of a limitation period or a missing term, for example, the loss will simply lie where it falls.

This aspect of the recent developments is particularly significant to relations between producers and professional consultants. Despite the "intimacy" of their working relationships and the ease with which performance costs may be shifted between them, these classes of participants do not have a direct contractual connection. That architects, quantity surveyors, and gc.s each have an independent contractual relationship with a client, provides a basis for invoking sanctions where inadequate performance by one such participant results in economic loss to another. However, while the contractual channel may afford a means of compensating the "participant-victim" of opportunism, there

---

[43] For useful comments on the implications of this case for the structuring of transactional relationships between participants in building production, see, Michael Webster, "Implied Exclusion Clauses -- The Cementation Case" (1990) 6 Construction Law Journal 7; John N. Adams & Roger Brownsword, "From Jarvis to Junior Books: Tortuous and Tortious Constructions" (1989) 5 Construction Law Journal 3; see also, passim, Hilary Nicholls "Contractors' 'Duty to Warn' Following D & F. Estates and University of Glasgow v. Whitfield" (1989) 5 Construction Law Journal 175.

remains the problem of ensuring that sanctions are passed on to the defaulter and do not rest with the client.

Secondly, the decision in Cementation may have further restricted clients' access to remedies where there are latent defects in a building. During the late 1970's and early 1980's, negligence theories were routinely used to delay the date on which the procedural time clock would begin to run. Although the tortious theory was not strictly necessary for clients who could show that a qualitative failure was due to egregious opportunism, it was significant where defects were attributable to incompetence. At a time when "damage" was broadly defined to include defects in the structure of a building, judicial willingness to find concurrent duties in negligence afforded clients greater protection than might be available under the contractual regime[44].

Today, neither clients nor subsequent building owners are able to use tortious arguments as a basis of sanctioning producers or professionals unless a defect due to negligence causes consequential damage to persons or property other than

---

[44] The differences between the two theories of liability were most evident in litigation over latent defects during the five year period between the House of Lords' decisions in Anns v. Merton London Borough Council [1978] AC 728 and Pirelli General Cable Works Ltd v. Oscar Faber and Partners [1983] 1 All ER 65. Whereas clients who used a contractual theory would have six or twelve years from the date of breach within which to bring an action (depending on whether or not the contract was under seal), the Anns decisions suggested that a cause of action in negligence might not accrue until defects in a building became "discoverable". This interpretation of Anns was adopted by the Court of Appeal in a number of decisions before Pirelli, see, for example, Lewisham London Borough Council v. Leslie & Co. (1979) 250 EG 1289; Crump v. Torfaen Urban District Council (1982) 261 EG 679; Dennis v. Charnwood Borough Council [1982] 3 WLR 1064. In Pirelli, the House of Lords held that for the purposes of a negligence action, time would begin to run at the point when relevant and significant damage first occurred. Plaintiffs in negligence actions, therefore, might find that they were statute-barred where the damage to a building was not observable within six years. However, even the more restricted accrual date of Pirelli maintained the possibility of bringing a cause of action for a longer period than would be available for breach of a contract that was not under seal.

the building itself[45]. With respect to clients, however, the Cementation decision suggests that even within this limited sphere it may be difficult to use negligence liability after expiry of a contractual limitation period. The robust rejection by the Court of Appeal of "default" tortious liabilities between those who are connected by contract raises the spectre that in future contractual silences may be held implicitly to exclude duties owed to clients to avoid causing consequential physical damage[46].

One response to the current uncertainties surrounding default standards of performance and time limitations on actions would be for clients to seek (and pay for) additional security by insisting that producers assume contractual duties of care. Whether such a term would in fact extend the period within which clients may bring legal sanctions depends on the meaning to be attributed to critical provisions in the Latent

---

[45] D & F Estates v. Church Commissioners, supra, note 13; Murphy v. Brentwood District Council, supra, note 13. If a latent defect does cause such damage, sanctions against gc.s or architects appear to be available to subsequent building owners for a period of three years (personal injury) or six years (property damage) from the date on which relevant and significant damage first occurred.

[46] This interpretation is reinforced by the fact that JCT80 provides for the gc to indemnify the client against liability for consequential physical damage arising out of the gc.s activities on the site during production: clauses 20 & 21. Clients face the risk therefore that courts, following the logic of the Cementation analysis, may hold that the parties' limited contractual provision for the contingency implicitly excludes a default norm which would hold the gc accountable in negligence for consequential physical damage due to defects in the building where the damage does not occur until the building is in use. A further complicating factor would arise from the interaction of the Unfair Contract Terms Act 1977 with the contractual norms. Were the contractual indemnity clauses to be viewed as a limitation on the gc.s' liability in negligence, they would be subject to the provisions of the Act. Liability for death or personal injury caused by defects in the building, therefore, could not be excluded or restricted, and restrictions on liability for property damage caused by such defects would be subject to a reasonableness test: s.2, Unfair Contract Terms Act. If, on the other hand, the effect of Cementation is that gc.s are not subject to duties of care except to the extent that they are expressed in the contract, then the analysis is rather different. The contractual provisions governing indemnities would not be a limitation, but an assumption of liability in negligence. While, in theory at least, the Unfair Contract Terms Act 1977, is intended to govern terms which define obligations, as well as those which restrict or exclude duties, in practice it would seem that the Cementation argument is far less amenable to the controls of the Act.

Damage Act of 1986. This legislation provides that where damage results from a latent defect due to "negligence", the person incurring damage has three years from the date when the damage became "discoverable" in which to commence proceedings[47].

The Act does not define "negligence". If the term is interpreted to include breach of contractual duties of care, clients would clearly be able to use such norms to enhance their access to sanctions. If, on the other hand, the negligence norm of the Act is taken to refer exclusively to the tort of negligence, actions based on contractual duties of care would continue to be governed by the conventional limitation period of six (or twelve) years from the date of breach.

Restrictions on tortious liabilities appear also to have inhibited further development of contributory negligence as a defence to actions for breach of contract. In the context of building contracts this would have the effect of eliminating a potentially powerful tool of apportionment. Historically, English courts, when dealing with contractual sanctions, would use concepts such as "causation", "mitigation" and "remoteness" to define risk allocation and effect implicit apportionment[48], but deny loss-sharing when

---

[47] All actions are subject to a final limitation date of fifteen years from the original date of breach.

[48] See, for example, O'Connor v. B.D. Kirby & Co. [1972] 1 QB 90 (causation); Weld-Blundell v. Stphens [1920] AC 956 (remoteness and causation); Jamal v. Moolla Dawood Sons & Co. [1916] AC 175 (mitigation). For a recent example, of the use of causation / remoteness arguments to apportion

the defendant raised the contributory negligence defence[49]. During the early 1980's the Official Referees had begun to admit the defence where a gc could show that the architect, or another participant linked only to the client, was implicated in a compound breach. This practice was implicitly endorsed by the Court of Appeal in Forsikringsaktieselskampat Vesta v. Butcher[50], where it was accepted that contributory negligence should be incorporated into the working rules governing sanctions for breach of contract. However, in upholding the decision of the trial judge[51], the Court of Appeal held that contributory negligence would be available only where a defendant owes duties in negligence which are co-extensive with, but independent of, its contractual obligations. It is precisely this possibility of liability in the tort of negligence independently of contract which appears to have been eradicated by the decisions in Simaan and Cementation[52].

---

liability in a construction context, see, Frost v. Moody Homes Ltd. (1990) 6 Construction Law Journal 43.

[49] For a helpful review of the jurisprudence in this area, see the opinion of Neill LJ., in A.B. Marintrans v. Comet Shipping Co. Ltd [1985] 1 Lloyd's Reports 568.

[50] [1986] 2 Lloyd's Reports 179.

[51] [1986] 2 All ER 488

[52] For differing perspectives on whether recognition of the contributory negligence defence is, or would be, a desirable development in construction contracts, see David I. Bristow "Contributory Fault in Construction Contracts" (1986) 2 Construction Law Journal 252 and Michael J. Smith "Forsikringsaktieselskapet Vesta v. Butcher and Others: The Fish Farm Fiasco -- Contributory Negligence, Contracts and Construction" (1988) 4 Construction Law Journal 75.

B. Quality

1. Introduction to the Contractual Regulation of Quality

a. Standards and Sanctions

Within the institutional setting of building production, qualitative standards are readily defined, but may be difficult to enforce. We have already seen that the planning process provides a forum for the development of transaction-specific rules. In addition, qualitative aspects of the performances of building producers and professionals are governed by public legal regimes such as the Building Regulations, the Sale of Goods Act, and the Supply of Goods and Services Act.

As we move from question of standards to sanctions, however, enforcement issues become more complex. Quite apart from the implementation dilemmas described above, the power of legal sanctions to deter opportunism or protect against incompetence is limited by critical characteristics of building transactions. The interactive and cumulative nature of building production, for example, simplifies concealment of defective work and inputs, and hence exacerbates the costs of detecting failures to meet contractual standards. Moreover, the relative inexperience of many clients and the "one-off"

nature of their participation in building production renders client observation and monitoring an unreliable means of evaluating producers or the professionals to whom the task of supervision is delegated.

Nor is evaluation of performances by reference to the "outcome" of the transaction an ideal solution. Building producers and professionals' shares in the transactional surplus take the form of a fee which is paid by the end of the production phase. Returns to clients, by contrast, are derived from the building in use. That clients' interests lie in the services supplied by an unusually durable product exposes an information gap between production and evaluation of buildings. Judgments about how far a building, as produced, conforms to a client's expectations must be postponed, at least to some extent, until a building user has experience of the performance of the building. The time which it takes for users to acquire relevant information about building defects affects the power of legal remedies to operate as a safeguard against opportunism or incompetence. The costs of establishing and pinpointing fault, for example, are likely to increase with the duration of building use. Time-lags between execution of the building transaction and the evaluation of performance also provide scope for incompetent or opportunistic defaulters to disappear or otherwise shield themselves from legal sanctions.

b. Classification of Building Defects under JCT80

JCT80 classifies building defects into two main categories. First, some aspect of the building as produced may fail to conform to the decisions which were made during planning. Second, a building may be defective despite having been produced precisely in accordance with the specification of the building concept. In both instances the failure may be trivial or important and may affect the performance of the building, its safety in use, maintainance costs, or market value. An additional question which is raised by "conforming" defects is whether the building, as produced, in fact meets the clients needs.

The former type of deficiency - the non-conforming defect - may be seen as redistribution of shares in the transactional surplus from clients to the building producer responsible for that part of the project. The primary beneficiary of redistribution through "conforming" defects, is the participant - architect, specialist designer, or nominated sub-contractor - who produced the unsuitable plans. However, within the complex and interactive process governed by JCT80, responsibility for quality cannot be defined in quite such a discrete fashion. Architects, Clerks of Works and gc.s have supervisory duties which may generate liability for non-conforming defects. With respect to conforming defects, the organisation of building production raises the issue of how

far building producers ought to be held accountable for failing to intervene when their location and expertise provides a basis for identifying problems in a design or specification.

2. Non-Conforming Inputs

a. Production Sanctions

(i) Description of the Sanctions

Contractual remedies against gc.s for non-conforming inputs are available to clients whether the defective inputs affect the market value, the cost-in-use, or the safety of the building. Clients, by virtue of the contract, are entitled to a product with complies exactly with the decisions which were made during planning. Gc.s' liability for non-conforming defects may be "personal" or "procedural" in function[53]. In the latter case, the liability of the gc incorporates formal responsibility for every participant with whom it has a contractual relationship, including the nominated participants[54].

During production, conformity with the documents defining the building concept is enforceable against the gc by way of

---

53 Supra.

54 See discussion, infra.

a transaction-specific remedy. This enforcement instrument combines literal performance with the sanction of empowering clients to withhold interim payments. JCT80 authorises the architect, upon discovery of non-conforming inputs, to instruct the gc to replace defective materials or rectify poor quality workmanship[55] and to refuse to certify for payment work which has not been properly executed[56]. In addition to the costs of removal and replacement, the gc is contractually accountable for disruption costs[57]. These financial sanctions are reinforced by the client's power unilaterally to terminate the contract if the gc persistently refuses to rectify defects[58].

This enforcement instrument is available to clients throughout site production and until the end of the "Defects Liability Period" (DLP)[59]. The DLP begins on the day named by the Architect in the certificate of "Practical Completion"[60] and continues for the time agreed between client and gc during planning and stated in the Appendix[61]. At the end of the DLP, the architect is to conduct a comprehensive review of the buildings. Deficiencies which appear during this period and

---

[55] Clause 8.3: supra, chapter VIII.

[56] Clause 30.2.1.1.

[57] That is, the gc is not entitled to any relief from the disruption to its progress, and it will be liable to the client if completion is delayed by the discovery of non-conforming inputs.

[58] Clause 27.1.3.

[59] Clause 17.

[60] Clause 17.1. The importance of Practical Completion is that it is the date from which the Client normally goes into occupation of the building. The Certificate of Practical Completion is also significant to the gc as it triggers release of one half of the sum which has been deducted by clients from the interim payments during production (the Retention): clause 30.4.

[61] JCT80 provides for a default norm of six months: Appendix.

are attributable to non-conforming inputs are to be specified in a schedule of defects prepared by the architect[62]. The gc is to be given this schedule within 14 days of the end of the DLP and is normally required to remedy all problems identified at its own cost[63]. Once the architect is satisfied that the defects set out in the schedule have been rectified, she is to issue the "Certificate of Completion of Making Good Defects"[64].

Gc.s' incentives to remedy defects during the DLP are primarily financial. The "Certificate of Completion of Making Good Defects" triggers release of the second half of the sum which the client has withheld from interim payments during production (the Retention)[65]. In addition, this Certificate paves the way for final accounting of the transaction and issue of the Final Certificate.

With respect to the issue of quality control, the Final Certificate has one important effect. That is, it releases the gc from liability for inputs which were required to meet the qualitative standard of "reasonable satisfaction" of the Architect, unless arbitration proceedings have been launched or fraud can be shown[66].

---

[62] Clause 17.2: Note that clause 17 also empowers the architect to issue specific Instructions during the DLP requiring particular defects to be made good within a reasonable time from the issue of the instruction: clause 17.3.

[63] Clause 17.2.

[64] Clause 17.4.

[65] Clause 30.4.1.3.

[66] Clause 30.9.1.

The literal enforcement regime is subject to an important limitation in that the sanction is available only for a short period during the useable life of the building. Once the Certificate of Completion of Making Good Defects has been issued, the client loses the contractual power to compel the gc to return and rectify defects. Nor can clients draw on "public" legal norms to reinforce demands for exact compliance. Specific performance is seldom awarded for breach of building contracts and is not available once the gc has vacated the site[67].

The client's primary remedy against the gc for non-conforming inputs which are discovered after the Certificate has been issued is the action in damages for breach of contract. English courts tend to use the reinstatement measure as the quantification principle for breach of quality terms in building transactions[68]. The pure reinstatement sum may be modified, however, by doctrines such as remoteness of damage, mitigation, causation, and, perhaps also, contributory

---

[67] For applications of the traditional rule denying specific performance as a remedy for breach of building contracts, see, Flint v. Brandon (1808) 3 Ves. 159; Wilkinson v. Clements (1872) LR 8 Ch. 96; Wood v. Silcock (1884) 50 LT 251. For exceptions to the traditional rule, see, Wolverhampton Corporation v. Emmons [1901] 1 QB 515 and Carpenters Estates Ltd v. Davies [1940] Ch. 160. The principles developed in these latter decisions enable specific performance to be awarded where three conditions are met:

i) the work is precisely defined;
ii) damages will not adequately compensate the plaintiff;
iii) the defendant is in possession of the land on which the building is to be done.

[68] Mertens v. Home Freehold Co [1921] 2 KB 526, Smith v. Johnson (1899) 15 TLR 179, East Ham Borough Council v. Bernard Sunley & Sons Ltd., supra, note 9; The Board of Governers of the Hospital for Sick Children & ano v. McLaughlin & Harvey plc (1990) 6 Construction Law Journal 245.

negligence[69].

Gc.s are exposed to the risk of contractual sanctions for a period of six or twelve years from the date of breach depending on whether the contract was under seal. In addition, s.32 of the Limitation Act extends clients' power to invoke a legal sanction if the defect results from an opportunistic breach of contract. Under this section, the commencement of the limitation period is delayed where the client can show fraud or deliberate concealment of defects. In such cases the cause of action does not accrue until the date when the client discovered or ought "with reasonable diligence" to have discovered the fraud or concealment[70].

(ii) Institutional Analysis of the Sanctions

The limited duration of the transaction-specific sanction seems to be explicable in terms of the organisation of the construction industry. As we have seen, producers' inability to manipulate demand compels gc.s to seek economic security

---

[69] Supra. Within the context of building production, the doctrine of mitigation raises two practical problems: the time at which damages should be assessed, and credit for "betterment". On the issue of date for assessment, see, Dodd Properties (Kent) Ltd. v. Canterbury City Council [1980] 1 WLR 433; William Cory & Son v. Wingate Investments Ltd. 17 Building Law Reports 104; see, generally, Ian N. Duncan Wallace, "Inflation and the Assessment of Construction Cost Damages" (1982) 98 Law Quarterly Review 406. On the issue of costly mitigatory actions which result in benefits to the plaintiff, see, generally, British Westinghouse Co. v. Underground Electric Railways Co of London [1912] AC 673; Lodge Holes Colliery Company Limited v. The Borough of Wednesbury [1908] AC 323; and the discussion in The Board of Governers of the Hospital for Sick Children v. McLaughlin & Harvey plc, supra, note 68.

[70] Before 1980 the only exemption stated in the Limitation Act was "fraud". However, in an important series of building contract cases, the courts had interpreted the section to mean that clients could rely on the exemption if there was deliberate concealment of defects: see, Beaman v. ARTS Ltd. [1949] 1 KB 550; Clark v. Woor [1965] 2 All ER 353; Applegate v. Moss [1971] 1 QB 406; Lewisham London Borough Council v. Leslie & Co. (1979) 12 Building Law Reports 22.

by committing resources to an on-going programme of contracts[71]. Management of such a programme, it might be argued, would be difficult, if not impossible, were clients able to force gc.s to return and effect repairs months or years after a building is in use.

Conventional rationales for refusing specifically to enforce building contracts are also superficially plausible. Repairs to a defective building, no less than initial production, create scope for cheating on quality margins. The risk of incompetence or opportunism is exacerbated where execution of an activity involves dimensions of skill and effort which are difficult to measure. That specific performance would compel the person who was responsible for defects to return, perhaps reluctantly, to effect the repairs, lends credence to the belief that this remedy would necessarily entail careful supervision of the building producer(s). The costs of such monitoring, the argument concludes, are in most instances likely to exceed the net benefits to clients of the power to coerce the original gc to repair defects.

However, to focus exclusively on the implications for producers, or courts, of gc.s in fact returning and executing repairs may be to miss the point of a literal enforcement

---

[71] Supra, chapter VI.

sanction[72]. Protection of clients' interests by way of a property rule rather than the liability rule of compensatory damages would not necessarily result in the gc doing the work itself. Rather literal enforcement, like the damages remedy, creates a framework within which gc.s would bargain with clients for release from their transactional undertakings.

In theory, at least, the bargaining frameworks instituted by property rules and liability rules differ in their distribution of contractual power. Liability rules cast a protective shadow over the defaulting party in that they constitute a limiting price for the breach which is generally less than the cost to the defaulter of performing the contract. By contrast, if the non-defaulting party's interests in performance are protected by a property rule, the outcome of post-breach negotiations is shaped by the non-defaulter's power ultimately to compel the other to incur the cost of performing[73].

Such comparisons between property rule and liability rule forms of legal sanction are based on the premise that compensatory damages are measured by reference to the market

---

[72] This discussion draws generally on Calabresi & Melamed's important analaysis of property rules and liability rules, and subsequent developments of this argument in the context of specific performance: Guido Calabresi & A. Douglas Melamed, "Property Rules, Liability Rules and Inalienability: One View of the Cathedral" (1972) 85 Harvard Law Review 1089; see, generally, Allan Schwartz, "The Case for Specific Performance" (1979) 89 Yale Law Journal 271; William D. Bishop "The Choice of Remedy for Breach of Contract" (1985) 14 Journal of Legal Studies 299; Thomas S. Ulen, "The Efficiency of Specific Performance: Towards A Unified Theory of Contract Remedies" (1984) 83 Michigan Law Review 341.

[73] Ibid.

value of the expected performance[74]. Where, as in the case of building transactions, damages are based on the cost of completion, the distinction between property rule and liability rule protection is less stark[75]. Empowering clients to extract the cost of rectifying defects from a defaulting gc has similar implications to literal enforcement in that clients are in a relatively strong position to bargain for a share in a gc's profits from breach. Yet the damages sanction, as measured by the cost of completion, is not identical to literal enforcement[76]. In the former instance, though not in the latter, the defaulting party's liability is contained by judicially developed working rules such as the idea of mitigation and the doctrine of remoteness.

Analysis of the implications of substantive and procedural norms which limit gc.s' contractual liability is complicated by the dual role of such qualifying doctrines. Restrictions on a contractor's accountability for the consequences of its breach might be viewed as a judgment that part of the risk of loss ought to be borne by the non-

---

[74] As the analysis has been developed in the law and economics literature, this measure of damages is viewed as a means of allocating to promisees the risk that a contract will not be performed because the resources are valued more highly in another use. In addition to the references cited above, see, for example, Richard A. Posner Economic Analysis of Law (Boston: Little Brown & Co., 1977); Anthony T. Kronman, "Specific Performance" (1978) 44 University of Chicago Law Review 351.

[75] For economic analysis of the differences between "market value" and "cost of completion" measures of damages, see, Don Harris, Anthony I. Ogus, & Jennifer Phillips, "Contract Remedies and the Consumer Surplus" (1979) 95 Law Quarterly Review 581; Timothy J. Muris, "Cost of Completion or Diminution in Market Value: The Relevance of Subjective Value" (1983) 12 Journal of Legal Studies 379.

[76] Ibid.

breaching party, or was not included in the contract price[77]. Within neoclassical law and economics, for example, the argument that a promisee-buyer ought to bear the risk that a promisor-seller may receive a better offer from another buyer during the period between formation and performance of a contract is a common justification for limiting the original buyer's damages to reasonably foreseeable losses[78].

Quality control in building production raises different issues. There does not seem to be any good reason to use public rules of law to limit clients' reliance on the competence and good faith of building producers. Gc.s who feel that such limitations are necessary may always alert the client during planning. The parties might then negotiate an appropriate, and "reasonable" limitation or exclusion clause, and discount the contract price. In the context of qualitative defects, therefore, it might be argued that courts are right to be sceptical of attempts by gc.s to invoke the limitation doctrines of common law.

On the other hand, building defects are frequently the result of compound breaches. More often than not a participant who is connected to the transaction only by contract with the client is also implicated in the problem[79]. In such

---

[77] Such judgments are particularly visible when compensation is withheld or reduced on the grounds that the loss is "too remote", or might have been avoided if the non-breaching party had taken reasonable action in the face of the breach.

[78] Supra, chapter III.

[79] Typically, breach by a producer will be compounded by inadequate supervision, see, for example, East Ham Borough Council v. Bernard Sunley, supra, note 9; see, discussion infra.

situations, the client is to be used as a cost-pass-through mechanism for channelling sanctions to the appropriate person. When used in this context, principles such as causation, remoteness of damage, and contributory negligence, would serve not so much to limit the client's compensation, but as a basis for passing liability through the network of contracts[80].

b. Supervision Sanctions

The justification for empowering clients to bring sanctions against architects for quality failures due to non-conforming defects is straightforward. The architect, though not directly engaged in construction of the building, supplies supervisory services for which she is compensated in the fee for the project. In order to ensure that architects do not chisel on their supervisory obligations, they ought to be accountable for failures which would have been avoided by competent supervision.

The primary obstacles to implementation of this goal relate to standard-setting and targetting. Definition of the quality of monitoring services which the architect is to supply is made more difficult by the complex character of supervision. Relevant performance norms are required not only to establish standards of professional competence in the

---

[80] See, generally, the discussion of apportionment and cost-pass-through, supra.

execution of specific supervisory tasks such as inspection or certification, but also to govern discretionary judgments about how much supervision is necessary, and the need for intervention in the production process[81].

The issue of targetting concerns relationships between the supervisory responsibilities of the architect and other participants. The gc has a contractual duty to supervise production as does the Clerk of Works. These participants, like the architect, are paid to monitor execution of the transaction. Enforcement of these overlapping obligations, through the mechanism of legal sanctions, is impeded by the problems of apportionment and accountability described above.

A further question which may arise concerns the scope of the protection afforded to other participants by the presence of project architects. This issue has been raised in the context of relationships between architects and building producers, and between architects and building workers on the site. Gc.s, for example, have sought to argue that their liability to clients for defects in a completed building ought to be limited because the architect failed to identify defective work during the production and make an appropriate intervention[82]. It has also been suggested that an injured

---

[81] See, generally, Anthony M. Dugdale Professional Negligence (London: Butterworth, 1989) (2nd ed.); Ian N. Duncan Wallace "Liability of Professionals in Construction Contracts" (1984-5) 1 Construction Law Journal 4; Andy Khan, "Standard of Proof in Professional Negligence" (1984-5 1 Construction Law Journal 182. For economic analysis of the issue of professional liability in the context of legal services, see, Cento G. Veljanovski & Christopher J. Whelan, "Professional Negligence and the Quality of Legal Services - An Economic Perspective" (1983) 46 Modern Law Review 700.

[82] East Ham Borough Council v. Bernard Sunley & Sons Ltd., supra, note 9.

building worker ought to be able to invoke sanctions against the architect for negligent supervision where injuries resulted from an unsafe method of production adopted by the gc[83].

The institutional culture within which building transactions are situated offers two possible strategies for defining supervisory standards: express contractual terms, and reliance on the common law norms which govern transactions between professionals and their clients[84]. Neither strategy is transaction costless. A decision to use the express term route may entail the clients and architects incurring the direct negotiation costs of creating qualitative standards to govern supervision.

In addition, there may be more subtle costs. Quantity and quality of supervision inputs are not matters which are easily expressed in specific contract language. Such terms, therefore, tend to be formulated either in the language of "aspirational norms", such as "best efforts" or reasonableness, or by reference to observable proxies, such

---

[83] Compare Clayton v. Woodman & Son (Builders) Ltd. [1962] 2 All ER 33 where the CA held that the architect was not accountable to an injured worker for the unsafe production method adopted by the gc, with Clay v. A.J. Crump & Sons Ltd. [1964] 1 QB 533 where the architect was liable to a building worker. One difference between the two cases was that in Clay, the unsafe procedure (demolition contractors leaving a wall standing) was also a breach of the contractual specification and the architect had relied upon the contractor who asserted that the wall was safe. In effect, the sanction available to the injured worker was derived from the fact that the architect's failure to monitor compliance with the specification would constitute a breach of the architect's contract with the client. In Clayton, by contrast, the unsafe procedure was not a contravention of a specific contractual term. There was no indication, therefore, that the architect had failed adequately to supervise production.

[84] For discussion of the specific content of architects' duties, see Dugdale, Professional Negligence, supra, note 81; Duncan Wallace, "Liability of Professionals in Construction Contracts", supra, note 81.

as frequency of visits. Aspirational norms are subject to the same problems of specificity and monitoring which may affect common law standards of reasonableness. The alternative strategy of reliance on proxies, raises the question of "fit" between the observable measure of performance and the quality of supervision[85].

Negotiation costs may be avoided or reduced by reliance on the standardised "Conditions of Engagement" produced by the RIBA and the terms institutionalised in the Supply of Goods and Services Act. Whether or not these terms constitute an "ideal" definition of what the client might legitimately expect from an architect in supervising the Works, they provide a baseline sets of working rules which the parties might use or adapt as required.

The Conditions of Engagement limit the supervisory role of the architect to protection of clients' interests in the outcomes of building transactions, that is, securing finished buildings which conform to decisions made during planning[86].

---

85 Supra, chapter IV.

86 These terms reflect the standards formulated by Pearson LJ., in Clayton v. Woodman, supra, note 83. He states that the duty of the architect was simply "to make sure that the owner will have a building properly constructed in accordance with the contract", at 40. See also, Mocatta J. in AMF (International) Ltd. v. Magnet Bowling Ltd. [1968] 1 WLR 1028, commenting on the decision in Clayton v. Woodman & Son. He asserts that the Clayton case:

> ... further establishes than an architect has no right to instruct a builder how his work is to be done or the safety precautions to be taken. It is the function and right of the builder to carry out his own building operations as he thinks fit. The architect, on the other hand, is engaged as the agent of the owner for whom the building is being erected, and his function is, inter alia, to make sure that in the end, when the work has been completed, the owner will have a building properly constructed in accordance with the contract and any supplementary instructions which the architect may have given.

In the course of a comprehensive discussion of the role of the architect in building transactions, Official Referee, Judge William Stabb, QC., commented that:

> ... the building owner is entitled to expect his architect so to administer the contract and supervise the work, as to ensure, so far as is reasonably possible, that

While architects undertake to make such visits to the site as are necessary to see that production is proceeding in accordance with the contract[87], there is an express disclaimer of responsibility for the methods of work adopted by the gc[88].

Reliance on the common law standards governing professional negligence produces much the same criteria of competence. Courts generally defer to professional definitions of the nature and quality of supervision that clients may legitimately expect. Although conflicts between the views of individual experts over the precise practice which ought to be followed may arise, standards of supervisory care are formulated by courts in such general terms that these conflicts are readily accommodated in findings of fact[89].

That the Conditions of Engagement purport to define architects' responsibilities for supervision in a manner which is distinct from gc.s' production and supervision duties accords with a transactional objective of targetting legal sanctions precisely. However, the dichotomy between monitoring compliance with plans and supervision over working methods

---

> the quality of work matches up to the standard contemplated....No one suggests that the architect is required to tell a contractor how his work is to be done, nor is the architect responsible for the manner in which the contractor does the work. What his supervisory duty does require of him is to follow the progress of the work and to take steps to see that those words comply with the general requirements of the contract in specification and quality. If he should fail to exercise his professional care and skill in this respect, he would be liable to his employer for any damage attributable to that failure.

Sutcliffe v. Chippendale & Edmondson (1971) 18 Building Law Reports 149 at 162.

87 Clause 1.33 Standard Conditions of Engagement (London: RIBA Publications).

88 Clause 1.34 of the Conditions of Engagement, ibid.,stipulates that the architect is "not responsible for the contractor's operational methods ... nor for any failure by the contractor to carry out the work in accordance with the building contract".

89 See Khan, "Standard of Proof in Professional Negligence", supra, note 81.

may be easier to articulate than to institutionalise. Moreover, as has been recognised in the courts, the formal separation between architects' and gc.s' responsibilities may require modification if a competent architect would have reason to doubt the good faith or proficiency of a gc[90].

It is also possible to develop an intuitive sense of differences between the duties of architects and Clerks of Works based on industry understandings of their respective roles in building production[91]. For example, one might derive from the expectation that CW.s attend the site on a daily basis, and liaise with gc.s' representatives on production matters, a norm that CW.s should monitor on-going compliance on matters of detail. Architects, by contrast, would be expected to ensure that the building as a whole conforms to decisions which were made during planning[92].

---

[90] For example, in Sutcliffe v. Chippendale & Edmondson, supra, note 86, Judge Stabb QC maintained that:

> [T]he degree of supervision required of an architect must be governed to some extent by his confidence in the contractor. If and when something occurs which should indicate to him a lack of competence in the contractor, then, in the interest of his employer, the standard of supervision should be higher.

at 162.

[91] See, for example, Kensington & Chelsea & Westminster Area Health Authority v. Wettern Composites and Others (1984) 1 Construction Law Reports 114.

[92] See, for example, Saunders v. Broadstairs Local Board (1890) Hudson's Building Contracts 4th ed. vol 2 at 164; Leicester Board of Guardians v. Trollope (1911) JP 197 (Hudson's Building Contracts 4th ed. vol 2 419. In the course of his judgment in the latter case, Channell J. commented that:

> Everybody knows that an architect cannot be there all the time, and everybody knows that the clerk of the works is appointed to protect the interests of the employwer against the builder, mainly because the architect cannot be there.... [T]here is no difficulty in seeing what are the respective functions and duties of an architect and of a clerk of the works ... the clerk of the works has to see to matters of detail, ... the architect is not expected to do so ... the architect is responsible to see that his design is carried out. That fairly indicates what the respective duties of each are, but it leaves one in each case to say whether the matter complained of is a matter of detail or a matter of seeing whether the design is complied with.

Hudson, at 423. See also, Kensington & Chelsea Area Health Authority v. Wettern Composites, supra, note 91.

Once again, however, this type of formulaic separation between the supervisory responsibilities of different participants generates classification problems. Enforcement of such transactional norms entails costly and potentially error-prone decisions as to whether a particular defect is due to failure to observe a matter of detail or inadequate monitoring of compliance with the building concept.

The difficulties entailed in defining supervisory duties in a manner which is sufficiently distinct that the performances of each supervisor can be separately evaluated, and, where necessary, sanctioned, illustrates the larger issues of apportionment and accountability raised by contractual enforcement within building production[93]. The use of a damages remedy to sanction a supervisor for failing to provide the appropriate quality of monitoring services automatically reduces the weight of the sanction against the building producer who supplies defective inputs[94]. Similarly, a finding that both architect and Clerk of Works are implicated in a failure to detect defective inputs results in

---

[93] Supra.

[94] For example, in Kensington & Chelsea Area Health Authority v. Wettern Composites, supra, note 91, serious defects in the production of a hospital meant that the building owners had to spend L250 000 on repairs. In its original form the action was against the sub-contractors (Wettern) who installed the defective components, and the manufacturers of the defective product, as well as the architect, (for inadequate supervision) and structural engineers (for design failures). By the time that the issue came to trial, the sub-contractors had gone into liquidation, and the action against the manufacturers had been dropped. The building owners claimed the entire cost of repairing the defects from the building professionals. Official Referee David Smout QC., exonerated the structural engineers, but held that the firm of architects was presumptively liable for the full cost of repair on the grounds that they had failed adequately to supervise production. However, on the facts of the case, the architects' liability was limited to 80% of the cost of repairs because the judge believed that the Clerk of Works must also have failed to execute his supervisory obligations properly. As the Clerk of Works could not be found, the effect of the judge's decision on apportionment was to allocate 20% of the loss to the subsequent owner of the building.

neither participant incurring 100% of the sanction[95].

3. "Conforming" Defects

JCT80 attempts to structure liability for "conforming defects" in line with the functional separation between design and production created by the Contracting System. Architects are accountable to clients for the costs of repair engendered by failures in the building concept. Similarly, the architect is responsible where the design, though functional, does not meet those clients' needs that were communcated during planning. By contrast, the express contractual duties of the gc are confined to execution of the Works in compliance with design decisions, the Bill of Quantities and Architects' Instructions[96].

Once again, however, the idea of sharp divisions between the transactional tasks of different participants sits uneasily with the polycentricity of building transactions. Enforcement problems arise because architects are not the only participants who supply design services[97]. In addition, gc.s' expertise in building production, raises the question of their accountability for defects in designs or in components materials which were specified in the Bill of Quantities.

---

95 Ibid.

96 Clause 2.1, clause 4.1.

97 Supra, chapter VI.

These issues are further complicated by the role of nominated participants in building transactions. We have seen that packages of inputs supplied by this class of participants may include design, selection of materials and assembly services[98]. The inclusive nature of specialists' services promotes discrete allocations of responsibility for distinct segments of the building, but conflicts with conventional divisions between designers and producers[99].

Within the JCT's contracts, this dilemma was traditionally managed by the strategy of channelling all sanctions against nominated participants through the agency of the gc[100]. Interestingly, the problem of the under-inclusive nature of gc.s' duties to clients (that is, the fact that gc.s do not have design duties) was overcome by the willingness of judges to imply warranties of quality into the main contract[101]. Once gc.s' performances were held to be governed by norms of fitness and merchantability, clients' power to bring an action which would eventually result in sanctions against a nominated participant was greatly enhanced[102].

Clients were able to obtain remedies where the design or selection choices of specialists proved to be unsuitable,

---

98 Supra, chapter VI.

99 Ibid.

100 Ibid.

101 Young & Marten Ltd. v. McManus Childs Ltd., supra, note 31; see also, Test Valley Borough Council v. Greater London Council (1979) 13 Building Law Reports 63; Independent Broadcasting Authority v. EMI Electronics Ltd. and BICC Construction Ltd. (1980) 14 Building Law Reports 1; Holland, Hannen & Cubitt (Northern) Ltd. v. Welsh Health Technical Services Organisation (1981) 18 Building Law Reports 80.

102 Ibid.

defective or inadequate. While the initial action would be brought against the gc, it typically functioned only as a procedural device. Damages paid by a gc to a client would be recoverable by the gc in an action against the specialist.

On the other hand, the use of cost-pass-through, in general, was undermined by judicial concerns over the potentially over-inclusive nature of gc.s' obligations for the performances of participants nominated by clients[103]. Under JCT80 the problem of sanctioning nominated sub-contractors for design failures has now been addressed by the introduction of a direct collateral warranty between client and specialist[104].

With respect to plans produced by other design consultants, the architect remains presumptively accountable to the client[105]. This working rule is quite extensive in that it governs the design of building components where the architect is not involved in production of the plans, and has no specialist knowledge[106]. The scope of the duty is perhaps best understood in terms of the architect's role as adviser

---

103 Supra, see also, chapter VI.

104 Nominated sub-contractors are now directly accountable to clients for design failures which reflect professional incompetence: clause 2.1 NSC/2, infra.

105 Moresk Cleaners v. Hicks [1966] 2 Lloyd's Report 338 (note that the designer in this case was described in the pleadings as a nominated sub-contractor); see also, Richard Robert Holdings Limited v. Douglas Smith Stimson Partnership (1989) Construction Law Journal 223. Donald Keating suggests that the architect's responsibility is limited to ensuring that the client has an effective contractual remedy against a person to whom responsibility for design has been transferred: Keating, Building Contracts (London: Sweet & Maxwell, 1978). By contrast, Hudson's Building and Engineering Contracts (edited by Ian Duncan Wallace) justifies the extent of the architect's duty by reference to formal limitations on the power to delegate legal responsibility for the task of design. That is to say, while the architect may legitimately ask someone else to design part of the building, she cannot, within the scope of the retainer, divest herself of responsibility for incompetence (or opportunism) in the execution of the task: Hudson's Building and Engineering Contracts (London: Sweet & Maxwell, 1970) (10th ed.).

106 Richard Robert Holdings Limited v. Douglas Smith Stimson Partnership, supra, note 105.

to the client. That is to say, architects who lack expertise in the design of particular building components may yet be expected to inform themselves to the extent necessary to make a reliable judgment as to suitability, and advise clients accordingly[107]. Where the costs of acquiring relevant knowledge are excessive, (as assessed against the terms of the contract between architect and client), an architect may always protect herself by informing the client of her inability to evaluate the work of a specialist designer[108].

With respect to gc.s' accountability for conforming defects, the governing legal culture within which JCT80 is situated extends the sanctioning power of clients in two ways. First, the statutory conditions regulating the quality of goods and services govern gc.s' "personal" liability under building contracts as well as their procedural role[109]. In addition to exact compliance with the planning choices expressed in the Contract documents, therefore, gc.s are accountable for the "merchantability" of material inputs[110], and for ensuring that building work is carried out with "reasonable care and skill"[111].

Secondly, a gc may be expected actively to intervene if

---

107 Ibid.

108 Ibid.

109 See, generally, Michael Regan "Fitness, Quality and Skill and Care" (1987) 3 Construction Law Journal 241.

110 Young & Marten Ltd. v. McManus Childs, supra, note 31; see also, s.4 Supply of Goods and Services Act 1982.

111 Supply of Goods and Services Act 1982, s.13.

it believes that designs are defective or the materials specified in the Contract Documents are not fit for the purposes of the building. This duty requires that the gc alert the architect, in the latter's capacity as agent to the client, to actual or potential problems in using the particular design or product for the purposes of the construction project[112]. As originally conceived, the duty to warn was based on recognition of gc.s' expertise in building production, and the obligation took the form of a contractual duty of care to be implied into the transaction between client and gc[113]. This approach may have been undermined by recent decisions restricting the use of negligence norms to plug contractual gaps[114]. However, as an alternative route to the same end, clients may be able to rely on the implied conditions of the Supply of Goods and Services Act[115]. Duties to use reasonable skill and care in the execution of a building contract may be viewed as encompassing an obligation to warn where a competent gc would have realised that there might be design or specification defects.

Whether gc.s are also accountable to the client for breach of statutory standards governing building production

---

112 Equitable Debenture Assets Corporation v. William Moss and Others (1984) 2 Construction Law Reports 1; Victoria University of Manchester v. Hugh Wilson & Lewis Womersley and Pochin (Contractors) Ltd. (1984) 2 Construction Law Reports 43.

113 Supra, chapter VII.

114 Supra; see also, Glasgow University v. Whitfield (1989) 5 Construction Law Journal 73; Nicholls "Contractors' 'Duty to Warn' following D. & F. Estates and University of Glasgow v. Whitfield", supra, note 43.

115 As these default norms are implied by operation of law, they are insulated against judicial reluctance actively to plug contractual gaps with affirmative duties: supra.

is a contentious issue. Writing in 1985, John Parris argued that while the JCT has attempted to shelter the gc from contractual liability for inputs which conform to the architect's designs but do not comply with statutory standards, clause 6.1.5 is ineffective to limit the accountability of gc.s under tortious theories of recovery[116]. Two such theories are available. It might be argued that a gc should be liable in negligence where a competent gc ought to have realised that compliance with the architect's designs would result in a building which failed to meet statutory standards. Alternatively, a building producer's failure to comply with statutory requirements might ground an action for breach of statutory duty without proof of fault.

These arguments may be consistent with an objective of increasing the weight of sanctions available against those implicated in production of a defective building. However, they are difficult to sustain in the light of legislative provisions governing enforcement of statutory standards and contemporary judicial trends. The breach of statutory duty theory has had, at best, a tenuous status in the development of building control. The traditional governing framework for public regulation of building quality - the Public Health Acts - made no provision for civil liability[117]. During the early

---

[116] John Parris, The Standard Form of Building Contract: JCT80, (London: Collins, 1985).

[117] Until 1966 the regulatory instrument used to implement building control was the local building bylaw. Since 1966 control has been based on the standards developed by central government in the form of the Building Regulations.

1980's, it briefly appeared as if the decision in Anns[118] had opened up the possibility of actions for breach of statutory duty against building producers or professionals[119]. Subsequent decisions, however, have rejected this approach. In Worlock v. SAWS[120], for example, Woolf J. declined to adopt the theory of liability suggested in Anns on the grounds that:

> It seems ... very difficult to accept that ... the plaintiff could establish an absolute duty against a builder by virtue of statute when the contract under which the building work was performed was one which created no such obligation[121].

C. Time

1. The Nature of the Contractual Sanctions

JCT80 relies primarily on contract-specific financial sanctions to protect clients' interests in timely completion of a building project[122]. The Conditions empower clients to deduct or demand payment of agreed damages for unexcused delay in completion[123]. In addition, each of the alternative

---

[118] Supra, note 44.

[119] See, for example, Eames London Estates v. North Hertfordshire District Council and others ((1980) 18 Building Law Reports 50.

[120] (1981) 20 Building Law Reports 94.

[121] Ibid. at at 109; see also Taylor Woodrow Construction (Midlands) Ltd v. Charcon Structures Ltd. (1982) 266 EG 40; Perry v. Tendring District Council (1985) 3 Construction Law Reports 74. Note that the Building Act 1984 which introduces a new statutory regime governing supervision of construction projects to ensure compliance with the Building Regulations, expressly provides for civil liability: s.38.

[122] Note that clients may, as a last resort, terminate the contract: clause 27.

[123] Clause 24.2.

provisions for managing cost fluctuations freeze clients' obligations to assume part of any increase in input costs on the Completion Date[124]. Failure to complete on time, therefore, shifts to gc.s the entire burden of inflation. Finally, the Conditions authorise clients to deduct an agreed percentage of the sum due on each instalment from the payment certified by the architect[125]. As the Retention is not released until after the building is fit for occupation, it provides an additional inducement to timely completion.

Administration of these sanctions is handled by the architect. The client's right to deduct the agreed sum arises only when the architect certifies that the gc has failed to complete the Works by the existing Completion Date[126]. Similarly, the client's obligation to pay for increases in input costs is fixed at the rates current when the architect certifies that production ought to have been completed[127]. The architect is not directly involved in establishing the bonding mechanism of the Retention fund, in that the percentage sum which is to be withheld from interim payments is agreed between client and gc during planning. However, release of the Retention to the gc is expressly made conditional on certificates issued by the architect[128].

---

[124] Clause 38, clause 39, clause 40.

[125] Clause 30.4.

[126] Clause 24.2.

[127] Clause 38.4.7; clause 39.5.7; clause 40.7.1.1.

[128] Clause 30.4.

The agreed damages sanction may be viewed as a means for the building producers to control exposure to risk and a mechanism by which clients may enforce time constraints. Access to this sanction enables clients to avoid the costs, uncertainties and potential errors of adjudicative processes[129]. This alternative to the ordinary damages award is particularly significant in the light of the assessment problems which attend breaches of time provisions[130]. Losses due to delay are unusually difficult to measure. Clients face incentives to adapt themselves to the progress of the project. They may, for example, occupy those parts of the building which are useable, and simply endure the stress and inconvenience of continuing building operations. Although such costs are genuine, potentially substantial, and attributable to breach by building producers, they are difficult to recover in an action for damages. For public clients in particular the losses may be even less concrete. The unavailability of a new public facility at the time originally envisaged may cause widespread inconvenience, and dissatisfaction, but the costs to those who were to have used the facility, are neither sufficiently definite, nor adequately connected to the breach to be recoverable.

Even in those instances where clients are able to show that late completion resulted in specific economic losses

---

129 Justin Sweet "Liquidated Damages in California" (1972) 60 California Law Review 84.

130 Temloc v. Errill (1988) 4 Construction Law Journal 63.

which would not have been incurred had the building been finished on time, the costs of invoking the general damages remedy against a recalcitrant gc may be prohibitive. There is always the possibility that the gc will dispute liability, rendering legal action more complex, time-consuming and costly. Losses resulting from breach of time obligations are also vulnerable to disqualification by the operation of the remoteness doctrines.

Limitations on clients' power to sanction producers for failure to meet a production deadline, whatever their source, may feed back into governance of the production process. Gc.s, and other producers, who know that the costs to clients of penalising delay may be prohibitive, are in a relatively stronger position to chisel on time margins, than if clients' access to a sanction against delay were more straightforward. In terms of governance of complex transactions, therefore, agreed damages provisions may be viewed as an attempt to furnish clients with a weapon by which credibly to threaten to impose costs on breach[131].

The power of such a threat, and hence, its credibility, however, is shaped by public rules which govern the use of agreed damages clauses. Within building transactions, judicial policing of agreed damages clauses may appear in two normative guises. First, the sanction may be challenged on the grounds that it should not be invoked in the circumstances that have

---

131 Supra, chapter IV.

arisen. In this context the judicial role involves "gap-filling" and decisions about risk-allocation. Secondly, judges are empowered to review agreed damages clauses by reference to a norm of "reasonableness".

2. Risk-Allocation

In the context of time margins, judicial gap-filling occurs "in the shadow of" the transactional provisions for managing disruptions. As we have seen JCT80 affords the gc a contractual right to an extension of time if its progress is impeded by events for which the client has assumed all or part of the risk[132]. With respect to these contingencies, therefore, clients' power to use the contractual sanction against late completion depends on the adjustment machinery having been properly administered. Where the architect has failed to grant an appropriate extension, clients face the risk that gc.s' will resist an attempt to apply the sanction on the grounds that their performance is no longer governed by the time constraint[133]. While such a challenge by a gc, if legitimate, would not necessarily destroy clients' power subsequently to insist on a reasonable completion date, it would have the potentially significant effect of eliminating clients' access

---

132 Supra, chapter VIII.

133 Holme v. Guppy (1838) 3 M. & W. 387; Wells v. Army & Navy Co-operative Society (1902) 86 Law Times 764.

to liquidated damages[134].

Careful administration of the extension of time machinery is particularly important to the protection of clients' interests in timely completion because delay is seldom attributable to a single cause that is entirely at the risk of the gc. The consequences of dilatory performance by a gc, may be compounded by factors such as the architect's failure to issue instructions on time, or delay by a nominated participant. In such instances, preservation of clients' access to the sanction depends on the architect having adequately protected the gc's contractual rights not to be impeded by the client, or any person or event for which the client is accountable to the gc.

Clients face a similar risk of being denied access to the contractual sanction when the contingency which hampers progress is not included in the list of "Relevant Events". Two contradictory strands appear in judicial decisions about the implications of contractual silences for clients' access to liquidated damages. One approach uses norms of contractual interpretation drawn from the assumption that standard form building contracts are contracts of adhesion designed by, and in the interests of, the dominant party, here assumed to be clients. The alternative approach is shaped by the traditional conception of building transactions as "entire" contracts under which gc.s assume the risks of all contingencies except

---

[134] Ibid.

for acts or ommissions of the client.

The former perspective has been used to justify withholding from clients the legal power to use the agreed danages sanction where the building contract is silent or its provisions governing the contingency causing delay are ambiguous[135]. It is thought that the scope of both the extension of time machinery and the sanction ought to be construed strictly against clients because these terms are inserted solely for their protection[136]. At least part of the risk of any contingency which is neither "obviously" the fault of the gc, nor expressly allocated to the gc, therefore, is assumed to have been allocated to the client[137].

Notice, however, the subtlety of this particular default norm and the manner in which it shifts control over the sanctions against delay from participants to courts. The only consequence which is said to follow automatically from a finding that the risk of a particular event had not been assumed by a building producer is that clients lose the

---

135 See, for example, Peak Construction (Liverpool) Ltd v. McKinney Foundations Ltd. (1970) 1 Building Law Reports 111, see, in particular, the reasons of Salmon LJ. He asserts that:

> The liquidated damages and extension of time clauses in printed forms of contract must be construed strictly contra proferentem. If the employer wishes to recover liquidated damages for failure by the contractors to complete on time in spite of the fact that some of the delay is due to the employers' own fault or breach of contract, then the extension of time clause should provide, expressly or by necessary inference, for an extension on account of such a fault or breach on the part of the employer.

See also, Bramall & Ogden Ltd v. Sheffield City Council (1983) (1985) 1 Construction Law Reports 30; and Bruno Zornow (Builders) Ltd. v. Beechcroft Developments Ltd. (1989) (1990) 6 Construction Law Journal 132.

136 Ibid.

137 Ibid.

contractual power to deduct or demand liquidated damages[138]. Clients may still use the ordinary unliquidated damages remedy to obtain compensation, if it is shown that among the causes of delay there is an event of which the risk had been allocated to the gc[139].

The view that the gc assumes all risks except for obstruction by the client, or where the contract provides otherwise, has quite different implications from the perspective shaped by the contra proferentem rule. While the extension of time machinery is again viewed as a means of protecting clients from the consequences of their own defaults, this result is not in itself seen as "harsh" or a manifestation of the dominance of clients' interests in the private rules of the bargain[140]. The agreed damages clause is treated as serving the interests of both client and gc. Whereas clients' benefit lies in the ease with which delay may be sanctioned, gc.s are perceived to gain from the certainty and manageability of their exposure to liability for breach[141].

This conception of the agreed damages clause as a benefit to client and gc underlies the position that formulation of a default norm to govern contingencies where the contract is

---

138 Peak Construction (Liverpool) Ltd v. McKinney Foundations Ltd, supra, note 135; Bramall & Ogden Ltd v. Sheffield City Council, supra, note 135.

139 Ibid.

140 See, for example, Percy Bilton Ltd. v. Greater London Council (1981) 79 Local Government Reports 463; E. Turner and Sons Limited v. Mathind Limited (1989) 5 Construction Law Journal 273. See, generally, Terence M. Burke "Delay Under Australian Law" in Peter Gauch & Justin Sweet (eds.) Selected Problems of Construction Law: International Approach (London: Sweet & Maxwell, 1983).

141 Ibid.

silent or ambiguous is distinct from the issue of clients' access to a sanction. Default norms are to be determined by reference to the premise that the gc is responsible for timely completion except where delay is due to an event for which the client is contractually accountable[142]. With respect to the former class of contingencies, clients may obviously use the agreed damages sanction. Where, on the other hand, the gc's progress is impeded by the client, the power to insist upon timely completion and use the contractual sanction may be preserved by appropriate use of the extension of time machinery.

3. Reasonableness

The contradictory dimensions of courts' power to review liquidated damages clauses for reasonableness are particularly evident in the context of building contracts. One important objective of the sanction within these transactions is to discipline the gc and its input suppliers. The agreed damages clause, "held over the contractor at every turn, like an electric prodding iron"[143], is intended to penalise opportunism and cheating on time margins. It is supposed to function, in part, to drive the gc to perform in accordance with the

---

142 Ibid.

143 Burke "Delay Under Australian Law", supra, note 140 at 37.

contract[144]. However the declared purpose of the courts' power to review such clauses is precisely to prevent the terms being used in a manner that would "penalise" breach or "compel" performance[145].

At the heart of the conflict between courts' concerns and the transactional objectives of agreed damages clauses are competing classical and relational visions of contractual sanctions. A crucial assumption of the former model is that transactors act in a competitive context. Markets are assumed ready and able to supply workable substitutes for the performance of a breaching party. It should then be a matter of indifference to the non-breacher whether she receives actual performance from her co-contractor, or compensation sufficient to enable her to obtain a substitute good or service. Viewed from this perspective, the primary and legitimate objectives of a liquidated damages clause are to enable the promisee to avoid the proof and error costs of the judicial process and the promisor to control exposure to risk[146].

Evidence that the parties settled on a genuinely super-compensatory damages sum suggests that there was something amiss in the bargaining process. Inadequate information interchange at formation, for example, might have misled the

---

144 Ibid.

145 Dunlop Pneumatic Tyre Co. Ltd. v. New Garage and Motor Co. Ltd. [1915] AC 79.

146 Sweet, "Liquidated Damages in California", supra, note 129; Kenneth W. Clarkson, Roger L. Miller & Timothy J. Muris, "Liquidated Damages v. Penalties: Sense or Nonsense" 1978 Wisconsin Law Review 351.

promisor about the risks which it was assuming. Alternatively, both parties might have been mistaken about the implications of the contract, the likely magnitude of loss, or the probability of the event which caused loss[147]. Intervention by courts in such transactions serves as a means of limiting what is perceived to be the unjustifed, and perhaps, inadvertent, contractual power of the promisee resulting from problems during formation[148].

By contrast, building transactions are typically situated in a very different economic environment. The quasi-rents which attach to performance by a specific gc may be such that clients cannot simply find a substitute without losing some of their investment in the transaction[149]. This context generates relations of power in which the client is at a disadvantage. Opportunistic producers may exploit their relative contractual power by cheating on time margins, or threatening to delay progress unless the contract is revised in their favour. Whichever strategy is deployed, its effect is to reduce the value of the transactional surplus due to a client.

The position of clients within building transactions suggests that they are relatively powerless to counter

---

147 Charles J. Goetz & Robert E. Scott "Liquidated Damages, Penalties and the Just Compensation Principle: Some notes on an Enforcement Model and a Theory of Efficient Breach" (1977) 77 Columbia Law Review 554. Sam Rea jr., "Non-Pecuniary Loss and Breach of Contract" (1982) 11 Journal of Legal Studies 35.

148 Ibid.

149 Supra, chapter IV.

opportunistic breaches of time constraints. While blatant cheating on time margins may be easier to observe than careless work or poor quality materials, it is difficult to counter. That producers have so much control over the pace of production suggests that an apparently excessive financial sanction may play an important role in enhancing clients' transactional security.

At the simplest level, such a sanction would increase the costs to gc.s (and other building producers) of tardy completion. This change in the relative price of cheating on time constraints would in itself be likely to result in less opportunism than if the sanction were not "excessive". Moreover, a heavy penalty would equip clients with a more credible basis for resisting gc.s' threats to delay production. Finally, a working rule which enabled parties to agree to apparently "penal" damages would afford gc.s' a means of signalling commitment and good faith at the beginning of a transaction. The enforceability of penalty clauses, therefore, might facilitate pre-contractual screening by clients[150].

One general objection to this argument is that an "excessive" penalty would afford clients "too much" power. Of particular concern is the fear that in transactions where the agreed damages sum is greater than the loss from breach, clients might opportunistically attempt to induce delay in

---

[150] See generally, supra, chapter IV; see also, chapter VII, supra.

order to reap the benefits of the clause[151]. As there is no reason to prefer opportunistic clients to opportunistic producers, the argument continues, we should avoid working rules which might provide a site for strategic behaviour.

That the decisions and actions of clients, or perhaps more commonly, those for whom clients are contractually accountable to building producers, may impede gc.s' progress is undeniable. However, the working rules of JCT80 considerably limit the scope for clients to gain from opportunistic inducement of delay. Clients lose the contractual power to invoke the sanction where the gc's "breach" - that is, the delay - is attributable to any matter for which the client has assumed the risk, unless, of course, the gc has been granted an extension of time. If the gc receives such an extension it is not required to pay liquidated damages for its failure to meet the previous completion date.

While the extension of time machinery does not absolutely secure the position of the gc against opportunism, particularly on the part of the architect[152], it makes it unlikely that clients would perceive significant benefits from inducing delay. It appears therefore, that the shift in transactional power which would be created by acceptance of penalty clauses would enable clients better to resist or

---

151 Clarkson, Miller & Muris, "Liquidated Damages v. Penalties: Sense or Nonsense", supra, note 146.

152 Supra, chapter VIII.

discipline opportunistic producers without opening up substantial scope for reverse opportunism.

D. Sanctions Against Nominated Building Producers

The 1980 edition of the standard form contract has strengthened the machinery of enforcement with respect to specialist input suppliers. The approach which has been chosen entails three main changes from previous versions of the standard form contract. First, the JCT has reinforced formal distinctions between nominated suppliers and nominated sub-contractors. Secondly, the nomination procedures have been reshaped to clarify the procedural function of the gc as a liability channel. Finally, clients now have a direct contractual route to sanctions against a nominated sub-contractor for those aspects of nsc.s' activities which do not fall within the JCT's definition of the role of the gc under the main contract.

With respect to nominated suppliers, JCT80 has maintained the cost-pass-through machinery but addressed the problem of potentially inconsistent contracts. Clause 36 introduces two strategies for avoiding inconsistency. Under the first option, the architect's power to nominate is restricted to those suppliers who will undertake to indemnify the gc against liability to the client[153]. Alternatively, if the only terms on

---

[153] Clause 36.4.

which a preferred nominee is willing to participate in the transaction entail limitations on its liability to the gc, the architect may invoke the provisions of clause 36.5. This working rule empowers the architect to nominate someone who will supply only on restrictive terms, so long as the architect obtains the gc's express consent[154]. Once the sales contract has been executed, the accountability of the gc, under the terms of the main contract, for inputs supplied by the nominee, is automatically restricted to the same extent as the supplier's liability to the gc.

In the case of nominated sub-contractors, there are two mutually exclusive routes to the imposition of sanctions against chiselling on time and quality margins. For those aspects of nsc.s' role in building production which involve the same type of inputs as are supplied by gc.s, sanctions are still to be channelled through the gc. With respect to the supply of design, selection, advisory or manufacturing services and the "impact" costs of chiselling by a nsc, the client may now rely on an integrated collateral contract[155].

The collateral contract empowers clients to enforce nsc.s' residual liabilities by means of a direct contractual sanction. The contract is to be executed during the nomination process and incorporates three main classes of obligations. First, the nominee undertakes to exercise reasonable skill and

---

154 See chapter VII, supra, for discussion of the gc's veto power.

155 NSC/2 or NSC/ 2a, depending on the method of nomination that is adopted: supra, chapter VIII.

care in design, selection of materials and satisfaction of performance specifications[156]. Secondly, there is an express undertaking that the nsc will not cause delay to the gc's progress on the project[157]. Finally, the nsc is accountable for losses to the client which arise where inadequate performance by a nsc, or its withdrawal from the transaction during execution, makes it necessary for the architect to re-nominate[158].

The collateral contract is clearly a response to the accountability problems which have thwarted attempts to use the cost-pass-through machinery as a means of disciplining nsc.s. The contract clarifies the responsibilities of nsc.s and facilitates clients' access to sanctions. A further governance benefit associated with this strategy lies in the relative ease with which working rules of the transaction between client and nsc may be modified. Whether one is concerned with JCT-driven changes to the standard terms or transaction-specific adaptations, the existence of a distinct contract governing relations between clients and nsc.s would seem to reduce the need for other participants to be actively involved in revisions.

However, the benefits of moving towards separate

---

[156] Clause 2.1 NSC/2.

[157] Clause 3.4 NSC/2. In theory at least, the sanction available to clients for breach of this term would be agreed damages that the client could have deducted from the gc absent the extension of time. The primary issue that might arise relates to whether the nsc had notice at the time of appointment of the amount and rate of the liquidated damages clause in the main contract.

[158] Clause 6 NSC/2. See chapter VIII, supra.

contracts to govern a polycentric process such as building production should not be exaggerated. One important problem which may arise is the issue of transactional "fit". Under JCT80 the nexus between client, gc and nsc is now governed by three distinct but integrated packages of working rules: the main contract (client and gc), the sub-contract (gc and nsc), and the collateral warranty (client and nsc). That the JCT is the drafting agency for each form might suggest that there is no need to worry about consistency and coherence. However, the reality of the process within which the standard contracts are formulated means that discrepancies, contradictions and ambiguities between the different documents are likely to arise.

Take, for example, the issue of nsc.s' accountability for compliance with contractual specifications. Both the main contract and the standard form of sub-contract use the performance norm of exact compliance with the documents on which the producer tendered[159]. Under cost-pass-through, therefore, the contractual regime would afford the client an action against the gc, and the gc an action against the nsc for any deviations from the specification governing the Sub-Contract Works. The collateral contract between client and nsc, by contrast, institutes a lower standard of performance in that nsc.s undertake only to exercise "reasonable skill and care ... in the satisfaction of any performance

---

[159] Clause 2.1 main form, Article 1, NSC/4.

specification"[160]. Clients who seek to hold nsc.s directly accountable under the collateral warranty for deviations from the specification, therefore, may be met with the defence that the nsc's performance conformed to the contractual standard of care.

At a theoretical level, it is not difficult to imagine how the discrepancy between these working rules might be addressed in a manner which furthers a transactional goal of accountability. It is important to recognise, however, that there may be practical obstacles to implementation of this goal. A change to the working rules of the collateral contract from the negligence standard to a governing norm embodying strict compliance would presumably be resisted by the same industry interests which obtained the lower standard in the first place. Nor does it seem possible for courts to take the initiative. Change might potentially be achieved if judges were to institutionalise a practice of giving priority to the strict liability norm of the cost-pass-through mechanism over the negligence standard of the collateral contract. However, such a practice would appear to be completely antithetical to the classical ideas of discreteness, party-autonomy, and respect for the express terms governing economic relations between individuals, which seem to have such a tenacious hold on contemporary judicial decision-making.

---

[160] Clause 2.1.3 NSC/2.

E. The Transactional Implications of Legal Sanctions and the Contracting Continuum

Our analysis of formal enforcement instruments has demonstrated that there are tensions between crucial characteristics of the process governed by JCT80 and the model of economic relationships embedded in the institutional culture of legal sanctions. Building production is polycentric. Relations between participants are complex and interactive. As in the case of "firm-like" transactions, it may be difficult, if not impossible, clearly to separate the contributions of different participants to the final product[161].

Legal sanctions, by contrast, are predicated on assumptions of discreteness. The model transaction embodies obligations that are sharply defined, tasks which are expressed in a measurable form, and explicit allocations of risks. Above all else, the governing legal culture demands divisions between the transactional roles of contractors and separability of their outputs.

The opposition between the production needs of mutuality and fusion and the legal-cultural requirements of distinctiveness that is so evident in building transactions has complicated implications for governance. On the one hand

---

161 Supra, chapter V.

the interdependent character of building production may engender potentially serious costs in maintaining the accountability of producers and professionals for the quality of inputs which they supply. Armed with the knowledge that it is costly for clients to monitor each participant to ensure compliance with transactional understandings, opportunistic individuals are well-placed to cheat or engage in other forms of strategic behaviour.

This contractual power-dynamic suggests that any strategy which might increase the measurability of producers' and professionals' decisions and activities during production would help to limit the scope for opportunism. That law promises access to a particular class of sanctions where tasks are discretely defined, risks are clearly allocated, and execution is measurable, would seem, therefore, to afford clients a means to obtain more protection against opportunism than would available "outwith" the shadow of the law.

However, as this chapter has shown, accommodation of the building transaction to the institutional structure of law is far from transaction costless. Nor are legal sanctions, when deployed in this context, necessarily able to deliver on their promise of greater accountability. At the simplest level, the moulding of the building contract into the form required by law entails the costs of spelling out tasks, procedures and allocations of risks. While this process may have the beneficial effect of facilitating planning and pricing for

those who would use the contract, it may also generate subtle governance costs.

For example, a high degree of detail in the explicit working rules of long-term, polycentric transactions will tend to increase the complexity of decision-making and management procedures. Specificity, within such transactions, is not just a matter of spelling out who does what, where, when and how, but also entails the development of formal procedures for co-ordinating the tasks and decision-making responsibilities assigned to different participants. Of course, transactional connections between individuals would need to made whatever the form of the governing framework. However, the institutional setting within which tasks are organised and change is accommodated shapes the costs of this management process. Relational understandings, discretionary norms, and practices of compromise constitute a different and less overtly complex institutional setting to that created by formal administrative and supervisory procedures which are amenable to legal sanctions.

Nor is complexity the only issue. There is a real question as to whether the model of contracting embedded in legal sanctions is capable of governing the process of building production. We saw in chapter IV, for example, that participants in relational transactions may develop informal methods of operation which bear little relationship to the governing legal culture. Indeed the formal working rules of

the parties' contract and the governing legal culture of which the contract is a part, may be of scant interest or relevance until a disruptive event causes a shock to the working relationship. The role of legal sanctions in such situations is highly ambiguous. Far from functioning as a means of channelling conduct into commercially appropriate behaviour, law may constitute an instrument of contractual power. Resort to a formal contractual regime which has been tacitly discarded, therefore, may in itself be a strategic move and a manifestation of transactional dominance rather than a good-faith attempt to resolve a problem[162].

Our discussion of legal sanctions has shown that the transactional architecture of JCT80, as it is shaped by law, can be used strategically by participants in building production to avoid or limit responsibility for defective performance. The use of distinct bilateral contracts in which risks and duties are precisely defined to govern polycentric economic activity tends to generate "gaps", inconsistencies, overlaps and ambiguities in the network of contractual commitments. These problems of co-ordination and constistency may not matter during the ordinary course of "healthy" building transactions. Where things go wrong however, they may become a site for strategic manouevering by producers and professionals who seek to avoid or limit accountability for their actions and decisions during production. We have seen,

---

[162] Supra, chapter IV.

for example, that contractors may use the presence of terms in their own contracts which address analogous issues to the matter in dispute as a basis for arguing that they should not be held accountable where the contract is silent. Alternatively, a participant may seek to limit its own liability by pointing to the working rules governing the transactional responsibilities of other participants.

Transaction costs arising out of the relationship between the public norms of legal sanctions and the transactional needs of building production would seem to be ineradicable. Closer accommodation of the JCT contract to the requirements of law simply introduces a different set of complications and costs than those which are engendered by a less precise match between public and private governance norms. That there is no simple solution to the problem of using legal sanctions to maintain accountability does not detract from the value of the analysis used in this thesis. Institutional analysis clearly provides a basis for exploring the implications of the adjustments to law embodied in JCT80 for the distribution of transactional power. Moreover, by highlighting difficulties that economic actors may confront in using legal sanctions to maintain transactional security, the analysis challenges conventional assumptions about the instrumental role of law in the governance of contractual relations.

Chapter X Conclusions

The institutional analysis developed in this thesis raises substantive and methodological issues. At the level of methodology, our transaction cost analysis of JCT80 has implicitly revealed some of the limitations of the sharp abstraction associated with neoclassical economic analysis of law, and explicitly demonstrated the importance of "rich" or "thick" descriptive analysis of complex contracting.

The traditional virtue of neoclassical economic analysis of law is said to be its emphasis on key variables. The ability to predict the impact of changes in legal rules on social and economic behaviour is derived from the analyst's reduction of complicated reality into a very few essential relationships. In the case of JCT80, the complex and polycentric nature of the building transactions raises serious doubts about the power of this type of analysis to explain what exists, predict responses to change, or formulate workable proposals which would constitute unambiguous improvements to problems. Moreover, the example of the building contract suggests that simplification around a specific set of variables creates the danger of presenting a particular picture or "story" of contracting activity that is far removed from the transactional realities.

The type of institutional analysis developed here

provides the theorist with an important set of conceptual tools with which to explore complex contracting. Our rich and detailed description has provided a basis for examining small-scale interactions between rules and behavioural choices, identifying sources of contractual frictions, and accounting for divergence between theoretical prescriptions and transactional decisions. That individuals' choices with respect to economic relations are treated as constrained by their context, and essentially comparative, opens up a new perspective and fresh analytical questions.

On the other hand, it is important to be realistic about the strengths and limitations of comparative institutionalism. The methodological insistence on detail and specificity renders it difficult to draw broad policy implications from the observed reality. While the analysis can readily be used to demonstrate that the resolution of one problem in a particular manner would simply generate a new set of costs and dilemmas, it does not appear to drive substantive conclusions as to which of the various packages of costs and dilemmas is preferable.

However, this air of neutrality can be misleading. The research agenda and direction of the comparative institutionalist are no less shaped by values than those of other scholars. A reluctance to advocate change therefore may reflect a judgment that although the contracting practice under review may not embody efficiency on a grand-scale, the

status quo probably represents the imperfect best that can be attained in a less than ideal world.

It should also be recognised, however, that the analysis may be used in a manner which has more critical "bite". As we have shown, comparative institutionalism may expose dimensions of contracting practices which are obscured in other analytical approaches. With respect to JCT80, for example, the tools of comparative institutionalism enabled us to address the issue of the distribution of decision-making power within the working rules of the building transaction. Development of this issue might potentially form part of a larger critique of the images and the realities of contracting practices in contemporary society.

Quite apart from its potentially misleading appearance of neutrality, institutional analysis may be vulnerable to the criticism that it is itself overly complex. It is sometimes argued, for example, that there is little analytical advantage to be gained from assessing the intricacies of reality through the lens of an over-elaborate theory. That the explanation of social and economic "facts" entails a process of selection is undeniable. However, the comparative institutionalist does not contest the importance of criteria of relevance or dispute the need for systematic mapping complex reality onto a <u>relatively</u> simplified theoretical matrix. What is at issue is not the question of whether to abstract from every day detail, but what should remain as part of the phenomena to be explained.

To the comparative institutionalist, it is simply inconceivable that analysis of contractual governance would assume away the context and culture which are taken to shape transactional decision-making.

At a more substantive level, the thesis has made two general points. First, it has highlighted the issue of the decision-making power within contractual relationships. The economic fact of decision-making power appears in all three models of contractual governance. However, the forms in which decision-making power may be manifested are shaped by the nature of the transaction and the institutional setting. This aspect of the thesis raises the question of how such forms of "internal" decision-making power ought to be conceptualised, processed and evaluated within debates over contractual governance issues.

Secondly, our analysis has raised questions about the role of law in the governance of complex transactions. Our analysis clearly does not support the conventional laisser-faire image of law as a pure facilitator of economic activity. Neither does the traditional instrumental vision in which legal change generates adjustment to new market conditions seem to be borne out in our story of the building contract. Nor, finally, is it at all obvious that law functions as a beacon of commercial morality, promoting good-faith and sanctioning deviance.

It would be a mistake, however, to conclude that law and

the legal process operates purely as a "default" dispute-resolution service for those who cannot find a less costly means of managing conflict. From what we have seen of a particular type of complex transaction, it would appear that the law pertaining to protection of economic interests may play an important role in shaping the distribution of transactional power and constituting sites for strategic manoevering.

With respect to the analysis of the building contract, the thesis has demonstrated that polycentricity may be a source of substantial transaction costs. While building production to some extent involves idiosyncratic investments and is clearly shaped by uncertainty, its overriding characteristic is the interactive interdependent, and multipartite nature of participation. This finding suggests that polycentricity might be added to the conventional analytical matrix of the transactional economists.

More generally, our analysis of the building contract has created a basis for further research. This might take an overtly comparative form. JCT80 is not the only standard form of building contract even within the UK. Construction is a major industry throughout the world and standardised contracts are common. The type of analysis developed in this thesis would seem to be capable of generating useful insights into the rationales for, and implications of, both variations or similarities between forms of transactional governance.

Alternatively, a subsequent research agenda might focus on empirical analysis of contracting behaviour during production. In the course of evaluating the general hypothesis - that the building contract might be viewed as a choice between imperfect decision-making frameworks for managing transaction costs - the analysis has generated a number of more limited propositions regarding the transactional implications of particular governance choices. Further exploration of these propositions through investigation of actual examples of planning, management and enforcement practices as they are in fact instituted within building transactions would not only shed further light on the organisation of building production but also enhance our understanding of complex transactions more generally.

Bibliography

Acheson, J.M., "The Maine Lobster Market: Between Market and Hierarchy" (1985) 1 Journal of Law, Economics and Organisation 385.

Adams J.N., "Consideration for Requirements Contracts" (1978) 94 Law Quarterly Review 73.

Adams J.N., & Brownsword R., "From Jarvis to Junior Books: Tortuous and Tortious Constructions" (1989) 5 Construction Law Journal 3.

Aivazian, V.A., Trebilcock M.J., & Penny M., "The Law of Contract Modifications: The Uncertain Quest for a Benchmark of Enforceability" (1984) 22 Osgoode Hall Law Journal 173.

Akerlof G.A. "The Market for "Lemons": Quality Uncertainty and the Market Mechanism" (1970) 84 Quarterly Journal of Economics 488.

Akerlof G.A., "A Theory of Social Custom, of Which Unemployment May be One Consequence" (1980) 94 Quarterly Journal of Economics 749.

Akerlof G.A., "Loyalty Filters" (1983) 73 American Economic Review 54.

Akerlof G.A., "Labour Contracts as Partial Gift Exchange" (1982) 97 Quarterly Journal of Economics 543.

Alchian, A.A., & Demsetz, H. "Production, Information Costs and Economic Organization" (1972) 62 American Economic Review 777.

Anderson, A.G., "Conflicts of Interest: Efficiency, Fairness and Corporate Structure" (1978) 25 UCLA Law Review 738.

Arrow, K.J., The Limits of Organization (New York: W.W. Norton, 1974).

Arrow, K.J., Information and Economic Behaviour (Stockholm: Federation of Swedish Industries, 1973).

Arrow, K.J., "Informational Structure of The Firm" (1985) 75 American Economic Review 303.

Arrow, K.J., "Reflections on the Essays" in Feiwel G., (ed.) Arrow and the Foundations of the Theory of Economic Policy (New York: New York University Press, 1987).

Arthurs H.W., Without the Law (Toronto: University of Toronto Press, 1985).

Ashley "The Economic Implications of Impossibility Doctrine" (1979) 26 Hastings Law Journal 1251.

Ashworth A., Contractual Procedures in the Construction Industry (Harlow: Longman Scientific & Technical, 1986).

Atiyah P.S. "The Theoretical Basis of Contract Law - An English Perspective" (1981) 1 International Review of Law & Economics 183.

Atiyah P.S The Rise and Fall of Freedom of Contract (Oxford: Oxford University Press, 1979).

Atiyah P.S., "Contracts, Promises and the Law of Obligations" (1978) 94 Law Quarterly Review 193.

Atiyah P.S., Essays on Contract (Oxford: Oxford University Press, 1986).

Auerbach J., Justice Without Law? (New York: Oxford University Press, 1983).

Ayres I., & Gertner R., "Filling Gaps in Incomplete Contracts: An Economic Theory of Default Rules" (1990) 19 Yale Law Journal 87.

Baird D.G., "Self-Interest and Co-operation in Long-Term Contracts" (1990) 19 Journal of Legal Studies 583.

Baird, D.G., & Jackson, T.H., "Corporate Re-organisations and the Treatment of Diverse Ownership Interests: A Comment on Adequate Protection of Secured Creditors in Bankruptcy" (1984) 51 University of Chicago Law Review 97.

Baker J.H., "From Sanctity of Contract to Reasonable Expectations" 1979 Current Legal Problems 17.

Baldwin R., & McCrudden C., (eds.) Regulation and Public Law (London: Weidenfeld & Nicolson, 1987).

Ball M., Rebuilding Construction: Economic Change in the British Construction Industry (London: Routledge, 1988).

Barber B., "The Absolutisation of the Market" in Markets & Morals Dworkin G., Bermant G., & Brown P.G., (eds. (New York: John Wiley & Sons, 1977).

Barron J.M., & Umbeck J.R., "The Effects of Different Contractual Arrangements: The Case of Retail Gasoline Markets" (1984) 27 Journal of Law and Economics 313.

Barton, T., "Common Law and Its Substitutes: The Allocation of Social Problems to Alternative Decisional Institutions" (1985) 63 N. Carolina Law Review. 519.

Barton, J.H., "The Economic Basis of Damages for Breach of Contract" (1972) 1 Journal of Legal Studies 277.

Barzel Y., "Measurement Cost and the Organization of Markets" (1982) 25 Journal of Law and Economics 27.

Bayley L.G., Building: Teamwork or Conflict? (London: George Godwin, 1973)

Bayles M., "The Purpose of Contract Law" (1983) 17 Valparaiso Law Review 613.

Baysinger B.D., & Butler H.N., "The Role of Corporate Law in the Theory of the Firm" (1985) 28 Journal of Law and Economics 179.

Baysinger B.D., & Butler H.N., "Corporate Governance and the Board of Directors: Performance Effects of Changes in Board Composition" (1985) 1 Journal of Law, Economics & organization 101.

Beale H.G., Remedies for Breach of Contract, (London: Modern Legal Studies, Sweet & Maxwell, 1980).

Beale H.,G., and Dugdale, A. "Contracts between Businessmen: Planning and the Use of Contract Remedies" (1975) 2 British Journal of Law and Society 45.

Beatson J., "Discharge for Breach: The Position of Installments, Deposits and other Payments Due Before Completion" (1981) 97 Law Quarterly Review 389.

Becker G.S., The Economic Approach to Human Behaviour (Chicago: University of Chicago Press, 1976).

Benjamin D.K., "The Use of Collateral to Enforce Debt Contracts" (1978) 16 Economic Inquiry 333.

Berle A.A., & Means G.C., The Modern Corporation and Private Property (New York: Macmillan, 1932).

Ben-Porath Y., "The F-Connection: Families. Friends, Firms and the Organization of Exchange" (1980) 6 Population and Development Review 1.

Bishop, W.D., "The Contract Tort-Boundary and the Economics of Insurance" (1983) 12 Journal of Legal Studies, 241.

Bishop W.D., "The Choice of Remedy for Breach of Contract" (1985) 14 Journal of Legal Studies 299.

Blaug, M., The Methodology of Economics (Cambridge: Cambridge University Press, 1980).

Bowyer J. History of Building, (Crosby Lockwood Staples 1973).

Bowley M., The British Building Industry: Four Studies in Response and Resistance to Change (Cambridge: Cambridge University Press, 1966).

Bratton "The New Economic Theory of the Firm: Critical Perspectives from History" (1989) 41 Stanford Law Review 1471.

Bristow D. I., "Contributory Fault in Construction Contracts" (1986) 2 Construction Law Journal 252.

Bruce, C.J., "An Economic Analysis of The Impossibility Doctrine" (1982) 11 Journal of Legal Studies 311-332.

Bruce, C.J., "A Positive Analysis of Methodology in the Law and Economics Literature" (1989) 12 Hamline Law Review 197.

Brudney V., "Corporate Governance, Agency Costs and the Rhetoric of Contract" (1985) 85 Columbia Law Review.

Building Employers Confederation, A Fresh Look at the UK and US Building Industries (London: BEC, 1986).

Burrows, A.S., Remedies for Torts and Breach of Contract (London: Butterworth, 1987).

Burrows A.S., "Contract, Tort and Restitution - A Satisfactory Division or Not?" (1983) 99 Law Quarterly Review 217.

Burrows P., & Veljanovski C.G., (eds.) An Economic Approach to Law (London: Butterworth, 1981).

Calabresi G., & Melamed A.D., "Property Rules, Liability Rules and Inalienability: One View of the Cathedral" (1972) 85 Harvard Law Review 1089.

Casson M., "The Role of Vertical Integration in the Shipping Industry" (1986) 20 Journal of Transport Economics and Policy 7.

Chandler A.D., The Visible Hand: The Managerial Revolution in American Business (Cambridge, Mass.: Harvard University Press, 1977).

Chandler A.D., & Daems H., (eds.) Managerial Hierarchies: Comparative Perspectives on the Rise of the Modern Industrial Enterprise (Cambridge, Mass.: Harvard University Press, 1980).

Charney D., "Non-Legal Sanctions in Commercial Relations" (1990) 104 Harvard Law Review 373.

Chartered Institute of Building Project Management in Building (London: CIOB, 1982).

Chayes A., "The Role of the Judge in Public Law Litigation" (1976) 89 Harvard Law Review 1281.

Cheung S.N.S., "The Contractual Nature of the Firm" (1983) 26 J. Law & Econs. 1.

Cheung S.N.S., "Transaction Costs, Risk Aversion, and the Choice of Contractual Arrangements" (1969) 12 Journal of Law and Economics 23.

Childres R & Spitz, S.J., "Status in the Law of Contract" (1972) 47 New York University Law Review 1.

Clarke "The Production of the Built Environment: Backward or Peculiar?" (1985) 6 The Production of the Built Environment: Proceedings of the Bartlett International Summer School.

Clark R., The Japanese Company (New Haven: Yale University Press, 1979).

Clarkson K.W., Miller R.L., & Muris T.J., "Liquidated Damages v. Penalties: Sense or Nonsense" 1978 Wisconsin Law Review 351.

Coase R.H., "The Contractual Nature of the Firm" (1983) 26 Journal of Law and Economics 1.

Coase R.H., "Industrial Organization: A Proposal for Research" in V.R. Fuchs (ed.) Policy Issues and Research Opportunities in Industrial Organization (New York: National Bureau of Economic Research 1972) 59-73.

Coase R.H., "The Nature of the Firm" (1937) 4 Economica 386.

Coase R.H., "The Problem of Social Cost" (1960) 3 Journal of Law and Economics 1.

Coase R.H., "The Nature of the Firm: Influence" (1988) 4 J. Law, Econs., & Org. 33.

Coase R.H., "Economics and Contiguous Disciplines" (1978) 7 Journal of Legal Studies 201.

Cohen M.R., "The Basis of Contract" (1933) 46 Harvard Law Review 553.

Cohen M.R., Law and the Social Order (New York: Harcourt Brace, 1933).

Cohen L.R. "The Firm: A Revised Definition" (1979) 46 Southern Journal of Economics 580.

Coleman J., "Efficiency, Utility and Wealth Maximization" (1980) 8 Hofstra Law Review 509.

Coleman J., "Economics and the Law: A Critical Review of the Foundations of the Economic Approach to Law" (1984) 94 Ethics 649.

Coleman J., Markets, Morals and the Law (Cambridge: Cambridge University Press, 1988).

Coleman J., Heckathorn D.D., Maser S., "A Bargaining Theory Approach to Default Provisions and Disclosure Rules in Contract Law" (1989) 12 Harvard Journal of Law and Public Policy 639.

Collins H., The Law of Contract (London: Weidenfeld and Nicolson, 1986).

Commons, J.R., Legal Foundations of Capitalism (Madison: University of Wisconsin Press 1924).

Commons J.R., "The Problem of Correlating Law, Economics, and Ethics" (1932) 8 Wisconsin Law Review 3.

Commons J.R., Institutional Economics: Its Place in Political Economy (Madison: University of Wisconsin Press, 1959).

"Construction Management and Design-Build/Fast Track Construction: A Symposium" (1983) 46 Law and Contemporary Problems 1-180.

Cook K.S. & Emerson, R.M., "Power, Equity and Commitment in Exchange Networks" (1978) 43 American Sociological Review 721.

Cooney E.W., "The Origins of the Victorian Master Builders" (1955) 8 Economic History Review 167.

Cooney E.W., "Innovation in the Postwar British Building Industry: A Historical View" (1985) 1 Construction History 52.

Cooter R., "Unity in Tort, Contract, and Property: The Model of Precaution" (1985) 73 California Law Review 1

Cooter R., & Ulen T.S., Law and Economics (US: Harper Collins, 1988)

Corbin A.L., "Contracts for the Benefit of Third Persons" (1930) 49 Law Quarterly Review 12.

Cornes D.L., Design Liability in the Construction Industry (London: Granada, 1983).

Culyer A.J., Economics (Oxford: Basil Blackwell, 1985).

Dahlman C.J., "The Problem of Externality" (1979) 22 Journal of Law and Economics 141.

Daintith T., "Regulation by Contract: The New Prerogative", 1979 Current Legal Problems 41.

Daintith T., "The Design and Performance of Long-Term Contracts" in Daintith T., & Teubner G., (eds.) Contract and Organization: Legal Analysis in the Light of Economic and Social Theory (Berlin, Walter de Gruyter, 1986).

Dalton C., "An Essay on the Deconstruction of Contract Doctrine" (1988) 94 Yale Law Journal.

Danzig R., "A Comment on the Jurisprudence of the Uniform Commercial Code" (1975) 27 Stanford Law Review 621.

Dawson J., "Economic Duress - An Essay in Perspective" (1947) 45 Michigan Law Review 253.

Dawson J., "Effects of Inflation on Private Contracts: Germany 1914-1924" (1934) 33 Michigan Law Review 171.

Dawson J., & Cooper F.E., "The Effect of Inflation on Private Contracts: United States, 1861-1879" (1935) 33 Michigan Law Review 706.

Demsetz H., "Some Aspects of Property Rights" (1964) 9 Journal of Law and Economics 61.

Demsetz H., "Information and Efficiency: Another Viewpoint" (1969) 12 Journal of Law and Economics 1.

Demsetz H., "Toward A Theory of Property Rights" (1969) 59 American Economic Review (papers and Proceedings) 347.

Demsetz H., "The Structure of Ownership and the Theory of the Firm" (1983) 26 Journal of Law and Economics 375.

Demsetz H., "The Theory of the Firm Revisited" (1988) 4 Journal of Law, Economics, and Organization 141.

Demsetz H., Economic, Legal and Political Dimensions of Competition (Amsterdam: North-Holland, 1982).

Demsetz H., & Lehn K., "The Structure of Corporate Ownership: Causes and Consequences" (1985) 93 Journal of Political Economy 1155.

Devlin P., "The Relation between Commercial Law and Commercial Practice" (1951) 14 Modern Law Review 249.

Dingwall R. & Fenn P., "`A Respectable Profession'? Sociological and Economic Perspectives on the Regulation of Professional Services" (1987) 7 International Review of Law & Economics 51.

Dobbs I., "Externality, Efficiency, and the Pareto Principle" (1981) 1 International Review of Law and Economics 167.

Dolan D.F., The British Construction Industry - An Introduction (London: Macmillan, 1979).

Dore R., British Factory -- Japanese Factory (Berkeley: University of California Press, 1973).

Dore, R., "Goodwill and the Spirit of Market Capitalism" (1983) 34 British Journal of Sociology 459.

Dowie J., "The Risks of Contract Law" (1982) 2 International Review of Law and Economics 193.

Dowie, J. & Lefrere (eds.) Risk and Chance: Selected Readings, (Milton Keynes: Open University Press, 1980).

Dugdale A.M., Professional Negligence (London: Butterworth, 1989) (2nd ed.).

Dugdale A., & Yates D., "Variation, Waiver and Estoppel - A Reappraisal" (1976) 39 Modern Law Review 681.

Dugger W.M., "Property Rights, Law and John R. Commons" (1980) 38 Review of Social Economy 41.

Dugger W.M., "A Research Agenda for Institutional Economics" (1988) 22 Journal of Economic Issues 983.

Dugger W.M., "The Transaction Cost Analysis of Oliver E. Williamson: A New Synthesis?" (1983) 17 Journal of Economic Issues 95.

Duncan Wallace I.N., (ed.) Hudson's Building and Engineering Contracts (London: Sweet & Maxwell, 1970) (10th. ed.).

Duncan Wallace I.N., "Inflation and Assessment of Construction Cost Damages" (1982) 98 Law Quarterly Review 402.

Duncan Wallace I.N. "Price Under Common Law Systems", in Selected Problems of Construction Law: International Approach, Gauch P., and Sweet J., (eds) (London: Sweet and Maxwell, 1983).

Duncan Wallace I.N., "Liability of Professionals in Construction Contracts" (1984-5) 1 Construction Law Journal 4.

Duncan Wallace I.N., "Construction Contracts: The Architect, the Arbitrator and the Courts" (1986) 2 Construction Law Journal 13.

Duncan Wallace I.N., Construction Contracts: Principles and Policies (London: Sweet & Maxwell, 1986.

Duncan Wallace I.N., "How Much Measurement?" (1987) 3 Construction Law Journal 3.

Duncan Wallace I.N., "Interim Certificates - Another Heresy? The Lubenham Case" (1987) 3 Construction Law Journal 172.

Duncan Wallace I.N., "The Bickerton Albatross Once More" (1987) 3 Construction Law Journal 274.

Duncan Wallace I.N., "Defective Work: The New Flavours" (1990) 6 Construction Law Journal 87.

Duncan Wallace I.N., "Charter for the Construction Professional" (1990) 6 Construction Law Journal 207.

Duncan Wallace I.N., "Anns Beyond Repair" (1991) 107 Law Quarterly Review 228.

Durkheim E., The Division of Labour in Society (London: Macmillan, 1984)

Duxbury N., "Robert Hale and the Economics of Legal Force" (1990) 53 Modern Law Review 421.

Dworkin G., Bermant G., and Brown P.G., [illegible] and Morals (New York: John Wiley & Sons Inc., 1977).

Dworkin R.M., "Is Wealth A Value" (1980) 9 Journal of Legal Studies 191.

EDC for Building, Action on the Banwell Report, NEDO (London: HMSO, 1967).

EDC for Building, Faster Building for Industry, NEDO (London: HMSO, 1983).

EDCs for Building and Civil Engineering, Before You Build, NEDO (London: HMSO, 1974).

EDCs for Building and Civil Engineering, The Public Client and the Construction Industries (The Wood Report) NEDO (London: HMSO, 1975).

EDCs for Building and Civil Engineering, How Flexible is Construction? NEDO (London: HMSO, 1978).

Easterbrook F., "Two Agency-Cost Explanations of Dividends" (1984) 72 American Economic Review 650.

Easterbrook F., & Fischel D., "The Proper Role of a Target's Management in Responding to a Tender Offer" (1981) 94 Harvard Law Revies 1161.

Easterbrook F., & Fischel D., "The Corporate Contract" (1989) 89 Columbia Law Review 1416.

Eichner A.E., (ed.) Why Economics is Not Yet a Science (London: Macmillan, 1983).

Eisenberg M.A., "Private Ordering through Negotiation: Dispute Settlement and Rulemaking" (1976) 89 Harvard Law Review 637.

Eisenberg M.A., "Donative Promises" (1979) 47 University of Chicago Law Review 1.

Eisenberg M.A., "The Principles of Consideration" (1982) 67 Cornell Law Review 640.

Eisenberg M.A., "The Bargain Principle and its Limits" (1982) 95 Harvard Law Review 741.

Eisenberg M.A., "The Responsive Model of Contract Law" (1984) 36 Stanford Law Review 1107.

Eisenstadt S. & Roniger L., Clients, Patrons and Friends: Interpersonal Relations and the Structure of Trust in Society (New York: Cambridge University Press, 1984).

Elliott J.E., "Fact, Value, and Economic Policy Objectives" (1980) 32 Review of Social Economy 1.

Emden's Building Contracts and Practice, (1980) Eighth edition edited by S.Bickford-Smith and E. Freeth.

Faith R.L. Higgins R.S., and Tollison R.D., "Managerial Rents and Outside Recruitment in the Coasian Firm" (1984) 74 American Economic Review. 660.

Falk Moore S., "Law and Social Change: The Semi-Autonomous Social Field as an Appropriate Subject of Study" (1973) 7 Law and Society Review 719.

Falk Moore S., Law as Process: An Anthropological Approach (London: Routledge & Kegan Paul, 1978).

Fama E.F. "Agency Problems and the Theory of the Firm" (1980) 88 Journal of Political Economy 288.

Fama E.F., & Jensen, M.C "Separation of Ownership and Control" (1983) 26 Journal of Law and Economics 301.

Fama E.F., & Jensen M.C., "Agency Problems and Residual Claims" (1983) 26 Journal of Law and Economics 327.

Farber D.A., "Reassessing the Economic Efficiency of Compensatory Damages for Breach of Contract" (1980) 66 Virginia Law Review 1443.

Farnsworth A., Promise in Contract (1969) 69 Columbia Law Review 599.

Farnsworth A., "On Trying to Keep One's Promises: The Duty of Best Efforts in Contract Law" (1984) 46 University of Pittsburgh Law Review 1.

Farrar J.H., Company Law, (London: Butterworths, 1985).

Feinman J., "The Meaning of Reliance: A Historical Perspective" 1984 Wisconsin Law Review 1373.

Fenn P., "Mitigation and the Correct Measure of Damages" (1981) 1 International Review of Law and Economics 223.

Ferguson R.B., "The Adjudication of Commercial Disputes and the Legal System in Modern England" (1980) 7 British Journal of Law and Society 141.

Ferguson R.B., "Commercial Expectations and the Guarantee of the Law: Sales Transactions in mid-nineteenth Century England" in Law, Economy & Society: Essays in the History of English

Law 1750-1914 Rubin G.R., & Sugarman D., (eds.) (Abingdon: Professional Books, 1984).

Fried C., Contract as Promise: A Theory of Contractual Obligation (Cambridge, Mass: Harvard University Press, 1981).

Friedman L., Contract Law in America (Madison: University of Wisconsin Press, 1965).

Friedman M., "The Methodology of Positive Economics" Essays in Positive Economics (Chicago: University of Chicago Press, 1953).

Friedmann W., Law in A Changing Society (New York: Columbia University Press, 1972.

Fritz W.F. "`Underliquidated' Damages as Limitation of Liability" (1954) 33 Texas Law Review 196.

Frug M J. "Reading Contracts: A Feminist Analysis of A Contracts Casebook" (1985) 34 American University Law Review 1065.

Fuller L.L."Collective Bargaining and the Arbitrator" 1963 Wisconsin Law Review 3

Fuller L.L., "Consideration and Form" (1941) 41 Columbia Law Review 799.

Fuller L.L., & Perdue W.R., "The Reliance Interest in Contract Damages" (1936) 46 Yale Law Journal 52-95, 373-420.

Gardner G.C., "An Enquiry into the Principles of the Law of Contracts" (1932) 46 Harvard L. Rev. 1.

Geertz C., Local Knowledge: Fact and Law in a Comparative Perspective (New York: Basic Books, 1983).

Gibney F., Miracle By Design (New York: Times Books, 1982).

Gillette C.P., "Commercial Rationality and the Duty to Adjust Long-Term Contracts" (1985) 69 Minnesota Law Review 521.

Gillette C.P., "Commercial Relationships and the Selection of Default Rules for Remote Risks" (1990) 19 Journal of Legal Studies 535.

Gilmore G., The Death of Contract (Columbus: Ohio State University Press, 1974).

Gilson R., & Mnookin R., "Sharing Among the Human Capitalists: An Economic Inquiry into the Corporate Law Firm and How Partners Split Profits" (1985) 37 Stanford Law Review 313.

Goetz C.J., & Scott R.E., "Liquidated Damages, Penalties, and the Just Compensation Principle: Some Notes on an Enforcement Model and a Theory of Efficient Breach" (1977) 77 Columbia Law Review 554.

Goetz C.J., & Scott R.E., "Measuring Seller's Damages: The Lost Profits Puzzle" (1979) 31 Stanford Law Review 323

Goetz C.J., & Scott R.E., "Enforcing Promises: An Examination of the Basis of Contract" (1980) 89 Yale Law Journal 1261.

Goetz C.J., & Scott R.E., "Principles of Relational Contracts" (1981) 67 Virginia Law Review 1089.

Goetz C.J., & Scott R.E., "The Mitigation Principle: Toward a General Theory of Contractual Obligation" (1983) 69 Virginia Law Review 967.

Goetz C.J., & Scott R.E., "The Limits of Expanded Choice: An Analysis of the Interactions between Express and Implied Contract Terms" (1985) 73 Southern California Law Review 261.

Goldberg V.P., "Institutional Change and the Quasi-Invisible Hand" (1974) 17 Journal of Law and Economics 461.

Goldberg V.P., "Commons, Clark and the Emerging Post-Coasian Law and Economics" (1976) 10 Journal of Economic Issues 877.

Goldberg V.P., "Toward an Expanded Economic Theory of Contract" (1976) 10 Journal of Economic Issues 45.

Goldberg V.P., "Regulation and Administered Contracts" (1976) 7 Bell Journal of Economics 426.

Goldberg V.P., "The Law and Economics of Vertical Restrictions: A Relational Perspective" (1979) 58 Texas Law Review 91.

Goldberg V.P., "Relational Exchange: Economics and Complex Contracts" (1980) 23 American Behavioural Scientist 337.

Goldberg V.P., "Price-Adjustments in Long-Term Contracts" 1985 Wisconsin Law Review 527.

Goldberg V.P., & Erikson J.R., "Quantity and Price Adjustment in Long-Term Contracts: A Case Study of Petroleum Coke" (1987) 30 Journal of Law and Economics 369.

Gordon J., "The Mandatory Structure of Corporate Law" (1989) 89 Columbia Law Review 1549.

Gordon R., "Critical Legal Histories" (1984) 36 Stanford Law Review 57.

Gordon R., "Macaulay, Macneil, and the Discovery of Solidarity and Power in Contract Law" 1985 Wisconsin Law Review 565.

Gottlieb G., "Relationism: Legal Theory in a Relational Society" (1983) 50 University of Chicago Law Review 567.

Gough K., "The Building Regulations 1985: Something New or More of the Same" (1986) 2 Construction Law Journal 262.

Gould J.P., "The Economics of Legal Conflicts" (1973) 2 Journal of Legal Studies 279.

Gouldner A., "The Norm of Reciprocity" (1960) 25 American Sociological Review 161.

Grossman S.J., & Hart O.D., "Allocational Role of Takeover Bids in Situations of Asymmetric Information" (1981) 36 Journal of Finance 253.

Grossman S.J., & Hart O.D., "The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration" (1986) 94 Journal of Political Economy 691.

Grubb A., "A Case for Recognising Economic Loss in Defective Building Cases" (1984) 43 Cambridge Law Journal 111.

Gruchy A.G., "Law, Politics and Institutional Economics" (1973) 7 Journal of Economic Issues 623.

Gruchy A.G., The Reconstruction of Economics: An Analysis of the Fundamentals of Institutional Economics (New York: Greenwood Press, 1987).

Hadden T., Company Law and Capitalism (London: Weidenfeld & Nicolson, 1977).

Hale R., "Coercion and Distribution in a Supposedly Non-Coercive State" (1923) 38 Political Science Quarterly 47.

Hale R., "Bargaining, Duress, and Economic Liberty" (1943) 43 Columbia Law Review 603.

Hall R.L., & Hitch C.J., "Price Theory and Business Behaviour" (1939) 2 Oxford Economic Papers 12.

Halpern P., Trebilcock M.J., & Turnbull S., "An Economic Analysis of Limited Liability in Corporation Law" (1980) 30 University of Toronto Law Journal 117.

Hannah L., The Rise of the Corporate Economy (London: Methuen, 1983).

Hansmann H.B., "The Role of Non-Profit Enterprises" (1980) 89 Yale Law Journal 835.

Hansmann H.B., "The Organisation of Insurance Companies: Mutual vs Stock" (1985) 1 Journal of Law, Economics and Organisation 125.

Hansmann H., "Ownership of the Firm" (1988) 4 Journal of Law, Economics & Organization 267.

Harris D., Ogus A.I., & Phillips J., "Contract Remedies and the Consumer Surplus" (1979) 95 Law Quarterly Review 581.

Harris D. & Tallon D., (eds.) Contract Law Today: Anglo-French Comparisons, (Oxford: Clarendon Press, 1989)

Harris M., & Raviv A., "Optimal Incentive Contracts with Imperfect Information" (1979) 20 Journal of Economic Theory 231.

Hart H.L.A., The Concept of Law (Oxford: Oxford University Press, 1961).

Hart O.D., "The Market Mechanism as an Incentive Scheme" (1983) 14 Bell Journal of Economics 366.

Hart O.D., "Incomplete Contracts and the Theory of the Firm" (1988) 4 Journal of Law, Economics & Organization 119.

Harwood M. "A Structural Survey of Negligent Reports" (1987) 50 Modern Law Review 588.

Hayek F. A., "The Use of Knowledge in Society" (1945) 35 American Economic Review 519.

Heckathorn D.D. & Maser S.M., "Bargaining and the Sources of Transactions Costs: The Case of Government Regulation" (1987) 3 Journal of Law, Economics and Organisation 70.

Herriot, Levinthal & March "Learning from Experience in Organisations" (1985) 75 American Economic Review (Papers and Proceedings) 298.

Hessen R., "A New Concept of Corporations: A Contractual and Private Property Model" (1979) 30 Hastings Law Journal 1327.

Hessen R., "Separation of Ownership and Control: A Reappraisal" (1983) 26 Journal of Law and Economics 280.

Hicks J.R., "The Theory of Uncertainty and Profit" (1931) Economica 170.

Hillebrandt P.M., Economic Theory and the Construction Industry (London: Macmillan, 1974).

Hillebrandt P.M., Small Firms in the Construction Industry, Committee of Inquiry on Small Firms (The Bolton Committee), Research Report #10 (London: HMSO, 1970).

Hillebrandt P.M., Analysis of the British Construction Industry (London: Macmillan, 1984).

Hobbes T., Leviathan (Oxford: Basil Blackwell, 1955 [1651]).

Hohfeld W.N., "Some Fundamental Legal Conceptions as Applied in Judicial Reasoning" (1913) 23 Yale Law Journal 16.

Holmes O.W., The Common Law (Boston: Little, Brown & Co., 1929) (originally published in 1881).

Holmes O.W., "The Path of the Law" (1897) 10 Harvard Law Review 461.

Holmstrom B., "Moral Hazard and Observability" (1979) 10 Bell Journal of Economics 74.
Holmstrom B., "Moral Hazard in Teams" (1982) 13 Bell Journal of Economics 324.

Homans G.C., "Social Behavior as Exchange" (1958) American Journal of Sociology 597.

Homans G.C., Social Behavior, (New York: Harcourt, Brace & World, 1961).

Horwitz M., The Transformation of American Law: 1780-1860 (Camb., Mass: Harvard University Press, 1977).

Hurst J.W., Law and Economic Growth: The Legal History of the Lumber Industry in Wisconsin 1836-1915 (Cambridge, Mass.: Harvard University Press, 1964)

Hurwicz L., "The Design of Mechanisms for Resource Allocation" (1973) 63 American Economic Review (Papers and Proceedings) 1.

Hutton W., "The Student Becomes the Master", The Guardian, November 25, 1991.

Insurance Feasibility Committee, "Build: Building Users' Insurance Against Latent Defects", (NEDO) (London: HMSO, 1988).

Jackson T.H., "Bankruptcy, Non-Bankruptcy Entitlements, and the Creditors' Bargain" (1982) 91 Yale Law Journal 859.

Jackson T.H., "Avoiding Powers in Bankruptcy" (1984) 36 Stanford Law Review 725.

Jensen H.E., "Theory of Human Nature" (1987) 21 Journal of Economic Issues 1029.

Jensen M., & Meckling W., "Theory of the Firm: Managerial Behaviour, Agency Costs, and Capital Structure" (1976) 2 Journal of Financial Economics 305.

Johnson R.Z., "Non-Pecuniary Damages in Contract Situations: Lafleur v. John Deere Co." (1986) 13 Southern University Law Review 159.

Joskow P.L., "Commercial Impossibility, the Uranium Market, and the Westinghouse Case" (1977) 6 Journal of Legal Studies 119.

Joskow, P.L., "Vertical Integration and Long-Term Contracts: The Case of Coal-Burning Electric Generating Plants" (1985) 1 Journal of Law, Economics & Organization 33.

Joskow P.L., "Contract Duration and Transactions Specific Investment: Empirical Evidence from Coal Markets" (1987) 77 American Economic Review 168.

Joskow P.L., "Asset Specificity and the Structure of Vertical Relationships: Empirical Evidence" (1988) 4 Journal of Law, Economics, & Organization 95.

Joskow P.L., & Klevorick A.K., "A Framework for Analyzing Predatory Pricing Policy" (1979) 89 Yale Law Journal 89.

Julian A.L., "The New JCT Form: `A Farrago of Obscurities'?" (1980) New Law Journal 635.

Kahneman D., Knetsch J.L., & Thaler R., "Fairness as a Constraint on Profit Seeking: Entitlements in the Market" (1986) 76 American Economic Review 728.

Kanel D., "Institutional Economics: Perspectives on Economy and Society" (1985) 19 Journal of Economic Issues 815.

Kaye B., The Development of the Architects Profession in Britain (London: Allen & Unwin, 1960).

Keating D., Building Contracts (London: Sweet & Maxwell, 1978).

Kelman M., A Guide to Critical Legal Studies (Cambridge, Mass.: Harvard University Press, 1987).

Kennedy D., "Form and Substance in Private Law Adjudication" (1976) 89 Harvard Law Review 1685.

Kennedy D., "Cost-Reduction Theory as Legitimation" (1981) 90 Yale Law Journal 1275.

Kennedy D., "Cost-Benefit Analysis of Entitlement Problems: A Critique" (1981) 33 Stanford Law Review 387.

Kennedy D., "Distributive and Paternalist Motives in Contract and Tort Law, With Specific Reference to Compulsory Terms and Unequal Bargaining Power" (1982) 41 Maryland Law Review 563.

Kennedy D., & Michelman, F., "Are Property and Contract Efficient?" (1980) 8 Hofstra Law Review 711.

Kessler F.H., "Contracts of Adhesion - Some Thoughts about Freedom of Contract" (1943) 43 Columbia Law Review 629.

Kessler F.H., "Automobile Dealer Franchises: Vertical Integration by Contract" (1957) 66 Yale Law Journal 1135.

Kessler F.H., & Stern R.H., "Competition, Contract and Vertical Integration" (1959) 69 Yale Law Journal 1.

Kessler F.H. & Fine E. "Culpa in Contrahendo, Bargaining in Good Faith and Freedom of Contract: A Comparative Study" (1964) 77 Harvard L. Rev. 401.

Khan, A., "Standard of Proof in Professional Negligence" (1984-5 1 Construction Law Journal 182.

Kidwell J., "A Caveat" 1985 Wisconsin Law Review 615.

Kiholm Smith J., & Smith R.L., "Contract Law, Mutual Mistake and Incentives to Produce and Disclose Information" (1990) 19 Journal of Legal Studies 467.

Kingsford, Builders and Building Workers (London: Edward Arnold, 1973).

Kirsh H.J., "The Arbitration of Construction Disputes" (1986) 2 Construction Law Journal 3.

Klein B., "Transaction-Cost Determinants of "Unfair" Contractual Arrangements" (1980) 70 American Economic Review (Papers and Proceedings) 356.

Klein B., "Contracting Costs and Residual Claims: The Separation of Ownership and Control" (1983) 26 Journal of Law and Economics 367.

Klein B., "Contract Costs and Administered Prices: An Economic Theory of Rigid Wages" (1984) 74 American Economic Review (Papers and Proceedings) 332.

Klein B., "Vertical Integration as Organizational Ownership: The Fisher Body - General Motors Relationship Revisited" (1988) 4 Journal of Law, Economics, & Organization 199.

Klein B., Crawford R.G., & Alchian A.A., "Vertical Integration, Appropriable Rents, and the Competitive Contracting Process" (1978) 21 Journal of Law and Economics 297.

Klein B., & Leffler K.B., "The Role of Market Forces in Assuring Contractual Performance" (1981) 89 Journal of Political Economy 615.

Klein B., & Murphy K.M., "Vertical Restraints as Contract Enforcement Mechanisms" (1988) 31 Journal of Law and Economics 265.

Klein B., & Saft L.F., "The Law and Economics of Franchise Tying Contracts" (1985) 28 Journal of Law and Economics 345.

Klein P.A., "Of Paradigms and Politics" (1988) 22 Journal of Economic Issues 435.

Klein P.A., "Institutionalism as a School - A Reconsideration" (1990) 24 Journal of Economic Issues 381.

Klevorick A.K., "Law and Economic Theory: An Economist's View" (1975) 65 American Economic Review (papers & proceedings) 237.

Knight F.H., "Anthropology and Economics" (1941) 43 Journal of Political Economy 247.

Knoebber C.R., "An Alternative Mechanism to Assure Contractual Reliability" (1983) 12 Journal of Legal Studies 333.

Komesar N., "In Search of a General Approach to Legal Analysis: A Comparative Institutional Alternative" (1981) 79 Michigan Law Review 1350.

Kornhauser L.A., "Unconsionability in Standard Forms" (1976) 64 California Law Review 1151.

Kornhauser L.A., "Reliance, Reputation and Breach of Contract" (1983) 26 Journal of Law and Economics 691.

Kronman A.T., "Mistake, Disclosure, Information and the Law of Contracts" (1978) 7 Journal of Legal Studies 1.

Kronman A.T., "Specific Performance" (1978) 44 University of Chicago Law Review 351.

Kronman A.T., "Contract Law and Distributive Justice" (1980) 89 Yale Law Journal 472.

Kronman A.T., "Paternalism and the Law of Contracts" (1983) 92 Yale Law Journal 763.

Kronman A.T., "Contract Law and the State of Nature" (1985) 1 Journal of Law, Economics and Organization 5.

Kronman A.T., & Posner R.A., Economics of Contract Law (Boston: Little Brown & Co., 1979).

Landa J., "A Theory of the Ethnically Homogenous Middleman Group: An Institutional Alternative to Contract Law" (1981) 10 Journal of Legal Studies 349.

Landa J., "Hadley v. Baxendale and the Expansion of the Middleman Economy" (1987) 16 Journal of Legal Studies 455.

Landes W.M., & Posner R.A., "Salvors, Finders, Good Samaritans, and Other Rescuers: An Economic Study of Law and Altruism" (1978) 7 Journal of Legal Studies 83.

Lane R.E., "Markets and the Satisfaction of Human Wants" (1978) 12 Journal of Economic Issues 827.

Langlois R.N., Economics as a Provess: Essays in the New Institutional Economics (Cambridge: Cambridge University Press, 1986).

"Law, Private Governance and Continuing Relationships: A Symposium." 1985 Wisconsin Law Review 461 - 757.

Leeson R.A., Travelling Brothers (London: Allen & Unwin, 1979).

Leff A., "Contract as Thing" (1970) 19 American University Law Review 131.

Leff A., "Economic Analysis of Law: Some Realism about Nominalism" (1974) 60 Virginia Law Review 451.

Lempert R., "Norm-making in Social Exchange: A Contract Law Model" 1972 Law and Society Review 1.

Leontief W., "Theoretical Assumptions and Nonobserved Facts" (1975) 61 American Economic Review 1.

Levmore S., "Variety and Uniformity in the Treatment of the Good-Faith Purchaser" (1987) 16 Journal of Legal Studies 43.

Lewis J.D., & Weingert A., "Trust as a Social Reality" (1985) 63 Social Forces 967.

Lewis R., "Contracts between Businessmen: Reform of the Law of Firm Offers and an Empirical Study of Tendering Practices in the Building Industry" (1982) 9 Journal of Law and Society 153.

Lewis T.R., "Reputation and Contract Performance in Long-Term Projects" (1986) 17 Rand Journal of Economics 141.

Lindblom C.E., Politics and Markets: The World's Political-Economic Systems, (New York: Basic Books, 1977).

Llewellyn K.N., "The Theory of Legal `Science'" (1941) 20 North Carolina Law Review 1.

Llewellyn K.N., "On Law and Our Commerce" 1949 Wisconsin Law Review 625.

Llewellyn K., "Law and the Social Sciences, Especially Sociology" (1949) 62 Harvard Law Review 1266.

Llewellyn K., "The Effect of Legal Institutions upon Economics" (1925) 15 American Economic Review 665.

Llewellyn K., "The Modern Approach to Counseling and Advocacy, Especially in Commercial Transactions" (1946) 46 Columbia Law Review 167.

Llewellyn K., "What Price Contract? - an Essay in Perspective" (1931) 40 Yale Law Journal 704.

Lowry S.T., "Bargain and Contract Theory in Law and Economics" (1976) 10 Journal of Economic Issues 1.

McCall J.J., "Economics of Information and Job Search" (1970) 84 Quarterly Journal of Economics 113.

McChesney F., "Team Production, Monitoring, and Profit Sharing in Law Firms: An Alternative Hypothesis" (1982) 11 Journal of Legal Studies 379.

McCloskey D.N., "The Rhetoric of Law and Economics" (1988) 86 Michigan Law Review 752.

McCloskey D.N., If You're So Smart: The Narrative of Economic Expertise (Chicago: University of Chicago Press, 1990).

McKenna J., & Rodger R., "Control by Coercion: Employers' Associations and the Establishment of Industrial Order in the Building of England and Wales, 1860-1914" (1985) Business History Review 203.

Mcmanus J., "The Costs of Alternative Economic Organisations" (1975) 8 Canadian Journal of Economics 334.

Macaulay S., "Justice Traynor and the Law of Contracts" (1961) 13 Stanford Law Review 812.

Macaulay S., "Non-Contractual Relations in Business" (1963) 55 American Sociological Review 55.

Macaulay S., Law and the Balance of Power (New York: Russell Sage Foundation, 1966).

Macaulay S., "The Standardized Contracts of US Automobile Manufacturers" 7 International Encyclopedia of Comparative Law (The Hague: Tubingen, 1974).

Macaulay S., "Elegant Models, Empirical Pictures and the Complexities of Contract" (1977) 11 Law and Society Review 507.

Macaulay S., "Law Schools and the World Outside their Doors II: Some Notes on Two Recent Studies of the Chicago Bar" 32 Journal of Legal Education 506.

Macaulay S., "An Empirical View of Contract" 1985 Wisconsin Law Review 465.

Macneil I.R., "Restatement (second) of Contracts and Presentiation" (1974) 60 Virginia Law Review 589.

Macneil I.R., "The Many Futures of Contract" (1974) 47 Southern California Law Review 691.

Macneil I.R., "Contracts: Adjustment of Long-Term Economic Relations under Classical, Neoclassical and Relational Contract Law" (1978) 72 Northwestern University Law Review 854.

Macneil I.R., The New Social Contract: An Inquiry into Modern Contractual Relations, (New Haven: Yale University Press, 1980).

Macneil I.R., "Economic Analysis of Contractual Relations: Its Shortfalls and the Need for a "`Rich Classificatory Apparatus'" (1981) 75 Northwestern University Law Review 1018.

Macneil I.R., "Values in Contract: Internal and External" (1983) 78 Northwestern University Law Review 340.

Macneil I.R., "A Primer of Contract Planning" (1975) 48 Southern California Law Review 627.

Macneil I.R., "Relational Contract: What We Do and Do Not Know" 1985 Wisconsin Law Review 483.

Marcus G. & Marcus P., "Fact-Based Mediation for the Construction Industry" (1987) 42 Arbitration Journal 6.

Markovits R.S.,"A Basic Structure for Microeconomic Policy Analysis in Our Worse-Than-Second-Best World: A Proposal and Related Critique of the Chicago Approach to the Study of Law and Economics" 1975 Wisconsin Law Review 750.

Masten S.E., "The Organization of Production: Evidence from the Aerospace Industry" (1984) 27 Journal of Law and Economics 403.

Masten S.E., & Crocker K.J., "Efficient Adaptation in Long-Term Contracts: Take-or-Pay Provisions for Natural Gas" (1985) 75 American Economic Review 1083.

Masten S.E., "A Legal Basis for the Firm" (1988) 4 Journal of Law, Economics and Organization 181.

Mathewson F. & Winter R., "The Economics of Franchise Contracts" (1985) 28 Journal of Law and Economics 503.

Matthews R.C.O., "The Economics of Institutions and the Sources of Growth" (1986) 93 The Economic Journal 903.

Mauss M., The Gift (Glencoe: Free Press, 1954).

Mayhew A., "Culture: Core Concept Under Attack (1987) 21 Journal of Economic Issues 587.

Mentschikoff S., "Commercial Arbitration" (1961) 61 Columbia Law Review 846.

Mercuro N., (ed.) Law and Economics (Boston: Kluwer, 1989).

Ministry of Public Building & Works, Preparing to Build: R&D Building Management Handbook, (London: HMSO, 1965).

Ministry of Public Building and Works, Report of the Committee on the Placing and Management of Contracts for Building and Civil Engineering Works (The Banwell Report) (London: HMSO, 1964).

Ministry of Works, The Management and Placing of Building Contracts: Report of the Central Council for Works and Buildings to the Minister of Works (the Simon Report), (London: HMSO, 1944).

Ministry of Works, Survey of Problems Before the Construction Industries (The Emmerson Report) (London: HMSO, 1962).

Mishan E.J., "Pareto Optimality and the Law" (1967) 19 Oxford Economic Papers (NS) 255.

Mishan E.J., "The Effect of Externality on Individual Choice" (1981) 1 International Review of Law and Economics 97.

Mishan E.J., "The Folklore of the Market - An Inquiry into the Economic Doctrines of the Chicago School" (1975) 9 Journal of Economic Issues 681.

Mnookin R.H., & Kornhauser L., "Bargaining in the Shadow of the Law: The Case of Divorce" (1979) 88 Yale Law Journal 65.

Monopolies and Mergers Commission, Architects' Services: A Report on the Supply of Architects' Services with Reference to Scale Fees (London: HMSO, 1977).

Monopolies and Mergers Commission, Surveyors' Services: A Report on the Supply of Surveyors' Services with Reference to Scale Fees (London: HMSO, 1977).

Monteverde K., & Teece D.J., "Supplier Switching Costs and Vertical Integration in the Automobile Industry" (1982) 13 Bell Journal of Economics 206.

Monteverde K., & Teece D.J., "Appropriable Rents and Quasi-Vertical Integration" (1982) 25 Journal of Law and Economics 321.

Mueller A., "Contract Remedies: Business Fact and Legal Fantasy" 1967 Wisconsin Law Review 833.

Mulherin J.H., "Complexity in Long-Term Contracts: An Analysis of Natural Gas Contractual Provisions" (1986) 2 Journal of Law, Economics and Organization 105.

Muris T.J., "Opportunistic Behaviour and the Law of Contract" (1981) 65 Minnesota Law Review 521.

Muris T.J., "The Costs of Freely Granting Specific Performance" 1982 Duke Law Journal 1053.

Muris T.J., "Cost of Completion or Dimunition in Market Value: The Relevance of Subjective Value" (1983) 12 Journal of Legal Studies 379.

Mayhew A., "The Beginnings of Institutionalism" (1987) Journal of Economic Issues 971.

Ministry of Public Building and Works, Report of the Committee on the Placing and Management of Contracts for Building and Civil Engineering Works (The Banwell Report) HMSO 1964.

Narasimhan S., "Of Expectation, Incomplete Contracting and the Bargain Principle" (1986) 74 Southern California Law Review 1123.

Nutter W., "On Economism" (1979) 22 Journal of Law & Economics 263.

Ogus A.I., The Law of Damages, (London: Butterworths, 1973).

Ogus A.I., & Veljanovski C.G., Readings in the Economics of Law and Regulation (Oxford: Oxford University Press, 1984).

Ogus A.I. "Do We have A General Theory of Compensation?" (1984) 37 Current Legal Problems 29

Ogus A.I., "The Trust as a Governance Structure" (1986) 36 University of Toronto Law Journal 186.

Olsen F., "The Family and the Market: A Study of Ideology and Legal Reform" (1983) 96 Harvard Law Review 1497.

Palay T., "Comparative Institutional Economics: The Governance of Rail Freight Contracting" (1984) 13 Journal of Legal Studies 265.

Palay T., "A contract does not a Contract Make" 1985 Wisconsin Law Review 561.

Palay T., "Avoiding Regulatory Constraints: Contracting Safeguards and the Role of Informal Agreements" (1985) 1 Journal of Law, Economics and Organization 155.

Parris J., The Standard Form of Building Contract: JCT80 (London: Collins, 1985).

Patterson E., "The Apportionment of Business Risks" (1924) 24 Columbia Law Review 335.

Perloff J., "The Effects of Breaches of Forward Contracts Due to Unanticipated Price Changes" (1981) 10 Journal of Legal Studies 221.

Perloff J., "Breach of Contract and the Foreseeability Doctrine of Hadley v. Baxendale" (1981) 10 Journal of Legal Studies 39.

Perrow C., Complex Organizations: A Critical Essay (New York: Random House, 1986).

Polanyi, K., "The Economy as Instituted Process" in Trade and Market in Early Empires, Polanyi K., Arensberg C.M., & Pearson H.W., (eds.) (Glencoe., Ill.: the Free Press, 1957).

Polinsky A.M., "Economic Analysis as a Potentially Defective Product: A Buyers Guide to Posner's Economic Analysis of Law" (1974) 87 Harvard Law Review 1655.

Polinsky A.M., "Risk Sharing through Breach of Contract Remedies" (1983) 12 Journal of Legal Studies 427.

Polinsky A.M., An Introduction to Law and Economics (Boston: Little Brown & Co., 1983).

Port M.H., "The Office of Works and Building Contracts in Early Nineteenth-Century England" (1967) 20 Economic History Review 94.

Posner R.A., "Gratuitous Promises in Economics and Law" (1977) 6 Journal of Legal Studies 411.

Posner R.A., Economic Analysis of Law (Boston: Little Brown & Co., 1977).

Posner R.A., "Utilitarianism, Economics and Legal Theory" (1979) 8 Journal of Legal Studies 103.

Posner R.A., "The Ethical and Political Basis of the Efficiency Norm in Common Law Adjudication" (1980) 8 Hofstra Law Review 487.

Posner R.A., The Economics of Justice (Cambridge, Mass.: Harvard University Press, 1981).

Posner R.A., & Rosenfield A.M., "Impossibility and Related Doctrines in Contract Law: An Economic Analysis" (1977) 6 Journal of Legal Studies 83.

Powell-Smith V., & Sims J., Building Contract Claims (London: Granada, 1983).

Powell C.G., An Economic History of the British Building Industry: 1815-1979 (London: Architectural Press, 1980).

Pugh D.S., Hickson D.J., Hinings C.R., Writers on Organizations (Harmondsworth: Penguin Books, 1983).

Rea S., "Non-Pecuniary Loss and Breach of Contract" (1982) 11 Journal of Legal Studies 35.

Regan M., "Fitness, Quality and Skill and Care" (1987) 3 Construction Law Journal 241.

Reiter B.J., "The Control of Contract Power" (1981) 1 Oxford Journal of Legal Studies 347.

Reiter B.J., & Swan J.S., (eds.) Studies in Contract Law (Toronto: Butterworth, 1980).

RIBA Conditions of Engagement (London: RIBA, 1982).

Robbins, L.C., An Essay on the Nature and Significance of Economic Science (London: Macmillan, 1932).

Rosen S., "Transactions Costs and Internal Labour Markets" (1988) 4 Journal of Law, Economics & Organization 49.

Ross S.A., "The Economic Theory of Agency: The Principal's Problem" (1973) 62 American Economic Review 134.

Rowley C.K., "Social Science and the Law: The Relevance of Economic Theory" (1981) 1 Oxford Journal of Legal Studies 391.

Rubin G.R., & Sugarman D., (eds.) Law, Economy and Society: Essays in the History of English Law 1750-1914 (Abingdon: Professional Books, 1984).

Rubin P.H., "Why is the Common Law Efficient?" (1977) 6 Journal of Legal Studies 51.

Rubin P.H., "Unenforceable Contracts: Penalty Clauses and Specific Performance" (1981) 10 Journal of Legal Studies 237.

Ryngaert M., & Netter J., "Shareholder Wealth Effects of the Ohio Antitakeover Law" (1988) 4 Journal of Law, Economics & Organization 373.

Saft L.F., & Klein B., "The Law and Economics of Franchise Tying Contracts" (1985) 28 Journal of Law and Economics 345.

Samuels W.J. & Schmid A.A., (eds.) Law and Economics: An Institutional Perspective (Boston: Martinus Nijhoff, 1981).

Schelling T.C., "An Essay on Bargaining" (1956) 46 American Economic Review 281.

Schelling T.C., Choice & Consequence (Camb., Mass: Harvard University Press, 1984).

Scheppele K.L., Legal Secrets: Equality and Efficiency in the Common Law (Chicago: University of Chicago Press, 1988).

Schmid A.A., Property, Power and Public Choice: An Inquiry into Law and Economics (New York: Praeger, 1987).

Schultz F.M., "The Firm Offer Puzzle: A Study of Business Practices in the Construction Industry" (1952) 19 University of Chicago Law Review 237.

Schumpeter J.A., Capitalism, Socialism and Democracy (New York: Harper & Row, 1942).

Schumpeter J.A., History of Economic Analysis (edited by E.B. Schumpeter) (New York: OUP, 1954).

Schur E., Law and Society: A Sociological View (New York: Random House, 1967).

Schwartz, "Sales Law and Inflations" (1976) 50 Southern California Law Review 1.

Schwartz "A Reexamination of Nonsubstantive Unconscionability" (1977) 63 Virginia Law Review 1053.

Schwartz A., "The Case for Specific Performance" (1979) 89 Yale Law Journal 271.

Scott R.E., "Conflict and Co-operation in Long-Term Contracts" (1987) 75 California Law Review 2005.

Scott R.E., "A Relational Theory of Default Rules in Commercial Contracts" (1990) 19 Journal of Legal Studies 597.

Seidman R.B., "Contract Law, The Free Market and State Intervention: A Jurisprudential Perspective" (1973) 7 Journal of Economic Issues 553.

Sen A "Behaviour and the Concept of Preference" (1973) 40 Economica 241.

Shapiro C., "Premiums for High Quality Products as Returns to Reputations" (1983) 98 Quarterly Journal of Economics 659.

Sharp M., "Promises, Mistakes and Reciprocity" (1952) 19 University of Chicago Law Review 286.

Shavell S., "Damage Measures for Breach of Contract" (1980) Bell Journal of Economics 466.

Shavell S., "Risk-Sharing and Incentives in the Principal and Agent Relationship" (1979) 10 Bell Journal of Economics 55.

Simon H., "Theories of Decisionmaking in Economics and Behavioural Science" (1959) 49 American Economic Review 253.

Simpson A.W.B., "Innovation in Nineteenth Century Contract Law" 91975) 91 Law Quarterly Review 247.

Singleton J.R., "Consultants' Liability to the Builder" (1986) 2 Construction Law Journal 87.

Smith M.J., "Forsikringsaktieselskapet Vesta v. Butcher and Others: The Fish Farm Fiasco -- Contributory Negligence, Contracts and Construction" (1988) 4 Construction Law Journal 75.

Smith V., "Economic Theory and its Discontents" (1975) 64 American Economic Review, (papers and proceedings) 320.

Speidel R.E., "Excusable Non-Performance in Sales Contracts: Some Thoughts About Risk-Management" (1980) 32 Southern California Law Review 241.

Speidel R.E., "Court-Imposed Price Adjustments Under Long Term Supply Contracts" (1981) 76 Northwestern University Law Review 369.

Spence A.M., & Zeckhauser R., "Insurance, Information and Individual Action" (1971) American Economic Review 380.

Stapleton J., "Duty of Care and Economic Loss: A Wider Agenda" (1991) 107 Law Quarterly Review 249.

Stigler G.J., "The Economics of Information" (1961) 69 Journal of Political Economy 213.

Stone P.A., Building Economy: Design Production and Organisation - A Synoptic View (Oxford: Pergamon Press, 1983).

Stopford J.M., & Wells L.T., Managing the Multinatinational Enterprise (New York: Basic Books, 1972).

Summers C.W., "Collective Agreements and the Law of Contracts" (1969) 78 Yale L.J. 525.

Summerson J., Georgian London (Harmonsworth: Penguin, 1962).

Sweet J., "Liquidated Damages in California" (1972) 60 California Law Review 84

Sykes A.O., "The Doctrine of Commercial Impracticability in a Second-Best World" (1990) 19 Journal of Legal Studies 43.

Tavistock Institute of Human Relations, Interdependence and Uncertainty: A Study of the Building Industry (London: Tavistock Publications, 1966).

Telser L.G., "A Theory of Self-Enforcing Agreements" (1980) 50 Journal of Business 27.

Teubner G., (ed.) Juridification of Social Spheres: A Comparative Analysis in the Areas of Labor, Corporate, Antitrust and Social Welfare Law (Berlin: Walter de Gruyter, 1987).

Trebilcock M.J., "The Role of Insurance Considerations in the Choice of Efficient Liability Rules" (1988) 4 Journal of Law, Economics & Organization 243.

Trebilcock M.J., Restraint of Trade (Toronto: Carswell, 1986).

Tool, M.R., Evolutionary Economics: Volume I Foundations of Institutional Thought: Volume II Institutional Theory and Policy, (New York: M.E. Sharpe, 1988).

Trenner D., "Sub-Contractors' Rights upon the Main Contractor's Insolvency" (1987) 3 Construction Law Journal 94.

Turin D., (ed.) Aspects of the Economics of Construction (London: George Godwin, 1975).

Turner D.F., Building Contracts: A Practical Guide (Harlow: George Godwin, 1983).

Twining, W.L., Karl Llewellyn and the Realist Movement, (London: Weidenfeld & Nicolson, 1973).

Uff J., Construction Law: Law and Practice relating to the Construction Industry (London: Sweet & Maxwell, 1985).

Ulen T.S., "The Efficiency of Specific Performance: Towards A Unified Theory of Contract Remedies" (1984) 83 Michigan Law Review 341.

Unger R.M., "The Critical Legal Studies Movement" (1983) 96 Harvard Law Review 563.

Veblen T., "Why is Economics not an Evolutionary Science?" in The Place of Science in Modern Civilization and Other Essays (New York: Russell & Russell, 1961) 56.

Veblen T., The Theory of the Business Enterprise (New York: Scribner, 1932) (originally published in 1904).

Veljanovski C.G., The New Law-and-Economics: A Research Review (Oxford: SSRC, Socio-Legal Centre, 1982).

Veljanovski C.G., "Wealth-Maximisation, Law and Ethics: On the Limits of Economic Efficiency" (1981) 1 International Review of Law & Economics 5.

Veljanovski C.G., "The Economic Approach to Law: A Critical Introduction" (1980) 7 British Journal of Law and Society 158.

Veljanovski C.G., "The Role of Economics in the Common Law" (1985) 7 Research in Law and Economics 41.

Veljanovski C.G., & Whelan C.J., "Professional Negligence and the Quality of Legal Services - An Economic Perspective" (1983) 46 Modern Law Review 700.

Waller W.J., "Radical Institutionalism: Methodological Aspects of the Radical Tradition" (1988) 22 Journal of Economic Issues 667.

Webster M., "Implied Exclusion Clauses -- The Cementation Case" (1990) 6 Construction Law Journal 7.

Weinberg H., "Sales Law, Economics, and the Negotiability of Goods" (1980) 9 Journal of Legal Studies 569.

Whitford W., "Ian MacNeil's Contribution to Contracts Scholarship" 1985 Wisconsin Law Review 545.

White M., "Contract Breach and Contract Discharge due to Impossibility: A Unified Theory" (1988) 17 Journal of Legal Studies 353

Williamson O.E., "The Vertical Integration of Production: Market Failure Considerations" (1971) 61 American Economic Review 112.

Williamson O.E., "On the Governance of the Modern Corporation" (1979) 8 Hofstra Law Review 63.

Williamson O.E., "Transaction-Cost Economics: The Governance of Contractual Relations" (1979) 22 Journal of Law and Economics 233.

Williamson O.E., Markets and Hierarchies: Analysis and Antitrust Implications (New York: The Free Press, 1975).

Williamson O.E., "Assessing Vertical Market Restrictions" (1979) University of Pennsylvania Law Review 953.

Williamson O.E., "Credible Commitments: Using Hostages to Support Exchange" (1983) 73 American Economic Review 519.

Williamson O.E., The Economic Institutions of Capitalism (New York: The Free Press, 1985).

Williamson O.E., "Organization Form, Residual Claimants, and Corporate Control" (1983) 26 Journal of Law & Economics. 351.

Williamson O.E., "Assessing Contract" (1985) Journal of Law Economics & Organization 177.

Williamson O.E., "The Logic of Economic Organization" (1988) 4 Journal of Law, Economics, & Organization 65.

Willis A.J., George W.N.B., Willis C.J., & Scher H.P., The Architect in Practice (London: Granada, 1974).

Winter S.G., "On Coase, Competence, and the Corporation" (1988) 4 Journal of Law Economics and Organisation 163.

Wright A.T., "Opposition of the Law to Business Usages" (1926) 26 Columbia Law Review 916.

Yeomans D.T., "Managing Eighteenth-Century Building" (1988) 4 Construction History 3.

Yngvesson B., "Re-Examining Continuing Relations and the Law" 1985 Wisconsin Law Review 623.

Zeckhauser R.J., & Pratt J.W., (eds.) Principals and Agents: The Structure of Business (Boston: Harvard Business School Press, 1985).

Table of Cases

A. Schroeder Music Publishing Co. Ltd v. Macaulay [1974] 3 All ER 616.

A.B. Marintrans v. Comet Shipping Co. Ltd [1985] 1 Lloyd's Reports 568.

Abram SS Co. v. Westville Shipping Co. Ltd. [1923] AC 773.

Amalgamated Building Contractors v. Waltham Urban District Council [1952] 2 All ER 452.

AMF (International) Ltd. v. Magnet Bowling Ltd. [1968] 1 WLR 1028.

Anns v. Merton London Borough Council [1978] AC 728.

Appleby v. Myers (1867) LR 2 CP 651.

Applegate v. Moss [1971] 1 QB 406.

Arcos Ltd v. Aronson (1930) 36 Ll L. R. 108.

Ashville Investments Ltd. v. Elmer Contractors Ltd. [1988] 2 All ER 577.

Beaman v. ARTS Ltd. [1949] 1 KB 550.

Bettini v. Gye (1876) 1 QBD 351.

Blackburn Bobbin Co. Ltd. v. T.W. Allen & Sons Ltd. [1918] 2 KB 467.

Bolton v. Mahadeva [1972] 1 WLR 1009.

Bramall & Ogden Ltd v. Sheffield City Council (1983) 1 Construction Law Reports 30.

British Westinghouse Co. v. Underground Electric Railways Co of London [1912] AC 673.

British Steel Corporation v. Cleveland Bridge Engineering Co. [1984] 1 All ER 504.

Bruno Zornow (Builders) Ltd. v. Beechcroft Developments Ltd. (1989) (1990) 6 Construction Law Journal 132.

Carpenters Estates Ltd v. Davies [1940] Ch. 160.

Cellulose Acetate Silk Co. Ltd v. Widnes Foundry (1925) Ltd. [1933] AC 20.

Central London Property Trust v. High Trees House Ltd. [1947] KB 130.

Chambers v. Goldthorpe [1901] 1 KB 624.

Charter v. Sullivan [1957] 2 QB 117.

Clark v. Woor [1965] 2 All ER 353.

Clarke v. Dickson (1858) E.B.& B. 148.

Clay v. A.J. Crump & Sons Ltd. [1964] 1 QB 533.

Clayton v. Woodman & Son (Builders) Ltd. [1962] 2 All ER 33.

Courtney & Fairbairn v. Tolaini Bros. (Hotels) Ltd. [1975] 1 All ER. 716.

Crump v. Torfaen Urban District Council (1982) 261 EG 679.

Curtis v. Chemical Cleaning and Dyeing Co. [1951] 1 KB 805.

Cutter v. Powell (1795) 2 Sm.LC. 1.

D. & F. Estates v. Church Commissioners for England [1989] 1 AC 177.

Davies v. London and Provincial Marine Insurance Co. (1878) 8 Ch.D 469.

Davis Contractors Ltd. v. Fareham Urban District Council [1956] AC 696.

Dennis v. Charnwood Borough Council [1982] 3 WLR 1064.

Dick Bentley Productions Ltd. v. Harold Smith (Motors) Ltd. [1965] 1 WLR 623.

Dickinson v. Dodds (1876) 2 Ch. D. 463.

Dodd Properties (Kent) Ltd. v. Canterbury City Council [1980] 1 WLR 433.

Doleman & Sons v. Osset Corporation [1912] 3 KB 257 & 267.

Drennan v. Star Paving Company (1958) 51 Cal. 2d. 409.

Dunlop Pneumatic Tyre Co. Ltd. v. New Garage Motor Co. Ltd. [1915] AC 79.

E. Turner and Sons Limited v. Mathind Limited (1989) 5 Construction Law Journal 273.

Eames London Estates v. North Hertfordshire District Council and others ((1980) 18 Building Law Reports 50.

East Ham Borough Council v. Bernard Sunley & Sons Ltd. [1966] AC 406.

East Ham Borough Council v. Bernard Sunley & Sons Ltd[1966] AC 406.

Eastwood v. Kenyon (1840) 11 Ad. & El. 438.

Elsley v. J.G. Collins Insurance Agencies (1978) 3 DLR (3d) 1.

Equitable Debenture Assets Corporation v. William Moss and Others (1984) 2 Construction Law Reports 1.

Errington v. Errington [1952] 1 KB 290.

Esso Petroleum Ltd. v. Mardon [1976] QB 801.

F & G. Sykes (Wessex) Ltd. v. Fine Fare ltd. [1967] 1 Lloyd's Rep. 53.

F.A.Tamplin SS Co. Ltd. v. Anglo-Mexican Petroleum Products Co. Ltd. [1916] 2 AC 397.

Farrans (Construction) Ltd v. Dunfermline General District (1988) 4 Construction Law Journal 314.

Featherstonhaugh v. Fenwick (1810) 17 Ves. Jun.298.

Flint v. Brandon (1808) 3 Ves. 159.

Foakes v. Beer (1884) 9 App. Cas. 605.

Forsikringsaktieselskampat Vesta v. Butcher[1986] 2 Lloyd's Reports 179.

Frost v. Moody Homes Ltd. (1990) 6 Construction Law Journal 43.

Glenlion Construction Ltd. v. The Guiness Trust (1988) 4 Construction Law Journal 39.

Glenlion Construction Ltd v. The Guiness Trust (1988) 4 Construction Law Journal 39.

Gloucestershire County Council v. Richardson, [1969] 1 AC 480.

Great Northern Railway v. Witham (1873) L.R. 9 C.P. 16.

Greater Nottingham Cooperative Society Ltd v. Cementation Piling and Foundations Ltd. [1988] 3 WLR 396.

Greaves & Co. (Contractors) Ltd. v. Baynham Meikle & Partners [1975] 3 All ER 99.

Hadley v. Baxendale (1854) 9 Exch. 341.

Harrison v. Tennant (1856) 21 Beav. 482.

Harvela Investments v. Royal Trust Co. of Canada (CI) Ltd [1985] 1 All ER. 261.

Hawkes v. Saunders (1782) 1 Cowp 289.

Hedley Byrne & Co. Ltd. v. Heller & Partners Ltd. [1964] AC 465.
Hedley Byrne & Co. v. Heller & Partners Ltd ([1964] AC 465.

Herbert Morris v. Saxelby [1916] 1 AC 688.

Herne Bay Steam Boat Company v. Hutton [1903] 2 KB 683.

Hoenig v. Isaacs [1952] 2 All ER 176.

Holland Hannen & Cubitts v. Welsh Health Technical Service Organisation (1981) 18 Building Law Reports 80.

Holme v. Guppy 1838 3 M&W 387.

Hounslow London Borough Council v. Twickenham Garden Developments Ltd. (1970) 7 Building Law Reports 89.

Howe v. Smith (1884) 27 Ch D. 89 at 95.

Ibmac Ltd v. Marshall (Homes) Ltd. (1968) 208 EG 851.

Independent Broadcasting Authority v. EMI Electronics Ltd. and BICC Construction Ltd. (1980) 14 Building Law Reports 1.

Jackson v. Union Marine Insurance Co. (1874) LR 10 CP 125.

Jamal v. Moolla Dawood Sons & Co. [1916] AC 175.

John Jarvis Ltd. v. Rockdale Housing Association Ltd. (1987) 3 Construction Law Journal 24.

Junior Books Ltd. v. Veitchi Company Ltd. [1983] 1 AC 520.

Kendal v. Wood (1871) L.R. 6 Exch. 243.

Kensington & Chelsea & Westminster Area Health Authority v. Wettern Composites and Others (1985) 1 Construction Law Reports 114.

Krell v. Henry [1903] 2 KB 740.

Lamb v. Evans [1893] 1 Ch. 218.

Le Lievre v. Gould [1893] 1 QB 491.

Leaf v. International Galleries [1950] 2 KB 86.

Leicester Board of Guardians v. Trollope (1911) JP 197.

Leicestershire C.C. v. Michael Faraday and Partners [1941] 2 KB 205

Lewisham London Borough Council v. Leslie & Co. (1979) 12 Building Law Reports 22.

Lewisham London Borough Council v. Leslie & Co. (1979) 250 EG 1289.

Liverpool City Council v. Irwin [1977] AC 239.

Lodge Holes Colliery Company Limited v. The Borough of Wednesbury [1908] AC 323.

London Borough of Merton v. Hugh Stanley Leach Ltd 32 Building Law Reports 51.

Lubenham Fidelities & Investment Co. Ltd v. South Pembrokeshire District Council (1986) 2 Construction Law Journal 111.

Lynch v. Thorne [1956] 1 WLR 303.

M.& S. Drapers (A Firm) v. Reynolds [1956] 3 All ER 814.

Mackay v. Dick [1881] 6 AC 251.

May & Butcher Ltd. v. R.[1934] 2 KB 17n.

Mertens v. Home Freehold Co [1921] 2 KB 526.

Michael Salliss & Co. Ltd. v. E.C.A. Calil & Others (1988) 4 Construction Law Journal 125.

Miller v. Sadd [1981] 3 All ER 265.

Mitchell v. Guildford Union (1904) 68 JP 84.

Mona Oil Equipment Co v. Rhodesia Railways[1949] 2 All ER 1014.

Moody v. Cox & Hatt[1917] 2 Ch. 71.

Moresk Cleaners v. Hicks (1966) 4 Building Law Reports 50.

Morgan v. Manser [1848] 1 KB 184.

Murphy v. Brentwood District Council [1990] 3 WLR 414.

Murphy v. Brentwood District Council [1990] AC 414.

National Westminster Bank plc v. Morgan [1983] 1 All ER 821.

Neodox Limited v. Borough of Swinton and Pendlebury (1958) 5 Building Law Reports 38.

New Zealand Shipping Co. Ltd. v. A.M. Satterthwaite & Co. Ltd. (The Eurymedon) [1974] 1 All ER 1015.

O'Connor v. B.D. Kirby & Co. [1972] 1 QB 90.

Ocean Tramp Steamers v. V.O. Sovracht, The Eugenia [1964] 1 All ER 161.

Pacific Associates Incorporated and R.B. Construction Limited v. Halcrow International Partnership (1988) 4 Construction Law Journal 131.

Parker v. South Eastern Railway (1877) 2 CPD 416.

Payzu v. Saunders [1919] 2 KB 581.

Peak Construction (Liverpool) Ltd v. McKinney Foundations Ltd (1970) 1 Building Law Reports 111.

Percy Bilton Ltd. v. Greater London Council (1981) 79 Local Government Reports 463.

Perry v. Tendring District Council (1985) 3 Construction Law Reports 74.

Photo Production Ltd v. Securicor Transport Ltd. [1980] 1 All ER 556.

Pillans v. Van Mierop (1756) 3 Burr. 1663.

Pirelli General Cable Works Ltd v. Oscar Faber and Partners [1983] 1 All ER 65.

Port Jackson Stevedoring Pty Ltd. v. Salmond & Spraggon Pty (Australia) Ltd. (The New York Star) [1980] 3 All ER 257.

Poussard v. Spiers (1876) 1 QBD 183.

R. v. Demers [1900] AC 103 (PC).

Raffles v. Wichelhaus (1864) 2 H & C 906.

Re Dagenham (Thames) Dock Co. (1873) LR 8 Ch. App. 1022.

Re Birmingham Association of Building Trades Employers' Agreement [1963] 1 WLR 484.

Redgrave v. Hurd (1881) 20 ChD 1.

Richard Roberts Holdings Ltd. v. Douglas Smith Stimson Partnership (1989) 5 Construction Law Journal 223.

Robinson v. Harman (1848) 1 Exch. 850.

Rosehaugh Stanhope (Broadgate Phase 6) plc v. Redpath Dorman Long Ltd. (1990) 6 Construction Law Journal 309.

Salomen v. A. Salomen & Co., Ltd. [1897] AC 22.

Saunders v. Broadstairs Local Board (1890) Hudson's Building Contracts 4th ed. vol 2, 164.

Scammell & Nephew Ltd. v. Ouston [1941] AC 251.

Scriven Bros. & Co. v. Hindley & Co. [1913] 3 KB 564.

Shirlaw v. Southern Foundries Ltd. [1939] 2 KB 227.

Simaan v. Pilkington [1988] 1 All ER 791.

Sky Petroleum Ltd. v. V.I.P. Petroleum Ltd. [1974] 1 WLR 576.

Smith v. Eric S. Bush; Harris v. Wyre Forest District Council [1990] 1 AC 831.

Smith v. Hughes (1871) LR 6 QB 597.

Smith v. Johnson (1899) 15 TLR 179.

Spencer v. Hardinq (1870) LR CP 561.

Starside Properties v. Mustapha [1974] 1 WLR 816.

Stilk v. Myrick (1809) 2 Camp 317.

Stubbs v. Trower, The Times May 5, 1987.

Sudbrooke Trading Estate v. Eggleton [1982] 3 All ER 1.

Sutcliffe v. Thackrah [1974] AC 727.

Sutcliffe v. Chippendale & Edmondson (1971) 18 Building Law Reports 149.

Sutcliffe v Chippendale and Edmondson(1971) 18 Building Law Reports 149 (Lexis).

T A Bickerton v. North West Metropolitan Hospital Board [1970] 1 WLR 607.

T. Mahesan S/O thambia v. Malaysian Government Officers' Housing Society [1979] AC 374.

Tai Hing Cotton Mill Ltd. v. Liu Chong Hing Bank Ltd. [1986] 1 AC 80.

Tai Hing Cotton Mill Ltd. v. Liu Chong Hing Bank Ltd [1986] 1 AC 80.

Taylor v. Caldwell (1863) 3 B. & S. 826.

Taylor Woodrow Construction (Midlands) Ltd v. Charcon Structures Ltd. (1982) 266 EG 40.

Temloc Ltd v. Errill (1988) 4 Construction Law Journal 63.

Test Valley Borough Council v. Greater London Council (1979) 13 Building Law Reports 63.

The Board of Governers of the Hospital for Sick Children & ano v. McLaughlin & Harvey plc (1990) 6 Construction Law Journal 245.

The Moorcock (1889) 14 P.D. 64.

The University Court of the University of Glasgow v. William Whitfield (1989) 5 Construction Law Journal 73.

Thompson (WL) Ltd. v. R. Robinson (Gunmakers) Ltd. [1955] Ch. 177.

Trollope and Colls v. Atomic Power Construction [1962] 3 All ER. 1035.

Tsakiroglou & Co. Ltd. v. Noblee Thorl G.m.b.H. [1962] AC 93.

Vanbergen v. St Edmund's Properties [1933] 2 KB 233.

Victoria University of Manchester v. Hugh Wilson & Lewis Womersley and Pochin (Contractors) Ltd. (1984) 2 Construction Law Reports 43.

Wall v. Rederiaktiebolaget Lugudde [1915] 3 KB 66.

Walters v. Morgan (1861) 3 DeGF & J. 718.

Warner Brothers Pictures Inc. v. Nelson [1937] 1 KB 209.

Wells v. Army & Navy Co-operative Society Ltd. (1902) 86 Law Times 764.

Westminster City Council v. J. Jarvis & Sons [1970] 1 All ER 943.

Wilkinson v. Clements (1872) LR 8 Ch. 96.

William Cory & Son v. Wingate Investments Ltd. 17 Building Law Reports 104.

William Lacey (Hounslow) Ltd. v. Davis [1957] 1 WLR 932.

With v. O'Flanagan [1936] Ch. 575.

Wolverhampton Corporation v. Emmons [1901] 1 QB 515.

Wood v. Silcock (1884) 50 LT 251.

Worlock v. SAWS (1981) 20 Building Law Reports 94.

Young & Marten Ltd v. Mcmanus Childs Ltd. [1969] 1 AC 454.