THE UNIVERSITY OF ASTON IN BIRMINGHAM

DEPARTMENT OF BUILDING

Aspects of English Building Works from Medieval Times to the Mid-Nineteenth Century

by

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S U M M A R Y

The relationship between the design, production and financial control functions for building works in England from Medieval times to the middle of the Nineteenth Century.

In the introduction to his 'Biographical Dictionary of English Architects, 1660-1840', Professor H M Colvin writes:

> "The history of English architecture has been written almost as often as the history of England itself. But in their preoccupation with design and construction few architectural historians have paused to consider how architecture was practised in the past; intent on the analysis of style and the influences which create it they have paid little attention to the relationship between architect, builder and client which makes possible all architectural achievement. Yet the history of this relationship is not only of intrinsic interest: it is essential to the understanding of architecture itself."

This submission examines that relationship and the role of the financial controller and administrator - the surveyor - during the period under review.

C O N T E N T S

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PREVIOUS WORKS

Some aspects of the history of the relationship between architect, builder and client were being studied when Professor Colvin made his observation about the lack of attention given to that subject.

Dr Barrington Kaye was making "a sociological analysis of the origin and development of professionalism among architects in Britain" ("The Development of the Architectural Profession in Britain", Allen and Unwin, 1960), and a study of the development of the relationship of the architect and client had been completed but not published by F Jenkins. His book, "The Architect and his Patron" (Oxford University Press, 1961) is concerned with "human beings and human relations" rather than architectural "style and technique".

There are other works which touch on the subject. Dr Salzman's "Building in England Down to 1540" (Clarendon Press), first published in 1952, includes a chapter on 'Masons and Architects' and another about the organisation of building works. Professor Knoop and Dr Jones' books and articles, published over a period of many years, on the organisation and economics of building works with particular reference to the history of the masonry craft provide a major source of information about the relationship between the master craftsmen and the client.

"The History of the King's Works" (edited by Colvin), not yet complete, includes accounts of the relationship between the Crown, the clerks, masters and, in latter years, the architects. Sir John Summerson's "Architecture in Britain, 1530-1830", published in 1963, traces

the development of the architect as part of his study of architecture.

The role of the 'medieval architect' has been the subject of two works by J H Harvey which are listed in the bibliography. The development of the 'quantity surveyor' is the subject of Chapter 4 in Thompson's book "Chartered Surveyors, the Growth of a Profession".

All these works, and to a lesser extent others, lead to and provide a valuable base for the present research but they do not in themselves meet the need identified by Colvin, nor do they fully encompass the role of the surveyor.

STUDY METHOD

The study method used is essentially the same for each period:-

- the main features of the historical setting have been outlined followed by an examination of:
  - the client, his nature, needs, resources and his decision to build
  - the design and the designer
  - financial control and administration
  - the contractor and the organisation of the construction process.

At the end of each period the pattern of the organisation for that period has been analysed.

Illustrations have been provided from contemporary documents and a quantitative or statistical analysis has been made wherever sufficient data is available.

ABBREVIATIONS AND REFERENCES

Abbreviations have been used in footnotes to relate the text to the bibliography which includes almost all reference sources except those which are concerned only superficially with the text. The author's surname, the initial letters of his work and the page number referred to in the text are given, eg: Salzman, B E pp 9-10 refers to Salzman's "Building in England Down to 1540", pages 9 and 10.

PART I

THE CONSTRUCTION PROCESS AND THE PROFESSIONAL ROLES

CHAPTER 1

INTRODUCTION

On several occasions since the Second World War individuals and committees have been commissioned to investigate the nature of the British Construction Industry. A recurring conclusion of these investigations has been that in no other industry is the design of the product, the building, carried out in such isolation from its production.

This divorce of design from production has not always existed. At various periods in Britain's history the relationship of the design, financial (cost) control and production management functions has varied considerably. At one period the financial controller would be pre-eminent and at another the designer. The roles have evolved to meet the needs of the client (the person or persons commissioning the building), the social pattern of the period and the total volume of construction work to be carried out at any given time.

A few published works touch on the organisation of the construction process for a specific period as an adjunct to their main study but none consider the inter-relationship of the design, financial control and production management functions over an extended period, analysing the reasons for the evolution.

This paper examines the industry in its historical setting, indicates the changing roles and functions of the principal participants and

relates the changes in roles to the social pattern of the period, the needs of the individual client and those of society as a whole. It attempts to identify the factors which caused the changes in the roles and the effect which the practitioners of the changed roles had, in their turn, on the industry of their own time.

CHAPTER 2

THE CONSTRUCTION PROCESS

Professor Marion Bowley's description of the construction process is that it consists of:-

> working out an overall design for the building, that is the translation into spatial terms of the customer's requirements for accommodation and amenities; working out the structural design, that is solving the engineering problems of ensuring that the building stands up despite use and weather and that the services work; and, finally, actually producing the building ready for occupation. None of these activities are independent of each other. Both the overall design and the structural design are affected by the materials and building techniques available. The problems and even the practicability of erection are determined by these designs both in terms of the costs and the difficulty of erection . . .(1)

For a simple building the client(2) may be able to explain his requirements directly to the people converting the raw materials into the finished article. He may, indeed, take an active physical part in the construction of the building. For a more complex building, the client will probably be unable to express his concept of his need.

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(1) Bowley, BBI p 351

(2) 'Client' is the word used throughout this paper to indicate the person (or persons) who sponsors or initiates the construction process and, usually, provides the necessary resources.

Most building owners are involved in the construction of one building or at most only a few. They are amateurs if for no other reason than that their own occupations take up too much of their time to allow them to build for themselves. They must rely on the people who spend their lives building.

The Royal Institution of British Architects' 'Plan of Work' sets out the following stages:- inception, feasibility, outline proposals, scheme design, detail design, production information, documentation, tender action, project planning, operations on site, completion.

Complexity leads to specialisation. Early domestic buildings were constructed from bricks, the clay for which was dug and baked locally, from locally quarried stone and from timber felled in nearby forests. They were simple buildings which were designed and built by the owner. A modern hospital or similar building requires a host of specialists performing each of the functions listed above. Indeed, several differently skilled experts are required to design the various elements of the building.

The titles of these experts have changed over the years, and the definitions of the functions associated with these titles are considered in the next chapter.

CHAPTER 3

THE PROFESSIONAL ROLES AND TITLES

As the titles given below tend to have different connotations and embrace somewhat different functions at different periods in time, the present-day descriptions are given and explanations of the roles in former times are left until later in the text.

Architect

The Oxford English Dictionary gives the first occurrence of the word 'Architect' as 1563. He is described as "a master builder - one whose profession is to prepare plans of edifices and exercise a general superintendence over their erection". The Royal Institute of British Architects (RIBA) says that "an architect's main task is to design buildings . . . but he is able to help . . . by judging the feasibility or value of a project . . . inspection of building sites or existing buildings (etc) . . ."(1)

To this can be added "the preparation of working drawings and contract documents, the arranging of the contract, the supervision of the work whilst in progress, the certifying of interim payments and the examination of final accounts"(2). There have been many attempts to define what is meant by 'architect' but Salzman's is as appropriate as any, although there can be few practitioners who have matched his definition. "An architect, then, is a man who is capable of

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(1) RIBA Directory 1972, p 7.

(2) Willis, A J and George, W N B, "The Architect in Practice" (Crosby Lockwood 1970).

envisaging a building, complete and in detail, before one stone is laid upon another and is also capable of so conveying his vision to the actual builders that they are able to translate it into actual reality"[3].

Of the architect's role in relation to his client Lasdun[4] suggests:-

> The Architect should give his client not merely what he demanded in his brief but what he never dreamed of asking for, yet found he wanted all along.

The practical 'master builder' function precedes preparation of plans in the Oxford English Dictionary definition of "Architect", but there is little doubt that most architects from the 18th century to the present time have considered themselves as artists or designers first and foremost. The Salzman definition is of the architect as designer. The dictionary definition, as will be seen later, harks back to the Middle Ages when the architect's origins were rooted in the building crafts of masonry and carpentry.

Surveyor

The Oxford English Dictionary describes the surveyor as "one who surveys - one who has the oversight, or superintendence of a person or thing, an overseer or supervisor. One who designs, and superintends the construction of, a building; a practical architect". This is a wider role than that of the present day Quantity Surveyor whose supervisory role is primarily financial in his 'independent'

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(3) Salzman, B E, p 4.

(4) Lasdun, Denys - Lecture at the RIBA 1965.

capacity. The surveyor or manager in the present-day contracting organisation has a role more akin to that described above except that he is not usually 'one who designs'. The Oxford English Dictionary gives the date of the first mention of the word surveyor as 1440.

There is no doubt that surveyor and architect were synonymous terms in medieval times. Nevertheless, although the definitions of surveyor and architect are very similar, 'superintendence' is the function which takes precedence when reference is made to the surveyor. 'Design' is given as one of his functions when the definition moves from the general to the field of building. That 'surveyor' is a word covering a range of related but distinct disciplines is evident from the composition of the membership of the Royal Institution of Chartered Surveyors which includes building, estate, land, mining, property and quantity surveyors.

Contractor

Contractor is the word used in this paper to indicate the role of the person who, to adopt Salzman's definition of architect, translates the architect's vision into actual reality.

The dictionary is not helpful when one looks to 'contractor', but he can be considered as one who undertakes to execute all trades at an agreed price for others without submitting himself to their control in respect of his methods of carrying out his work. The above description is an amalgam of the descriptions given by two

authorities on building contracts[5], and a point that emerges about the contractor from these authorities is that of 'size'. The contractor is "willing to contract for works on a large scale" in contrast with the "builder (who) may for instance, be a mere mason or carpenter".

The Standard Form of Building Contract refers to the contractor as a person who undertakes to "carry out and complete the works shown upon the contract drawings . . . and in the Contract Bills . . . to the reasonable satisfaction of the Architect"[6]. 'Contractor' has been used in this paper to avoid confusion with the word 'builder' which is frequently used in early works to mean 'client'.

Quantity Surveyor

The role of the quantity surveyor has been summarised[7] as follows:-

> A construction cost adviser who, by virtue of his specialist training and experience, has developed a knowledge of construction economics which enables him to:
>
> 1 Advise on what a project would cost.
>
> 2 Advise on what size and standard of structure can be erected for any given expenditure.
>
> 3 Advise on the economics of a project and the preparation of a budget.
>
> 4 Co-operate with the designers to ensure that a building can be erected within an approved expenditure.

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(5) Cresswell, W T - Building and Engineering Contracts (Pitman 1952) and Emden and Gill - Building Contracts and Practice (Butterworth 1969)

(6) The Standard Forms of Building Contract, Clause 1

(7) RICS "The Services of the Chartered Quantity Surveyor".

5 Advise on tendering procedures and contractual arrangements. Prepare documents for obtaining tenders and arranging a contract.

6 Exercise control during the construction so that the cost is not exceeded without authority.

7 Act with the Architect or Engineer to ensure that the financial provisions of the contract are properly interpreted and applied so that the client's financial interest is safeguarded and that the builder is paid a proper price for the work.

The Banwell Committee[8] stated in its report that the quantity surveyor "should be regarded as the economist of the construction industry". He has been described as "one who advises on all cost and contractual arrangements, and acts as accountant to the project"[9] and as providing "a link between the designer (architect) and the producer (contractor). As cost adviser, technical accountant and specialist on contractual matters . . ."[10].

Clerk of Works

This is as old a title as any in the construction industry. The present day role is "to act solely as inspector on behalf of the employer (client) under the directions of the architect"[11]. This is a substantial reduction in the duties since medieval times.

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(8) The Banwell Committee Report on the Planning and Management of Contracts for Building and Civil Engineering Works to the Minister of Public Building and Works, 1962.

(9) MPBW(R & D) Research and Development in the Construction Industry.

(10) Institute of Quantity Surveyors, "The Quantity Surveyor in the Construction Industry".

(11) Standard Form of Building Contract, Cl 10.

CHAPTER 4

THE EVOLUTIONARY PERIODS

For study purposes two 'periods' have been used which are by no means precise. One cannot point to a time at which one contract procedure ended and another began or say that after a certain date craftsmen stopped designing buildings and architects took over. It is possible to say, for instance, that before the Great Fire in 1666 the majority of craftsmen in London were employed and paid by the client direct and that after that date the majority of London building work was carried out by craftsmen contractors; but such a statement would be valid only for London. Building practices have always varied region by region and do so to this day.

The rate of change varied according to region, and differences of type of client and size of building dictated different procedures. The periods used are:-

1 Norman Conquest to Dissolution (11th to Mid 16th Century)

2 Dissolution to the establishment of the professions (Mid 16th to Mid 19th Century)

PART II

NORMAN CONQUEST TO DISSOLUTION

(11th to Mid 16th Century)

CHAPTER 5

THE HISTORICAL SETTING (11th to Mid 16th Century)

The occupation of a conquered country required defensible buildings. This was the period of castles and fortified manor houses.

Supporting and supported by the Crown, for most of the period, was the Church. Saxon churches were demolished as a means of demonstrating the arrival of a new era and new ecclesiastical buildings of various types were constructed in place of the old. Sometimes the new buildings were constructed on the foundations of the old; frequently they were constructed near the site of the old.

New churches were altered and extended almost before the mortar had set as congregations grew or bishops became more powerful. Parish churches sprang up everywhere. Within 150 years of the Conquest the Universities of Oxford and Cambridge had been founded. Before the end of the period these establishments were to be significant clients of the Construction Industry.

As the country became settled, towns were given charters and trade prospered. People with similar interests acted in unison in commissioning buildings for their town or guild. Towns grew as the Land Enclosure Acts moved people from the villages.

The 15th century growth of overseas trade gave rise to the merchant, and at the same time squire and yeoman farmer emerged as men with substantial needs for buildings. The era ended when Henry VIII

rejected Rome and ordered the demolition of many of the monastic buildings. The period of the Crown and Church as principal clients was over.

In each of the next four chapters, which consider the construction process in relation to its client (the Crown, the Church, the Collective Client and the Individual Client), a similar but not invariable pattern for the chapter has been used:-

- the client himself is discussed; his needs, his decision to build and his resources
- the design and the designer
- execution of the works and the builder
- financial control and the controller
- examples of the organisation in practice
- the relationship of the client, designer, financial controller and contractor - a summary.

CHAPTER 6

BUILDING FOR THE CROWN

INTRODUCTION

- the King as the client
- the client's need
- finance for a building project
- the design of the King's buildings

THE ORGANISATION OF THE WORKS

- the King's decision to build
- the royal command
- supervision by sheriff and constable
- audit by 'view' of law-worthy men
- financial control by sheriff and exchequer
- the appointment of technical men as controllers
- the clerks and masters of works
- powers of the clerk of works
- purveyors
- status of clerk of works
- the role of the 'masters'

THE DEVELOPMENT OF THE OFFICE OF WORKS

CONTRACTS TO BUILD FOR THE CROWN

THE RELATIONSHIP OF THE CROWN, DESIGNER, PRODUCTION MANAGER AND FINANCIAL CONTROLLER - A SUMMARY

INTRODUCTION

The King as a Client

The medieval king spent much of his time travelling his kingdom accompanied by the nucleus of an army and his "household in the field"[1]. He was not always a welcome visitor and his life was sometimes at risk. His concern for his security is evident from writs which he issued[2]. He was frequently in one place for only a few days[3]. As a result he was well informed of events in his kingdom, he knew his building needs and he was closely involved in his building works.

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(1) Tout, MAH, Vol 4 pp 44-45, 1277-79. Edward I's wardrobe needed three carts with three horses each and two carts with four horses each to carry it. There is a suggestion of "additional equipment for the King's household, strengthened to become the nucleus of the army which the king regarded almost as the household in the field". Tout reconstructs the establishment and progress of the royal caravan from the Exchequer Accounts which include "a roll of necessary expenses of the household".

(See also Appendix 1(13). It is possible that the "house of deal, running upon six wheels and . . . covered with lead" mentioned in Liberate Roll 23 Henry III was intended for such a caravan).

(2) There are numerous commands in the writs contained in the various rolls to fix iron bars in windows and make ready rooms in advance of his arrival. (Appendix 1(1), (14) and (18) provide examples of such commands.

(3) Tout, MAH, Vol 4 pp 44-45 warns against assuming that the King was always present at the place of issue of a writ, but it seems reasonable to use the writs as a guide to his travels.

The Client's Need

The King had great need of defensible buildings during the 11th and 12th centuries. The Bayeux Tapestry shows workmen digging with spades and mattocks to provide the foundations for a castle which either William or Robert de Mortain had ordered "should be thrown up at Hastings"(4). The lament of the early 12th century chronicler was that ". . . they filled the land full of castles. They grieviously oppressed the wretched men of the land with castle works"(5). Fitness for function was the primary requirement of the motte and bailey stockades, made of timber, which were replaced with stone buildings as circumstances permitted.

The needs of the King changed as his position became more secure and defence became less important than the wish to impress his subjects and the crowned heads of other countries. Nonsuch Palace, referred to later, is the epitome of such a building(6).

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(4) In MacLagan's 'The Bayeux Tapestry' (Penguin Books Ltd, London 1943) the workmen are shown in sces 52 and 53. Another description of the tapestry suggests that the Normans are shown importing pre-fabricated sections of buildings for the castle. The differently shaded layers for the mound on which the castle stands, in the tapestry, suggest that the earth used for filling was consolidated in regular, horizontal layers.

(5) Peterborough chronicler during the civil war in Stephen's reign. Quoted by Brown in 'English medieval Castles' Batsford, 1954 p 114.

(6) Although the modern assessment of the occupation is of the Saxons absorbing and assimilating the invaders (the Normans becoming anglicised rather than the reverse), reference is often made in 15th century building contracts to a date 'after the Conquest', eg "the yere of King Herry the vj after the conquest xxxi ti" (1442) or "anno Regis Edwardi quarti post conquestum quartd' (1464). See Salzman, BE App B71, 84 and others.

He also commissioned buildings such as Westminster and Vale Royal Abbeys and colleges at Cambridge and Eton. To some extent the type of building commissioned by the King depended on his personal tastes and preferences.

Finance for a Building Project

"Rex E Thesaurario & F & R. Camerariis salutem. Liberate de thesauro nostro Huberto de Burgo Justiciano nostro L marcas ad operacionem castri nostri Dovr."
(The King greets E his Treasurer and F & R Chamberlains of the Exchequer. Deliver from our Treasury to Hubert de Burgh our Justicier 50 marks, towards the work of our castle at Dover(7).

This command from Henry III to his Treasurer in 1221 is typical of many and indicates the manner in which the crown allocated financial resources to its building works in the Middle Ages(8).

The power of the Crown becomes evident in writs which command Edward Fitz Odo to be diligent ". . . even as you wish our love towards you to be continued . . ." or ". . . as you would avoid the ire and indignation of the King"(9).

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(7) This is one of many such writs. See Appendix 1(2), (10), (12) and (17) for similar commands.

(8) See also the writs in Appendix 1(10), (12), (25) and (30) which refer to the issue of money for building works.

(9) Command from Henry III to Edward Fitz Odo, Keeper of the Works at Westminster between 1235-1245. Fitz Odo was a man of position and wealth. He commanded extensive credit. See Knoop and Jones, MM p 17. See also Appendix 1(24).

Even stronger is a command to the Sheriff of Wiltshire to make ready a new chamber for the Queen ". . . as he loveth his life and chattels"(10).

A substantial part of the Crown's financial resources were expended on building works. This was not something which commenced with the Angevin Kings. Alfred allocated a definite portion of his income to building work and to paying "craftsmen whom he constantly employed in the erection of new buildings in a manner surprising and hitherto unknown to the English"(11).

The medieval kings were not, however, economically invulnerable. The command from Henry III to the wardens of the mints of London and Canterbury, "Since we are at present greatly in need of money to complete our works of Westminster, we order you to pay . . . all the money which you shall receive from the issues of the aforesaid mints from the dates of the present (letters)"(12), contrasts with the command to the Sheriff of Wiltshire threatening him with the loss of his life and chattels.

The Design of the King's Buildings

It is certain from the medieval writs and contemporary papers that the early kings had a clear idea of their building needs and were

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(10) Knoop and Jones, MM p 17. The writs referred to in this and the previous footnote are taken from the Liberate and Close Rolls of Henry III.

(11) Salzman, BE p 2 ref William of Malmesbury, Gesta Pont, 255.

(12) Appendix 1(30). See also Appendix 1(25) and (27) which indicate royal financial difficulties.

often closely involved in the organisation of the works. Even before the Conquest we find that Alfred ". . . made a church, small indeed in area owing to the narrowness of the site, but contrived in a new manner of building", and mention of Eadred who ". . . took such an interest in the church (of Abingdon) that with his own hands he measured out the sites of the buildings and laid the foundations . . ."[13].

Much is known about the building works of Henry III, and it has been suggested that he might have been a successful architect had he not been king[14]. Indeed his not altogether successful reign may be due in some measure to his interest and involvement in building works. The extent of this interest can be seen in the writs contained in Appendix 1 to which further reference will be made later.

Equal interest in detailed design and specification is found with the building of Eton College when Henry VI expressed his 'will' in what would today be considered a detailed brief of the sort produced by a public undertaking with technical advisers of its own for guidance of the architect for a project. A mention of this is made in Project No 5 of Appendix 3 where the organisation of the building of Eton College is recorded.

At the end of the first period discussed in this paper, Henry VIII was another king who became involved in the design of the buildings

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(13) Salzman, BE pp 1 and 2, ref William of Malmesbury, Gesta Pont, quoting Bede.

(14) Harvey, MOW p 23.

he commissioned. A fort at Cowes was to be made "according to the platte (plan) devised by the King"[15] and the chapel at Windsor was built to "the platte that was made to his first device"[16]

Perhaps Henry VIII cannot be considered as typical of most medieval kings as he was renowned for his interest in the arts. It is not surprising that his interest included buildings. His interest in building was not restricted to the broad picture. To him is attributed patronage of the world's first water-closet[17].

It is likely, however, that the majority of the kings' buildings were the product of basic, functional needs, experience and observation of earlier buildings rather than inspiration on the part of the king. There are instances of the roof (and other elements) of a building being built in the style of another on orders from the king, and indeed whole buildings were modelled on other, existing, buildings. Examples of this are given in Appendix 1(23) where a hall in Dublin Castle is to be ". . . after the fashion of a hall at Canterbury" and the roof of the King's Chapel at Windsor is to be copied from the roof at Lichfield. There is, however, a limit to the extent to which one building can be copied from another and to the time which the Crown is able to devote to designing and supervising the construction of its buildings.

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(15) Williams, H VIII & C referring to L & P Henry VIII XIV (1), 899

(16) ibid, referring to Hist MSS Com Rep, Var VII, 21

(17) ibid p 168. Williams describes the "close stool for use of the King's majesty" by William Grene, a coffer-maker, at a cost of £6.8.1½d.

Even the most interested king found it necessary to employ men to design his buildings for him. The design process will be discussed later when the organisation of construction work is considered. For the time being it is sufficient to say that medieval kings were no different from any other clients commissioning buildings from the earliest to the present time. They saw something that took their fancy and they copied it; they wanted prestige and they caused buildings to be built that there might be nonesuch to equal them[18].

They were not above faking work "so that it may appear to be stone-work" (Appendix 1(23)), and, indeed, much of Nonsuch Palace was not what it at first sight appeared to be.

Having made the decision to build, whatever his motive, and having as good resources as most and better than many to bring it to completion, the king could initiate the construction process. It only remained to organise it[19].

THE ORGANISATION OF THE WORKS

The King's Decision to Build

Medieval building on the scale required by the Crown required a highly organised and competent industry with "creative thought and

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(18) The reason for Henry VIII's Nonsuch Palace. See Project No 8 in Appendix 3.

(19) Whilst it is true to say that the King's resources were better than many it must be remembered that the 14th and 15th century kings were seldom solvent. They depended on a system of credit based on 'assignment' which occasionally got out of control. See Harriss, GL 'Preference at the Medieval Exchequer', Bulletin of the Institute of Historical Research XXX (1957) for details. A brief description is included in Colvin, HKW p 197. See also, again, Appendix 1(25) and (27).

scientific planning in almost every case"[20]. Time was often of essence, particularly when building castles on the Welsh borders, and the building 'season' was short. Weather conditions often prevented building for four or five months of the year. The frequent impressing of men from districts far from the construction site made necessary military escorts to ensure they did not desert en route, accommodation near the site and all the accompanying problems of feeding and paying them.

One suspects a touch of hyperbole and perhaps petulance in Henry III's command to have a chamber at Westminster made ready for Easter "even though it should be necessary to have a thousand workmen a day for it"[21] but there is ample evidence of hundreds of men being simultaneously employed on larger projects. Then, as now, the larger projects were better organised than the small; the organisation structure and the procedure followed were different.

The Royal Command

The command from the King to the sheriff or constable which put the construction process into motion took the form of a writ of which examples are given in Appendices 1(1), (4), (7), (15) and others.

The writ was usually positive "have our houses of Oxford repaired" (App 1(1)), and made provision for reimbursement "and the expense

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(20) Taken from Brown (ref Brown, EMC p 128) referring to medieval castle building.

(21) Liberate Rolls, Henry III.

shall be allowed to you at the Exchequer". It was sometimes more precise, giving dimensions for the building of "a hall containing one hundred and twenty feet in length and eighty feet in width" and specifying "good wainscoting and painting; . . . (and) a stone turret in front of the same chapel in which four bells may be hung". (Appendix 1(23))

Not infrequently it was necessary to involve a third party, as occurred when timber was required for building Dover Castle (1221-1228). Henry III ordered the constable of Colchester to let the constable of Dover have tree trunks from the royal forest of Essex for the work of the castle (15 July 1222) and later, 27 January 1223, orders the sheriff of Essex to carry them by boats from Colchester to Dover (Appendix 1(7) and (9)).

Supervision by Sheriff and Constable

By the beginning of the 12th century the Norman Kings were well established in England and a procedure for the King's works had developed. With the exception of most new castles, palaces and similar major works, the responsibility for overall production and financial control was vested in the sheriff or constable in whose area the building was to be constructed. A generalisation would be to say that works of a non-military nature would be controlled by the sheriff and defensive works by the constable. There are, however, exceptions to this generalisation.

Audit by 'View' of Law-worthy Men

As a check that the work ordered had in fact been carried out it

was usual for the king's command to provide for the "view and testimony of law-worthy men" (Appendix 1(4) and others) as a condition of the cost being credited to the sheriff or constable[22]. The 'law-worthy men' were not normally technically qualified, or reimbursed for their time, and Colvin[23] records that a doctor, a parson and provisioner were required to 'view' in the latter part of the 12th century. An important part of a sheriff's duties was collecting revenue on the king's behalf from a variety of different sources. He was occasionally authorised to use the income from these sources for a building project. A new building could thus be paid for, indirectly, from several dis-associated sources[24].

Financial Control by Sheriff and Exchequer

The sheriff was, then, the financial controller and supervisor for much of the king's work for the first part of this period. Building was only one of his responsibilities and he was, as was the constable, without technical qualification in building matters.

Financial control at the level above the sheriff was the concern of the Exchequer. The system of writs, counter-writs and seals by which the Exchequer exercised control was thorough. It applied to all Crown expenditure and is fully described by Tout and

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(22) Appendix 1(6) also illustrates another control on the use of timber for building works, this time by the use of tallies.

(23) Colvin, HKW p 54.

(24) Pipe Roll 13 Henry II pp 18, 33-5.

Johnson[25] but is not within the scope of this paper.

If the Exchequer control in the 12th and 13th centuries was sophisticated the same cannot be said about the execution of smaller building works which were carried out by local craftsmen under the overall supervision of the sheriff. It was perhaps unreasonable to expect the sheriff to be competent to supervise building work along with his other activities, and as the volume and complexity of building work increased other means of control had to be devised.

The Appointment of Technical Men as Controllers

The solution adopted was the appointment of technical men. Such an order was given in 1256 by Henry III to "Masters John of Gloucester (the king's mason) and Alexander the carpenter". (Appendix 1(26)). The reason given for the appointments was "Because the king has suffered much damage through causing his works to be carried out by sheriffs and other officers . . ." Masters John and Alexander were appointed, at double their former wages, "while journeying in connection with the said works". This may suggest that the new appointments would not occupy all their time and that they would continue with their other employment when not acting in a consultative capacity. They were appointed "as chief masters of all works of castles, manors and houses on this side of the Trent and Humber, to view and amend the defects

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(25) Tout's "Chapters in Medieval Administrative History" (MUP) provide an intimate picture of the procedure and, indeed, of other aspects of medieval administration. Colvin, HKW p 53 refers to Dialogues de Scaccario, a contemporary treatise, ed C Johnson (1950) for a description of the procedure.

thereof, and to provide for the masonry and carpentry works thereof and to appoint viewers of the same, with mandate to sheriffs, constables and other keepers of the said works to be aiding to them" (Appendix 1(28)). These two writs illustrate very well the clarity of many such medieval commands. The manner in which the extent of the appointees' responsibility, authority and other necessary information is stated is better than that found in many present-day briefs or letters of appointment for managers.

The change from control by sheriff to control by technical 'masters' did not come about overnight. The impression gained from reading the writs about the appointments referred to above (dated 1256) is that the king had only recently suffered damage at the hands of the sheriffs. Colvin suggests, however, "that the sheriff was losing his old omnicompetence" before the end of the 12th century(26).

The dating of the change-over is not too important. What matters is that between, say, 1150 and 1250 government in England became more centralised and complex and master craftsmen entered, what had previously been the province of the clerics and sheriffs, the control of building works at a higher management level.

The Clerks and Masters of Works

The formalisation and centralisation of control of the king's works, which had as a mile-stone the appointment of Masters John and

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(26) Colvin, HKW p 55; but there does not appear to be much evidence to support any great changes before the end of the 12th century. This impression is supported by Harvey, MOW.

Alexander as 'chief masters' in 1256, had as a second mile-stone the appointment of John Blake as clerk of the king's works at Westminster, The Tower of London, the Castles at Windsor, Berkhamstead and Hadleigh and various manor houses, including Clarendon, in 1378. Blake's comptroller, appointed at the same time as he, was William Hanney who had until then been clerk of works at Westminster and the Tower of London(27).

In parallel with the clerical appointments, various 'masters' were appointed. The most notable of these was the appointment of the best known medieval master, Henry Yevele as 'king's chief mason'. To some extent this was a confirmation of an existing state because Yevele had for many years been involved in the king's works, but the title certainly increased his status(28).

Yevele's appointment followed those earlier in the year of Richard Swift as 'king's master carpenter', and John of Brampton as 'chief glazier'(29).

In this manner the separation of financial and technical responsibility was formalised. The clerical appointments for many years to come were mainly from the clergy or the Exchequer, and 'clerk of

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(27) Cal Pat Rolls 1377-81, pp 186, 197, 210.

(28) He had previously been mason and devisor of the king's works at Westminster and the Tower of London (Issue Roll E403/468, 29 May). On 14 April 1378 he was appointed 'capitalis cementarius Regis' (E/101/683/77).

(29) Cal Pat Rolls 1377-81 pp 120, 148, 155.

works' tended to be a political appointment. It was often a stepping stone to higher office in church or state. Of the many clerks of works who followed Blake probably the name most widely remembered is that of one of the less auspicious officers, Geoffrey Chaucer (1389-91).

Powers of the Clerk of Works

The clerk of works' powers included impressment of workmen (including their imprisonment if they proved recalcitrant), taking building materials and requisitioning horses and carts. The Crown, through the clerk of works, or his deputy, the purveyor (see below), was often unpopular with other builders, as activities on their sites often slowed down or stopped if the king's clerk of works exercised his powers. The church's building operations were generally exempt from impressment, but if the king's need was great exemption was not guaranteed(30).

The Purveyors

The scope of the clerk of works' activities was such that he required deputies or local agents. These 'purveyors' acted on a particular site or in a region where the building activities made a deputy necessary. Sites such as Clarendon where buildings were constantly being extended or maintained justified a permanent purveyor, but other sites employed a purveyor for a specific project and then dispensed with his services(31).

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(30) See Colvin, HKW p 192 for examples of impressment.

(31) An account of the organisation of building works at Clarendon is given later in this Chapter.

Even with his not inconsiderable establishment and powers the 14th and 15th century clerk of works did not control the majority of the king's expenditure on building works, as Colvin, HKW, p 199 and his Appendix A clearly demonstrates. Indeed, the clerks of works were probably responsible for little more than minor works.

Status of Clerk of Works

Nevertheless, the status of the clerk of works was that of an esquire. From his annual gift of robes he is seen to rank below keeper of the signet or the chamberlain of the Exchequer but above the heralds, the valets of the Chamber and the sergeants-at-arms(32).

Before leaving the office of clerk of works as established in 1378 it should be made clear that the title clerk of works did not originate in the 14th century. 1378 saw only a widening of the office to include a more highly organised role. The title existed in the middle of the 13th century and Appendix 2 refers to a list of clerks of works from 1265 to 1564.

The Role of the 'Masters'

Much has been written about the 'mistery' of the various crafts. Each craft was passed from master to apprentice and the secrets closely guarded. Care was taken by the craft-masters to ensure that the number of apprentices entering the craft was controlled(33).

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(32) Colvin, HKW, p 195 referring to E101/409/2.

(33) The works of Knoop and Jones, some of which are listed in the bibliography, and in particular "The Medieval Mason", fully cover this subject.
See also Harvey's "Medieval Architect".

It is not surprising therefore, that the pride in the secrecy of craft continued when the master reached a position of high responsibility. Technically the masters were answerable only to themselves.

Until social and economic historians examined and analysed the medieval building accounts it was generally accepted that the gothic buildings were designed by the clerics. Even Thorold Rogers, whose statistics on medieval prices and wages are still accepted, says "when we know who the builder was, he is almost always a clergyman"(34).

Opinion is now, however, unanimous that the craftsmen were the designers(35). Whether or not they met the definitions of 'architect' given in chapter 3 is arguable, as the masters designed only that part of the building within their own 'mistery'.

Socially the master craftsmen ranked as esquires and in their wills and deeds referring to their various transactions they are occasionally refered to as 'gentlemen'. Many of them were literate, even prior to the 14th Century, and they owned freehold property. Harvey observes that they seem to have been on intimate terms with royal and noble personages and were considered eminently

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(34) Rogers, T 'Six Centuries of Work and Wages' (Sonnenschein 1904)

(35) Papworth, SEB was one of the first to identify the master-craftsmen as designers. More recently Knoop and Jones, Harvey, Salzman and Colvin have firmly established the master-craftsman as creator and builder.

suitable for positions of trust[36].

One letter from a sheriff to a master-mason in 1259 probably demonstrates the personal relationship 'vis-a-vis' sheriff and master-mason and perhaps the social level of the master-craftsman generally as well as any. It reads:-

> To his dearest friend Master John the Mason, Williams of Ingelby, Sheriff of Lincolnshire, sends greetings with sincere affection . . . (details of a lead consignment) . . . wherefore make known to me in writing your pleasure and answer on these and other matters by the same bearer if it pleases you. Farewell.[37]

The gothic buildings were remarkable collaborative achievements. Without the closest collaboration and appreciation of the other man's craft by the responsible officers their erection would not have been possible and more than four hundred years of fine buildings would not bear witness to the craftsmanship and design ability of the masters. Appendix 2 contains sources of information about master craftsmen, clerks of works and other officers engaged in building works during this period which substantiate this statement.

THE DEVELOPMENT OF THE OFFICE OF WORKS

The table in figure 6.1 shows the periods during which the various offices existed.

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(36) Harvey, MOW pp 33-4 refers to the Calendars of Patent Rolls for numerous instances of royal craftsmen being appointed to commissions, holding the wardship of manors etc. See also Harvey, MA chs 2, 3 and 6.

(37) Cal Liberate Rolls 1251-60 p 458.

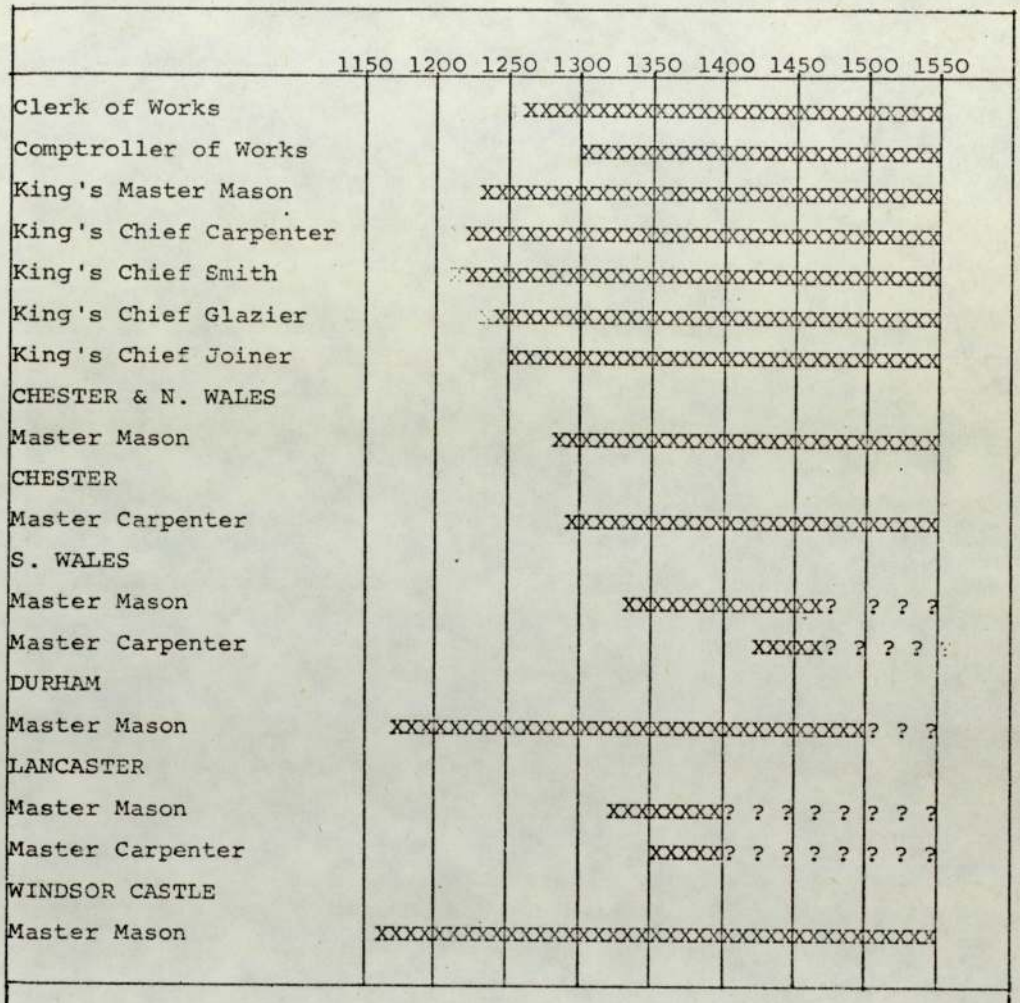

Figure 6.1 Officers of the King's Works up to 1550
table showing the periods during which the various offices existed
(prepared from lists of officers of the works by Harvey, MOW, Appendix E. The table excludes appointments at Westminster Abbey and Canterbury Cathedral. The '?' indicates a period during which records were incomplete)

The development of the Office of Works can be summarised as follows:-

Stage 1 Direct control (conquest to mid 12th century). The craftsman was part of the king's household in much the same way as the maintenance staff of a department in a large organisation (brewery, property company, large private estate) in the present day. The king would issue instructions direct or through an officer. The craftsman would be paid an hourly rate from the Wardrobe, and materials, when not obtainable from Crown lands, would be paid for out of the Wardrobe.

Stage 2 Sheriff and master (mid 12th century to mid 13th century). The sheriff (or constable of a castle or fortification) would be made responsible for execution of the works. He was the senior partner in a temporary partnership with a master craftsman who designed and organised the works for which he was paid an hourly rate or lump sum. The sheriff was responsible for seeing that the works were satisfactorily completed and for payment for materials and men's time. Before he, the sheriff, could recover the sum expended from the Exchequer he had to produce evidence from a law-worthy man that the works had been satisfactorily completed.

Stage 3 Formation of Office of Works (1256). 1256 saw the official transfer of responsibility for control of the king's works from the sheriff to the chief masters, but the change of management had started earlier. This was a change from control by administrator to control by technician, although no doubt as

time went on the technicians themselves became administrators.

At about the same time, clerks of works were appointed as the table in figure 6.1 shows. The partnership of dual control of finance and technology by clerk and technician was put on an official footing.

Stage 4 Regionalisation (early 14th century). The table shows the periods during which some of the regional offices existed. Harvey (MOW p 26) lists the provincial offices as:-

1 England south of the Trent and Humber

2 The Scottish Marches

3 Chester and Flint

4 North Wales (Anglesey, Caernarvon, Merioneth)

5 South Wales (Cardigan and Carmarthen)

6 The Duchy of Cornwall

7 The Duchy of Lancaster

8 The Palatinate of Durham.

Of these offices only the first two had records at the Royal Chancery and Exchequer.

Nor were all the areas administered by the Crown. Chester, Flint and the Duchy of Cornwall were sometimes administered by the Prince of Wales and North Wales was sometimes controlled from Chester. The Palatinate of Lancaster and the Lancaster estates were separately administered and Durham was under the jurisdiction of its prince-bishop. Windsor Castle and Westminster Abbey carried master masons from early times, as the table shows, but these sites were to some extent exceptional for obvious reasons.

The structures of the Office of Works, with the Surveyor-General at its head, can be seen in the organigram which accompanied the description of the works at Nonsuch Palace in Project No 8 of Appendix 3. With some rationalisation, such as the appointment of the first 'Clerk of the King's Works' in 1378, which has been described earlier, the pattern set in the early 14th century continued to the end of the period under consideration and, indeed, formed the basis of the office which exists at the present time and is currently embodied in the Department of the Environment.

CONTRACTS TO BUILD FOR THE CROWN

Appendices 5 and 6 contain particulars and an analysis of 132 surviving building contracts between 1300 and 1540 of which only 13 per cent are for the Crown. This percentage is remarkably low when it is remembered that Crown records have, in the main, been carefully preserved. Of these, the majority, twelve out of eighteen, occurred during the second half of the 14th century and only three occurred after that period.

Of all eighteen contracts, nine were for alterations and extensions to castles during the period 1378-84, another for work on a building in a castle in 1347, three for work at the Tower, two for work at Westminster Palace, one for vaulting St Georges Chapel, Windsor and one (a very substantial contract sum) for building twelve chapels at Vale Royal Abbey. The eighteenth (which was the earliest) should not, perhaps, be included as a contract for the Crown as it was for building a wall around the manor house at Eltham for Queen Isabel and appears to be in the nature of a contract with an individual.

The rash of contracts between 1378-84 was, in fact, nearly all with Dukes or Lords rather than with the King himself; but as it appears likely that the client was acting on behalf of the Crown the contracts have been attributed to the Crown.

There seems, therefore, to be little doubt that building by contract did not account for much of the King's works; the Office of Works preferred to employ men itself, as it was well qualified to organise and control building works.

THE RELATIONSHIP OF THE CROWN, DESIGNER, PRODUCTION MANAGER AND FINANCIAL CONTROLLER - A SUMMARY

The writs in Appendix 1, Project Nos 1, 3, 5, 6, 7 and 8 in Appendix 3 and the contracts contained in Appendices 5 and 6 which are referred to under the last heading all contain information which illustrates aspects of the relationship between the principal participants in the construction process. The projects contained in Appendix 3 are particularly useful as a source of information about the relationships of those engaged on the larger projects as they have been selected to include different building types at different times during the period.

Enough has been said under the heading "The role of the 'Masters'" to establish the 'master' as the designer and the production manager of building works. The relationships to be considered are, therefore;

- the Crown and the financial controller;
- the Crown and the master; and
- the financial controller and the master.

Evidence has been given above of the general dependence of successive kings on their financial controllers which establishes this relationship as being closer than that which existed between the Crown and the master when the master was acting as production manager.

Project Nos 3, 5, 6, 7 and 8 in Appendix 3 demonstrate that on major works, also, the financial controller was the premier link in the chain of command. For the building of Westminster Cathedral (Project No 3), the 'Keeper' acted as director and financial manager. Successive keepers were clerks. The 'keeper of the works' at Vale Royal Abbey (Project No 5), the 'Master of Works' at Eton College (Project No 7) and the 'Surveyor-General' and 'Accountant' at Nonsuch Palace (Project No 8) acted in a similar manner.

On the larger projects described in Appendix 3 the financial controller (clerk) and the master, at the level in the organisation below Keeper, worked together. An example of clerk and master working in concert occurs at Beaumaris (Project No 6) at the end of the 13th century. Similar collaboration appears to have existed at Nonsuch Palace (Project No 8) between the Surveyor and the Comptroller. The relationship between the financial controller and the master, each with his own establishment, provided the basis of the organisation for Gothic building projects for the Crown.

CHAPTER 7

BUILDING FOR THE CHURCH

INTRODUCTION

- the power of the Church
- its liaison with the Crown

THE CLIENT'S NEED

- the shape of his building
- its orientation
- to eradicate the Anglo-Saxon image
- to extend and alter
- to glorify God?

FINANCE FOR BUILDING

- from incumbents
- confraria
- responsibility for: church or laity
- lords and merchants as patrons
- from parishioners
- monastic revenues

DESIGN OF ECCLESIASTICAL BUILDINGS

- by master craftsmen
- by clergymen

THE ORGANISATION IN PRACTICE

- titles, roles and responsibilities
- independent designers and consultants

CONTRACTS TO BUILD FOR THE CHURCH

THE RELATIONSHIP OF THE CHURCH, DESIGNER, PRODUCTION MANAGER AND FINANCIAL CONTROLLER - A SUMMARY

INTRODUCTION

It has been said that in the middle ages, church buildings mushroomed in much the same way as cinemas in the 1930s. How was this, not inconsiderable, development organised?

Until the dissolution of the monasteries in the middle of the 16th century, the Church wielded great power. William I encouraged the Church to establish what were, in effect, ecclesiastical garrisons throughout the country as part of his policy to overawe the conquered inhabitants(1). A contemporary writer(2) said "there are three things that make a bishop in England: the will of the King, the will of the Pope or of the Court of Rome, and the money paid in large quantities to that Court". The statement supports the report on Bishop Alexander of Lincoln and Nigel of Ely written two hundred years earlier:-

> They were called bishops but they were men given up to pomp and display; they so devoted themselves to a military life and the world's pomp, that when they came to Court all men marvelled at them for the crowd of men at arms who attended them.(3)

This pomp and power needed large estates to support it. Many of the bishops' estates included several manors; the bishopric of Lincoln, for example, included forty manors and ten palaces.

There was close liaison between Church and Crown. Clerks, during the course of their careers, might be employed by either, and it

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(1) Cook, EC p 79

(2) Thomas Gascoigne, Chancellor of Oxford University in the mid 15th century. See "Loci et Libro Veritatem" ed Rogers, JET.

(3) "Gesta Shephani", c 1150, quoted by Cook, EC p 80.

was not unusual for a clergyman to move from Church to Court or Treasury. Indeed, there was almost a career structure which included both masters[4]. As the Church was the principal source of education, it is hardly surprising that positions which required literacy were filled by men trained in religious houses.

Bishops, by right, sat in the House of Lords; they often served as diplomats and took up other important appointments. Such was the relationship which existed between Church and State[5].

Much the same can be said of the role of the master craftsman. He was frequently managing a project for the king and at the same time acting as a consultant to the Church (or vice versa) and he was in no way bound to either the Church or the Crown exclusively.

Mention was made in Chapter 6 of the offices of works which the King set up in various regions. Whilst these offices were intended primarily for the benefit of the King, they also served, to a lesser extent, as technical centres for the promotion of building methods and technology. They were, no doubt, a contributory factor towards producing the similarity which existed between the organisations of Church and Crown construction projects. The Church did not possess offices of works such as those of the Crown. The various religious establishments were, to a considerable extent, autonomous. They decided what they needed by way of buildings, raised their own finance for the building works and administered the projects themselves.

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(4) Harvey, MOW

(5) Cook, EC, Chaps 1-3

THE CLIENT'S NEED

The available resources largely determined the quality and quantity of building work. As far as the 'shape' of the building was concerned post-conquest buildings lacked originality. The plans were often based on continental Norman cathedrals, churches or priories. Earlier buildings tended to follow the pattern of the 'parent' foundations but there were no standard plans.

The cruciform, plan of the church is thought to symbolise Christ on the cross; but whether the slight tilt of the choir (when viewed from the nave) which is often noticeable in medieval churches was due to setting-out error, intended to symbolise the droop of Christ's dead head or a device to give an illusion of length to an otherwise, sometimes, squat church, appears to be a matter for individual preference of opinion(6). What seems certain is that ritual, functional and prestige considerations came before aesthetics when the medieval church buildings were constructed.

The freemasonry account of the manner in which the orientation of the church was determined is as follows. The patron, clerics and masons assembled on the site at sun-rise on the Saint's day to which the church was to be dedicated to observe the position of the sun on the horizon. When it was fully visible the master-mason lined in the axis of the church on the sun(7). This is supposed

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(6) All suggestions are given in various published accounts of churches, particularly smaller parish churches.

(7) Laurie, WA, "History of Freemasonry and the Grand Lodge of Scotland" (1859). It would be interesting to check the axis of medieval churches to see if there is any substance in Laurie's account.

to account for the slightly different orientation of the various church buildings.

It is possible that if William I had not encouraged the Church to eradicate the Anglo-Saxon image there would not have been as much Norman church-building in the latter part of the 11th and first half of the 12th centuries as there was. In the event, Anglo-Saxon churches and religious houses were torn down and more magnificent buildings erected in their place(8). The old order was replaced by the new, often with use of some of the old foundations and re-use of original materials. The rebuilding did not end with the first generations of Normans. The early Norman churches and cathedrals were frequently extended, altered or occasionally demolished after a comparatively short life and entirely rebuilt to meet the changing needs of the user. A visit to many of the cathedrals and even humble parish churches will demonstrate this tendency. It is not unusual to find several 'periods' of Gothic architecture represented in one building.

Canterbury Cathedral, which provides the subject of Project No 2 in Appendix 3, demonstrates the frequency with which the east end was rebuilt. It is true that this was sometimes necessary because of burnings but on more than one occasion the chancel was re-built for non-essential reasons. The need of the client was, then, more often than not, for an impressive building rather than one simply to provide shelter for worship, prayer or study.

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(8) The Saxon churches which survived have proved to have considerable merit structurally and aesthetically even if they lacked the grandeur of their Norman successors.

No doubt churches and cathedrals were erected 'ad majorem Dei gloriam' but this was only one reason. They were also built to the glory of the bishop, to reflect the importance and power of the conquerer and impress the subjugated race.

FINANCE FOR BUILDING

Establishments which could sustain bishops in the style of Bishops Alexander and Nigel had substantial resources. The bishops themselves were often men of means and there are numerous reports of chancels being donated by such and such a bishop.

Not all establishments were, however, so well endowed or blessed with a wealthy incumbent, and a letter in 1302 from the Prior of the Cathedral Church of Worcester to archdeacons, officials, deans, abbots, priors, rectors, vicars, chaplains and others about reviving 'the old established confraria . . . in aid of the work of building the Church of Worcester' demonstrates another method of raising finance(9). The Prior's entreaty for alms gave rewards to those whose names were inscribed in the confraria which were:- the remission of one-third "of any penance laid upon him, 1028 days of indulgence (and) we grant also that all benefactors to the building works of the church of Worcester shall share in all the prayers and benefits which are offered in that church and in the whole diocese for ever". The dead whose names appeared in the confraria were granted permission to be buried in the cemetery.

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(9) Worcester Liber Albus, ed Wilson, JM Folio 11, r No 96 SPCK, 1920) From the context a 'confraria' appears to be a list of the confreres (fellow members) who contributed to the building fund. No fixed sum for inscription is mentioned. The letter provides a guide to the personnel which made up the establishment of an early 14th century diocese.

There was divided responsibility for financing the building of parish churches if Bishop Brentingham of Exeter's diocesan ruling reflected ecclesiastical policy in the 14th century:-

> The work of constructing and repairing the chancel of all mother churches belongs to the rectors of the parishes: but that of the naves pertains to the parishioners, without regard to any contrary custom. In the case of chapels, which have their distinct parochial district, the entire duty of maintenance belongs to the parishioners of the chapel, as it is for their convenience such chapels were built and, moreover, they may be obliged to assist, in case of need, the mother church.(10)

In practice, the patron for early churches was frequently the local lord; hence the considerable number of churches which are situated within the grounds of the lord's estate, the special pews for his family, and the squire/incumbent relationship which persisted until recent times. The 19th century works of Jane Austen, Trollope and Hardy admirably illustrate the relationship.

Later, wealthy merchants were often patrons. The 'wool' churches of East Anglia bear witness to the prosperity of the wool trade in the 15th century.

Numerous parish records refer to building works carried out as the result of individual or group donations by parishioners.

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(10) Taken from Cox, EPC p 10.

Monastic revenues and expenditures can be determined from the meticulous accounts kept by the religious houses but the administration of monastic finances was by no means simple. The Rule of St Benedict gave the abbot great power; indeed, he could if he chose (and he occasionally did) disregard his Chapter and commit his house to any project[11]. Matters which pertained to "the welfare of souls and to the great advantage of the church" were the subject of discussion by the Chapter but business matters ('extrinseca negotia') were, by a Papal instruction in 1234, to be discussed outside the Chapter by the "more discreet" members and the full body was only to be informed of their decisions[12]. There is no doubt that ecclesiastical buildings were sometimes erected to the detriment of the layman. The Praier and Complaynte of the (medieval) Plowman (Harl Misc (1808) Vol 1 pp 165-6) which talks of pretentious church buildings and ends ". . . Lorde God, what heryenge (worship) is it to bylden a church of deed stones and tobben thy quycke churches (living men) of her bodyliche lyvelode? (livelihood)" was no doubt fully justified when rents and tithes were taken by the church from the poor to finance an abbot's or bishop's vanity.

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(11) The Rule of St Benedict stated "whenever any weighty matters have to be transacted in the monastery, let the abbot call together all the community and himself propose the matter for discussion. After hearing the advice of the brethren, let him consider it in his own mind, and then do what he shall judge most expedient". The often quoted case of an abbot exercising his authority to the full is that of Abbot Roger Norreys of Evesham (1191-1213) who reduced the house to the deepest penury so that the monks were forced to beg for food and the church fell into ruins. For an account of monastic finances see Snape, RH "English Monastic Finances in the latter Middle Ages" (Cass, London 1968).

(12) "English Historical Review", 1912, p 739.

In the main, however, building finance was probably derived from all the sources mentioned above or, as will be seen later, from the rents from a town and the pyx at the door.

DESIGN OF ECCLESIASTICAL BUILDINGS

In Chapter 6, when the design of the king's buildings was being discussed, mention was made of the false attribution of building design to other than the master craftsman. There is ample proof that the vast majority of ecclesiastical buildings were also designed by the master craftsman.

There are, however, one or two notable exceptions to the general rule in the case of the Church which deserve mention. Abbot Hugh of Selbyn (c 1100) 'devotus architectus', set out a church and other buildings and physically participated in the construction work. This participation seems to have been a regular occurrence rather than a gesture.(13) It is likely that if the Abbot was involved in building operations to the extent he was, he also designed the building as his title 'architectus' suggests.

The fact that a monk, Daniel, (1135) constructed a tower at Broughton (Hunts) with hiding places and passages "fit to accomplish his design"(14) surely marks him as a designer.

The design of the centre tower at Ely Cathedral is unique. It replaced the tower which collapsed in 1322 but it is exquisitely

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(13) Mortet, Textes relatifs a l'arch.

(14) Chron Abb Rames, 225.

integrated in the structure. Alan de Walsingham, the sacrist at the time of the rebuilding of the tower, was referred to as 'vir venerabilis et artificiosus'. A contemporary account refers to Alan's "structure designed with the utmost and most marvellous subtlety of human thought"(15), from all of which evidence Salzman suggests that Walsingham was the architect(16). Cook, on the other hand, attributes the Octagon to the craftsmen, saying that Walsingham "did little else than cause the Octagon to be erected by experienced lay masons and builders"(17).

In the light of the Chronicle, the Salzman interpretation seems the most likely; Walsingham was the designer if not the technical manager for the rebuilding of the tower.

No doubt several clergymen designed single buildings or towers as 'amateurs' but Elias de Dereham deserves recognition as, at least, a semi-professional designer or architect if one accepts Salzman's view that he designed Salisbury Cathedral(18). Master Elias de Dereham(19) was Canon of Salisbury c 1230. From Close Rolls there is no doubt that he acted as a consultant to the king in building

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(15) Hist Eliensis (translated in Coulton's "Social Life").

(16) Salzman, BE p 7

(17) Cook, EC pp 290-1. Harvey in his biography of Yevele and in his "Medieval Architects" agrees with Cook.

(18) Salzman, BE pp 9-10.

(19) The title 'Master' is interesting; this was usually reserved for craftsmen who achieved mastery of their craft.

matters[20] but Salzman admits that it is not possible to assert definitely that he designed the cathedral. Elias provides, incidentally, an illustration of a canon serving the king in the administrative capacity mentioned earlier in the chapter, as he was 'Warden of the Works" ('custos operis') for twenty-five years. Once again, Cook (EC p 294) refuses to accept that a cleric was, in fact, architect for the cathedral and quotes Lethaby as support for his opinion[21].

THE ORGANISATION IN PRACTICE

In medieval ecclesiastical buildings, the design cannot be separated from the organisation of the construction because the designer was usually the master of the works. It is inevitable, therefore, that there may be some overlap of the examples used under the heads 'design' and 'organisation in practice'. There appear to be few comprehensive, contemporary accounts of organisation in this period. The rebuilding, after damage by fire, of the chancel of Canterbury Cathedral between 1174 and 1184 provides an account by an eye-witness which is unique. A synopsis of this project is given in Project No 2 of Appendix 3.

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(20) Cal Liberate R 219, 220 refers to a window to be made to the disposition of Master Elias. Close Roll R 242: work "according to what Master E . . . tells him". Close Roll R 268 says ". . . by counsel of Master E" as does Cal Liberate R 273.

(21) Cook appears to have other support on the Salisbury Cathedral controversy. Prof Hamilton Thompson does not allow that Elias had executive ability as an architect (Arch J XCVIII 1-34) according to Salzman's footnote. Cook mentions Coulton, GG ("Art and Reformation") and Swartwout ("The Monastic Craftsmen") as two of the principal scholars who exploded the myth of the cleric as architect and builder of medieval ecclesiastical buildings as propounded by de Montalembert, who had previously been accepted as the authority (Cook, EC p 289).

Exeter Cathedral Fabric Rolls contain information about other aspects of organisation and the relevant facts contained in these rolls have been compiled as Project No 4 of Appendix 3.

Other than those projects the accounts of the organisation given below have been taken from contracts, rolls and parish records which were concerned only incidently with building works.

Titles, roles and responsibilities

Matthew Paris, writing in the 13th century, warns that the attribution of a building to a particular abbot only means that he arranged for it to be built and provided the funds(22). Whilst this may well be so in most instances, on an ecclesiastical building project there was likely to be a clergyman acting as the establishment's representative and controller. Included within his responsibilities might be collecting revenues for the building works, ordering, purchasing and checking the delivery of materials and paying wages or contract sums, in addition to providing liaison between the establishment (diocese, chapter etc) and the men carrying out the works.

His title might vary considerably -
'Clerici operis novi' was the title used to describe Roger Jones' status as cleric in charge of the new bishop's cloister at Hereford Cathedral in 1412(23).

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(22) Gesta Abbatum (Rolls Ser) i 280 (ref Salzman, BE p 1).

(23) Capes, W "Charters and Records of Hereford Cathedral" (Wilson and Phillips - Hereford 1908) pp 267-9.

'Clericus Operationum', very similar to the last, was a title shared by ecclesiastical and royal clerks of works[24] who were, as the cleric part of the title indicates, recruited from the ranks of the church.

'Custos', with a qualification such as 'novi operis' in 1322 for the erection of the new tower at Ely; 'operis' (without the new) for John Welbourn (who was also treasurer) for church furniture, stalls and figures, at the same cathedral from 1351-85 and for various clerks at Exeter Cathedral from the end of the 13th to the mid 15th centuries are all titles which occur in the various records[25].

'Custos fabricae' also occurs at Exeter, at Wells and at York to mention but three establishments. 'Custos' and 'Clerici' were titles almost exclusively given to clerks, members of the establishment who were performing a clerical cum supervisory role, usually for a set period when a new building or extension was in progress.

Alan of Walsingham was 'custos' at the Ely Tower rebuilding (which was discussed earlier in this chapter); John of Wisbech, of the same monastery, was 'custos' of the Trinity Chapel in the first half of the 14th century.

The duties of the 'custos' or 'clerici' were broadly those of collecting revenues, ordering materials, checking, etc mentioned earlier under this heading.

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(24) Papworth, SEB pp 187-196 gives examples of this.

(25) Exeter Cathedral fabric rolls, various. See App 3, Proj No 4.

Comptroller was a title that also occurred in ecclesiastical establishments. The role of the comptroller was subordinate to that of the 'custos' or 'clerici'. He was concerned more with the day-to-day matters of making payments and checking. The ecclesiastical role seems to have been similar to that of the King's Office of Works role discussed in the last chapter but it does not occur as frequently as the 'custos'. Probably a project needed to be quite substantial before a comptroller was necessary. The impression given is that where a comptroller was employed the 'custos' was not so closely concerned with the project.

Usually the comptroller was a clerk but Exeter Cathedral proves to be an exception as on that project the master of the works was comptroller (see Appendix 3, Project No 4).

Another function of the comptroller was to act as an auditor to the clerk of work's accounts and it may be primarily this function which the 'magister' was performing at Exeter. 'Magister' (master) is another title which occurs in medieval church-building records. Qualifications such as 'operum', 'operis', 'opertum', 'novi operis' and 'fabricae' appear in different places at different times.

Whilst it is a fair generalisation to say that the 'magister' was the master-craftsman there are exceptions, particularly, in the upper echelons of ecclesiastical appointments.

At Croyland in the 14th century the sacristan was 'Magister Operum', the first of the six greater offices in the monastery[26]

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(26) Papworth, SEB p 192.

and rules concerning the office of 'magister operum' were made by John Whitehamstede, Abbot of St Albans, in 1429-30[27]. The master of the works was to:-

- see to repairs within and without the church
- collect rents which constituted the income of his office
- supervise such repairs as were necessary
- restore any surplus of income over expenditure to the common chest.

His was clearly a maintenance role and equally clearly a duty for one of the fraternity, probably the sacristan.

By contrast, at Exeter Cathedral for three centuries, the 'Magister Operis' was a master-mason by training and a Norman Chronicler frequently refers to the "master" when talking of the master of the works at Canterbury who was a mason[28].

Numerous conflicting examples of the holder of the 'magister' office in ecclesiastical developments having clerical or craft origins are given by Papworth (SEB) who concludes that no rigid rule can be applied.

It is probably true to say that generally when the 'magister' was a clerk he had overall supervision of the building works with subordinate clerics acting as 'custos' or 'clerici'. In his dictionary fol 1538, Sir Thomas Elyot gives "Maister of the Werkes" as "a deviser of buildyng, architector et architectus" and there is little doubt that by the end of the period under

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(27) Annales Monasterii Sancti Albani (Rolls Series 1,279).

(28) See Appendix 3, Project Nos 2 and 4.

consideration the master was usually recognised as the man responsible for the design, execution of the works, technology, man management and bringing together the actual resources of manpower and materials to make the finished building. He also had some capacity to estimate costs and take out quantities[29].

The master craftsman, usually a mason, who was employed by an ecclesiastical establishment as 'magister', held an appointment of considerable dignity. He was engaged by the Dean and Chapter for a set term which was sometimes 'for life' but more usually for a period of years. In some instances he was required to devote all his time to the interests of the 'house' but in others he was paid a lower annual stipend and an agreed rate per day when he was present on the works. It was not unusual for him to be provided with accommodation, as was so at Exeter[30], and gifts of robes often went with the appointment. No doubt the size of the project had some bearing on whether the magister was expected to devote all or part of his time to it.

Independent Designers and Consultants

The master was not always his own designer, or indeed his own master. This applies not only to ecclesiastical buildings; there are examples of various 'clients' using independent designers and consultants. In 1381 the Church of St Dunstan in the East, London was extended. A south aisle and porch was built according to the 'devyse' of Henry Yevele[31]. In 1433 at Chester, the Church of

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(29) Knoop and Jones, MM p 197

(30) See Appendix 3, Project No 4. For examples of master masons' contracts, see Knoop and Jones MM p 30.

(31) BM Harl Ch 48E 43.

St Mary on the Hill was extended by the addition of a chapel built by Thomas Betes, mason, under the supervision of John Asser, chief mason of the county[32], and in 1442 the tower of the church at Dunster, Somerset was built by John Marys of Stokgursy according to a 'patron' (pattern or 'plat') made by advice of Rychard Pope, free mason[33].

To what extent 'consultants' were employed in the manner indicated above it is difficult to say. Harvey (MOW page 61) lists six examples, three of which have been given above, of independent design or overall supervision by someone other than the mason engaged continuously on the works. All are between 1381 and 1518.

But if there is doubt as to the extent of the use of consultants as independent experts, there is considerable evidence of 'masters' being called from considerable distances to advise on or design buildings or parts of buildings.

William of Sens is mentioned later as one such master, and Harvey (MOW pp 84-6) lists some sixty such instances where men travelled more than 15 miles to advise or design. Those less than 15 miles he does not include "as such instances are very numerous". More than half related to ecclesiastical projects. A map showing the extent of the mobility of craftsmen is given with the description of the extension of Exeter Cathedral in Appendix 3, Project No 4.

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(32) Earwaker, "History of St Mary on the Hill", p 31.

(33) Arch Jnl Vol XXXVIII p 217.

CONTRACTS TO BUILD FOR THE CHURCH

In the previous chapter, under a similar heading, reference was made to the remarkably low percentage (13 per cent) of building contracts which involved the Crown.

It can be seen from the analysis in Appendix 5 that rather more (23 per cent) of all the surviving building contracts between 1300 and 1540 were with the Church; but even this percentage is not high when one considers the likelihood of Church manuscripts surviving and compares it with the greater hazards which would appear to confront the parchment or paper contract documents of the individual client or collective client.

The thirty contracts for the Church were distributed fairly evenly over the whole period. The client was, in sixteen instances, a cleric of some sort with a title such as the dean or priest. Two contracts named an abbess, five an abbott, five a prior and three a bishop.

The majority of the contracts were for work to chapels, cloisters, dormitories, churches etc, but no less than four were for rows of shops, usually, with living accommodation over them. Two of the contracts were for 18 and 20 shops - quite sizeable developments. The remainder include two wharves or landing places, two houses, some chambers, a bridge, a windmill and a brewhouse.

In only two instances was there reference to drawings being provided

but seven contracts mentioned other buildings or a 'model'[34] on which the proposed building was to be based.

The Church does not appear to have used contracts for many of its larger works. No doubt when major projects were carried out the principals preferred to employ workmen themselves and engage a master craftsman to supervise the works. Perhaps, too, the Church tended to use contracts when it considered the proposed building was of secondary importance.

THE RELATIONSHIP OF THE CHURCH, DESIGNER, PRODUCTION MANAGER AND FINANCIAL CONTROLLER - A SUMMARY

Successful organisation depended on a partnership between the cloth and the craft. To borrow Coulton's words[35], "Neither churchman alone, nor mason alone, could have done what churchman and mason did in harmonious partnership".

A typical organisation structure would be as that illustrated for the works at Exeter Cathedral: an inverted tree with two trunks, one trunk controlling the finance and general administration, the other the design and execution of the works.

The client's need was for a shelter which he would expect to be similar to that of his parent house in France. It is almost certain that a parchment or board with a dimensioned plan and

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(34) 'Model' appears to have been used for 'plan' occasionally. It is difficult to know from the context if a drawing or a model was to be used.

(35) Coulton, G G "Art and the Reformation".

possibly elevations was used to convey the client's concept of his need across the Channel to England.

Finance for the project was raised in many ways: from rents, donations by the wealthy, and widows' mites; from the wealth of the bishop or house-to-house begging by monks. Finance was not normally a major problem as time was not important.

The design of the building was by the master-mason for the majority of projects. He 'drew his own plotte', had his own 'molds' (templates) of pillar sections etc, some of which had probably come from France and had been (and continued to be) handed on from master to apprentice.

Materials were selected by the master craftsman who visited the quarry or selected the trees for felling. He organised the winning of the materials but they were ordered and paid for by the clerk of works.

Similarly the master of the works, via the master craftsmen, engaged and dismissed workmen who were paid by the clerk of works. The clerk of works would probably delegate part of this work to the comptroller if the size of the project warranted one.

Bringing together the physical resources on site was the job of the master of works. It was he who planned production and determined the sequence of operations. Churches and cathedrals were normally built from east to west as the chancel or choir was the

vital part of the building[36]. The nave was for the "convenience" of the congregation. It probably started life as a rude shelter which was replaced with a more permanent structure as funds were forthcoming. It could be, and frequently was, extended several times as the settlement became established and the congregation increased in size.

Medieval churches and cathedrals, so admired now, were often symbols of vanity, pomposity and oppression. The client looked to the future and lacked entirely the present-day concern for the past and its conservation. Ecclesiastical buildings were frequently altered, extended, demolished and rebuilt for the shadiest of motives and without regard to the past or with the positive intention of expunging it.

It is a paradox that the buildings which, in the present irreligeous era are regarded with such concern, were the product of a vital, brash period in the church's history which had no great regard for the men who designed and built them.

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(36) The choir of Canterbury Cathedral was rebuilt from west to east but the nave was already in existence. The new choir was being stitched on to the existing building. See Appendix 3, Project No 2.

CHAPTER 8

BUILDING FOR THE 'COLLECTIVE' CLIENT

INTRODUCTION

- definition of 'collective'
- the distribution of contracts among Collective Clients

FINANCE FOR BUILDING

- benefactors
- subscriptions

THE DESIGN

- specification
- use of drawings
- anonymous designers
- craftsmen as designers

EXECUTION OF THE WORKS

- the uniform practice
- London systems
- contractual arrangements

SUPERVISION OF THE WORKS

- by committees
- by salaried supervisors

THE UNIFORM PRACTICE - AN EXAMPLE

SUMMARY

INTRODUCTION

'Collective Client' has been used to include any group of (more than two) persons with a common need for a building. 'Collective Client' includes such clients as the colleges of Oxford and Cambridge universities and groups of parishioners who wished to extend their parish churches(1). It also includes the various committees of twelve, burgesses, town constables and similar groupings of 'honest citizens' which were the fore-runners of the town and city councils.

The earliest contract for a collective client occurs in 1322(2) with a clerk and two civilians contracting for the building of a tower, wall and gate in Chester. In 1335 the parishioners of St Martin in Coney Street, York contracted to have a row of houses built. In 1372 parishioners in Arlingham, Gloucestershire contracted to have their bell-tower completed, and two years later in 1374 the first of many contracts for building works for the colleges at Cambridge was drawn up.

During the next century, contracts with Collective Clients include works on two bridges, four church towers (the bridges and towers were all separate contracts in different parts of the country), a quay, a guild-hall and a house. Groups of parishioners or citizens were acting on behalf of their fellows in sponsoring building works.

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(1) See Chapter 7 about responsibility for church building; parts of the structure were the responsibility of the ecclesiastics and other parts the responsibility of the parishioners.

(2) See Appendix 4 for particulars of this contract and of the other contracts mentioned in this paragraph.

By far the largest number of surviving contracts made during the 15th and first half of the 16th centuries were with the colleges which make up Cambridge University, as can be seen from the table in figure 8.1.

It is interesting, if not necessarily significant, that the first of the contracts mentioned above was for a building which was required for defensive purposes; but that the need was shortly to change to buildings for social and educational purposes.

No doubt the earliest building works were carried out by direct labour or oral contract. It is known that some of the Oxford Colleges, based on earlier religious foundations, came into being in the middle of the 13th century and it is unlikely that no building works were carried out during the 100 or more years which preceded the earliest surviving contract in 1374. Hostels were required to accommodate students long before the licences were given in the 1340s for the construction of collegiate halls(3).

FINANCE FOR BUILDING

The Collective Client might have materials which could be used in the construction or even be able to undertake some of the works himself, but generally his contribution was financial rather than physical.

Strangely, because building accounts and other records have survived from the 14th and 15th centuries, there are few references

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(3) See Willis and Clark (HUC, Vol 1, pp xiii - xxx and chronological summary, pp lxxxiii - lxxxv).

Client \ Period	1300 -49	1350 -99	1400 -49	1450 -99	1500 -40	Total
Citizens	1	1	5	2	-	9
Parishioners	1	1	1	1	2	6
Colleges	-	1	7	4	11	23
Totals:	2	3	13	7	13	38

Figure 8.1 The distribution of contracts among Collective Clients (prepared from Appendices 4 and 5)

Client \ Source of design	drawings referred to		drawings by 3rd party		design based on another bldg. or mdl.		no reference to drawing or model		Total (contracts)	
	No.	%	No.	%	No.	%	No.	%	No.	%
Citizens	0	0	1	11	3	33	5	55	9	100
Parishioners	0	0	1	17	1	17	4	67	6	100
Colleges	9	39	0	0	3	13	11	48	23	100
Totals:	9	24	2	5	7	18	20	53	38	100

Figure 8.2 The use of drawings or models by Collective Clients

Client \ Contract arrngmt	Direct Labour, client to purchase materials		Contractor to provide all labour, matls. & plant		Contractor to provide labour; client some matls. & plant		Total (contracts)	
	No.	%	No.	%	No.	%	No.	%
Citizens	2	22	4	44	3	33	9	100
Parishioners	4	67	2	33	-	-	6	100
Colleges	6	26	14	61	3	13	23	100
Totals:	12	32	20	53	6	16	38	100

Figure 8.3 Client/Contractor contractual arrangements (1300 - 1540)

to sources of finance. It is known that "sundry and divers marchauntes in London gave emongist theyme xli towardes the hyeing of the newest Orgaynes"[4] for 'John's' College, Cambridge in the 1520s and that building was financed from subscriptions from fellows and others[5] but otherwise little is known about sources.

There are numerous examples of building works, after the period under consideration, being financed in part and occasionally entirely by the master of the college. Whilst this munificence is not so apparent before 1550 the Master of Trinity College, Cambridge in the 1440s made a substantial contribution to the cost of building works[6], and he was not the only early master to do so. In only one instance, however, does one read that ". . . Robert Wodelarke founded, built, and at his own cost and outlay erected and established . . . a certain house or hall, called the hall of Saint Katerine . . ." (1473)[7].

In 1466 the Master of Clare Hall went to London to solicit subscriptions to enable the Schools of Philosophy and Civil Law to be rebuilt[8]. He was apparently successful in his mission. From University accounts in the latter half of the 15th century it appears that 'benefactors' were the principal source of finance for many University building projects[9]. One such example occurs at

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(4) ibid, Vol 2, p 292
(5) ibid Vol 2, p 452
(6) ibid Vol 2, p 448
(7) ibid Vol 2, p 86
(8) ibid Vol 3, p 13
(9) ibid Vol 3, p 15

Christ's College Cambridge in the first decade of the 16th century when Bishop Fisher supplied the money for building works which was paid through John Scott who was probably acting as Clerk of Works[10].

THE DESIGN

The length, breadth, and height of the building was often stated in early contracts and usually the materials to be used were specified. The parishioners who commissioned the houses in York in 1335[11] specified that the row of houses should be 100 ft in length and 18 ft at one end and 15 ft at the other in breadth. The sizes of scantlings are given and the positions of windows and doors are described. So detailed is the specification that it is possible that someone with expert knowledge of construction technology was consulted. There is, however, no reference to an independent designer so it seems likely that the contracting carpenter assisted with the preparation of the contract, or perhaps one of the parishioners had the necessary knowledge.

The towers in Chester and Arlingham which were built for parishioners in the 14th century[12] are also described in considerable detail. In the contracts John of Helpeston is to "faciet et fundabit ibi quadem murum solidum altitudinis viii ulnarum regiarum cum quadam porta" at Chester and similar conditions with regard to corbels, collar-beams and floors "construet ac faciet corbayllas ubi fundi predicti turris competenter poterint poni & unum hostium in parte

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(10) ibid Vol 2, p 199

(11) Appendix 4/Contract 14 but see Salzman (BE pp 430-32) for details of the proposed structure.

(12) Appendix 4/Contracts 12 and 23.

orientali predicti turris ut homo supra trabes ecclesie vocatas Wyntbeemes intrare et egredere poterit" appear in the Arlingham contract. In nearly all the contracts for citizen and parishioner Collective Clients between 1300 and 1540 there are detailed specifications of the work to be carried out.

Drawings were often used for contract purposes or other buildings provided the basis for the proposed building. An analysis of Appendix 5 indicates the incidence of use as shown in figure 8.2. Comparison of the figures in that table with those for all types of client (see Appendix 5) shows that Collective Clients used drawings to a greater extent than others. Who produced the designs when drawings were used for building works?

There is little evidence that drawings were produced by the client before 1550. Although building accounts for the Cambridge Colleges exist from the 14th century they give little evidence of the identity of any independent architects in the role defined in Chapter 3.

Willis and Clark state that "the employment of the towers (at Queens' College, in the middle of the 15th century) is a peculiarity which offers presumptive evidence that the architect of the other two royal colleges of Kings and Eton was employed to design the buildings of this smaller foundation"(13). It seems likely that if the records of Queen's College gave the name of the architect the authors would have passed it on, particularly as they make further reference to the college being "the work of an

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(13) Willis and Clark (HUC, Vol 2, p 11)

excellent architect" when considering the collegiate plan in Volume 3 (p 265).

Similarly, reference is made to "the architect employed by Archbishop Chichele for his Colleges of S Bernard (1436) and All Souls (1437) . . . who combined the two tabernacles and central window below, as used at Merton College, with the central tabernacle above, as used at New College"[14]. But the architect remains anonymous.

The nearest we come to the employment of independent architects occurs in the middle of the 15th century when Reginald Ely, a former head-mason at the old court of King's College, and William Ruskyn, one of the clerks of the works, were consulted about works at Trinity College[15].

An interesting instance of payment of fees for the design in connection with lengthening a chapel and associated works at Christ's College, Cambridge occurs in 1510. William Swayne, probably the same person who was employed as 'comptroller' of the works at King's College Chapel in 1509, was paid £10. If the William Swayne mentioned as designer was the same man who acted as comptroller it appears to be one of the few instances where one person was concerned with both design and financial control at more or less the same time[16]. There is no indication of Swayne's

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(14) ibid, Vol 3, p 287
(15) ibid, Vol 2, p 449
(16) ibid, Vol 2, pp 199-200.
Swayne is mentioned in this manner on the strength of Willis's comment "The design appears to have been given by William Swayne, from the following most interesting entry." (Willis quotes the account and concludes ". . . and the sum paid, equivalent to about £120 at the present value of money, is evidently an architect's fee."

profession or craft.

Occasionally, a design was paid for separately as at St Johns College in 1524 where an account records:-

> Item gyffin to the Master mason of Ely for drawing a drawght for my lordes tumbe and for his arvse of the chapell . . . iijs iiijd.(17)

See also the construction of buildings at Trinity College 1387-1437 referred to below for mention of design by a third party.

It seems safe to assume that the design was usually by the master craftsman as part of a 'design and build' agreement even if there are few records of drawings in existence before 1550. If endorsement of the designer/builder role of the master craftsman is required it is given by Willis and Clark when they are comparing the style of the collegiate buildings:-

> At the commencement of the period we are considering, (14th and 15th centuries) a building contract, like the corresponding documents during the middle ages, is careful to specify the number of floors, doors, windows, chimneys, etc which the proposed building is to contain; but unless some well-known building is directed to be copied, the style is very rarely alluded to. This leads to the conclusion that it was left to the builder, either because, from the prevalence of a given style at the date of the contract, all reference to the subject would have been

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(17) ibid, Vol 2, p 282 referring to Dr Metcalf's Account Book, Michaelmas 1524 to Michaelmas 1525.

> superfluous, or because he could be trusted to invent a suitable treatment for himself. A builder therefore, or, - as he is usually designated, a free-mason - combined in his own person the functions of architect and builder, as we understand the terms.

The authors add "that the same person was often as willing to undertake small repairs as to design important buildings"[18].

EXECUTION OF THE WORKS

A Collective Client was not usually the sponsor of more than an occasional building project and consequently did not have an establishment of clerks and masters to supervise and execute work for him in the same way as the Crown or Church. Willis and Clark[19] say:-

> It was the uniform practice, down to the end of the 17th century, to purchase the materials required for building operations in large quantities, and to engage workmen at daily wages to make use of them.

The authors were referring to the colleges which make up the University of Cambridge but an examination of the building accounts of Collective Clients generally supports Willis and Clark to some extent at least.

Earlier in this chapter reference was made to the contracts which Collective Clients entered into with master craftsmen, and Knoop and Jones[20] note that three systems of municipal building

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(18) ibid, Vol 3, p 527
(19) ibid, Vol 1, x civ
(20) Knoop and Jones, MM, p 35.

existed in London in the middle of the 14th century (1332):-

(a) direct labour and purchase of materials by the client.

(b) direct purchase of materials by the client and the employment of a master craftsman on a contract basis.

(c) 'lump-sum' contracts under which the contractor provided all that was necessary for the completion of the works.

Knoop and Jones point out that the client was occasionally his own accountant and master of works but that this was not a common arrangement.

Appendix 5 shows that the arrangements which were used by Collective Clients for building works when contracts were entered into were as set out in figure 8.3.

The arrangements do not change significantly over the period 1300-1540 and Collective Clients appear to have been similar to the other clients in the arrangements they adopted, although Collective Clients were, perhaps, less likely to provide some of the materials and/or plant themselves.

The table in figure 8.3 refers only to building projects where a contract was entered into and takes no account of the, what must have been numerous, instances where clients simply engaged workmen themselves and adopted the 'uniform practice' which was put forward by Willis and Clark and is quoted above[21].

SUPERVISION OF THE WORKS

There was a tendency for Collective Clients to supervise by

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(21) Willis and Clark (HUC, Vol 2, pp 439-450)

'committee'. This tendency, of which many examples can be found in the records of the colleges of Cambridge University between 1550 and the 19th century, is apparent as early as 1457. A Syndicate was appointed with full powers for making all necessary arrangements for building a "New School of Philosophy and Civil Law and a Library"(22). The syndicate included the Chancellor, the Lord Bishop of Durham and other names which, from a study of contemporary papers, are known to belong to men of power and influence in the University. Two Proctors were appointed "to supervise the building work, to make all purchases and to conclude all bargains thereunto appertaining". Another syndicate was appointed to collect funds for the works.

The municipal clients appear to have functioned in a similar manner. The names of several citizens or parishioners appear on the contract but the day-to-day administration was delegated to wardens, clerks of works or similar representatives on either an honorary or salaried basis(23).

THE 'UNIFORM PRACTICE' 1387-1437 - AN EXAMPLE

An example of the 'uniform practice' can be seen at Trinity College in the 14th and 15th centuries when several buildings were constructed(24).

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(22) ibid, Vol 3, pp 12 and 13

(23) Knoop and Jones, MM, pp 35-41, find that wardens usually administered bridges. The numerous churchwardens' accounts show that parish councils acted in a similar manner.

(24) Willis and Clark (HUC, Vol 2, pp 439-450).

The Hall

Building commenced on the Hall on 15 August 1387, men being employed for some 15 weeks by the college. It seems likely that building operations were completed in 1389-90. Weekly payments were made to John Maidston, probably a master mason. Materials were purchased as the works proceeded.

Ten years later, in 1399-1400, a 'leaden lavatory' was made which, with sundry other minor works, occupied a mason and two labourers for 5 - 6 weeks.

The Bakehouse

In 1411-12 a new bakehouse was commenced in stone and took until 1414-15 to complete. It was a relatively minor building occupying two masons, one or two labourers and two 'leyers' for some of the first year. Materials for the structure and hurdles for the scaffold were purchased by the college. Agreements were entered into with different workmen for materials and labour.

During the second year (1412-13) three leyers and one labourer were employed. Arrangements were made for the woodwork; a contract was drawn up with two carpenters, and in June Richard Wryth was sent to view timber.

In 1413-14 the stonework gable ends were built and the other walls built up in preparation for the roof-timbers which were erected in 1414-15. Also in 1414-15, two tilers commenced laying the roof-slates, doors and ironmongery were fixed, window glass was purchased and the building was practically finished.

A special payment was made to a master mason named Dodington in the first year of construction which was probably his fee for the design. In addition, Dodington and his wife and servant were entertained at dinner and supper.

The Library

This building was commenced in 1416-17 and completed in 1421-22. In the first year a payment was made to Dodington of 6s.8d and the accounts follow a similar pattern to that described above: relatively small payments to numerous workmen.

Welfare of Workmen

A feature of these building projects (and another for the same college commenced in 1426-27 which took about ten years to complete) was the remuneration of the workmen. In addition to their pay they were fed, housed and partially clothed by the College. In addition to his weekly wage the principal mason ('latamus principalis') received an annual salary of 15s.7d.

Construction Periods

Examination of the dates given above shows that the relatively simple buildings took several years to complete when the 'uniform practice' of building organisation was adopted.

SUMMARY

It is probably true to say that the emergence of the Collective Client marked the beginning of stability in the land after the confusion which followed the Conquest. Groups of people with common interests and aims were coming together to sponsor building

works to meet a common need. That they were able to do so shows their confidence in the future and the beginnings of security. As the role of the Collective Client increased so the volume of work commissioned by the Crown and Church diminished. The colleges, which were founded on monasteries in many instances, took over from the Church the role of educator at the 'higher education' end of the scale. Bishops and priors gave way to syndicates as the building client(25). The Crown which, in the person of Henry VI, was the client for Eton College in the middle of the 15th century was soon to fade from the scene as direct sponsor of education. The place of the Crown, like that of the Church, was to be taken by committees.

In much the same way, the common citizens and parishioners took a more active part in shaping their built-environment. Towns received charters; the power of the church was, slowly at first, passing to the people. The Collective Client was on the move and becoming an increasingly important patron of the Construction Industry.

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(25) Willis and Clark (HUC, Vol 1, pp lxviii - lxx) refers to the charters which prescribed the constitution of some of the colleges and the subjects which were to be studied.

CHAPTER 9

BUILDING FOR THE 'INDIVIDUAL' CLIENT

THE CLIENT'S NEED

FINANCE FOR BUILDING

THE DESIGN

THE WORDING OF THE AGREEMENTS TO BUILD

THE USE OF DRAWINGS

EXECUTION OF THE WORKS

- administration for the nobility and squirearchy
- craftsmen undertaking the work of other crafts
- the relationship of project size to the use of written contracts

SUMMARY

'Individual' has been taken to include simple partnerships of two individuals (see Appendix 5). The reason for this is that few contracts with partnerships of this type exist and they most closely resemble those with individuals.

Knoop and Jones (MM p 38) state that there is not much information about the administration of private building works. This is not surprising when one considers the risk of loss of documents belonging to individuals. Inevitably, the records of the wealthy and established families have survived to a greater extent than those of merchants and less influential persons.

From the tables in Appendices 4 and 5 the distribution of contracts for Individual Clients over the period 1300-1540 is found to be:

1300 - 49	1350 - 99	1400 - 49	1450 - 99	1500 - 40	Total
10	6	9	10	7	42

35 per cent of all the contracts in Appendices 4 and 5 during the period were for Individual Clients; the contracts were, as can be seen above, distributed quite evenly throughout the whole period.

THE CLIENT'S NEED

The client's need for building works can be classified under four broad headings:

a) residential: including new and alterations and extensions to existing buildings

b) commercial: shops, inns and taverns

c) industrial: mills, brewhouses, malthouses

d) religious: church extensions, aisles and chapels.

In two instances, the shops had residential accommodation as part of the development and both uses have been noted in the following table. This accounts for the apparent difference in the total number of contracts shown in the last and in the following table.

The distribution of building type is as shown in figure 9.1. For individual clients, not surprisingly, residential need accounted for the majority of the contracts. The distribution was quite even over the whole period except for the religious buildings, which nearly all occur in the first half of the 15th century(1).

FINANCE FOR BUILDING

The financial circumstances of the Individual Client were similar to those of the Collective Client in that his principal resource was the coin of the realm. Payment 'in kind' was not, however, unknown and payment for the building of a hall, chambers and a stable in 1308 for which the client was a furrier was made partly in furs (Appendix 4/3). ("et dimidio centum cabl'orum orient, una furr' ad capucium mulierus precii Vs et in una furrura pro roba ipsius Simonis"(2) - Simon was the carpenter contractor).

Occasionally the contractor took surplus materials as part of his

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(1) The precise nature of the client's need is outside the scope of this paper but Colvin in 'Medieval England', describes the social background to the period. Barley (EFC, Chaps 1-3) provides interesting details about the evolution of the medieval house and the needs of men and their homes.

(2) Salzman (BE) suggests cabl'orum are marten-skins.

Period / Bldg.	1300 -49	1350 -99	1400 -49	1450 -99	1500 -40	Total
Residential	9	5	2	6	5	27
Commercial	2	0	1	1	0	4
Industrial	0	1	1	3	1	6
Religious	0	0	5	1	1	7
Totals:	11	6	9	11	7	44

Figure 9.1 The distribution of building type (1300 - 1540)

Source of design / Client	drawings referred to		drawings by 3rd party		design based on another bldg. or mdl.		no reference to drawing or model		Total (contracts)	
	No.	%	No.	%	No.	%	No.	%	No.	%
All Clients (excld. Individual Clients)	12	14	6	7	16	19	52	60	86	100
Individual Clients	2	4	0	0	6	13	38	83	46	100

Figure 9.2 The use of drawings or models by Individual Clients

remuneration[3] and, as can be seen from the payment column in Appendix 4, robes and gowns were occasionally provided in part payment.

THE DESIGN

At the lower end of the Individual Client scale fitness for function and economics were no doubt primary considerations in determining the design. Apart from the contracts for religious buildings (which were almost all chapels or extensions to churches), nearly all the buildings for Individual Clients were on a domestic scale and the designs would have fallen within the traditional pattern for the district.

Addy[4] traces the form of domestic buildings from prehistoric times and finds that domestic buildings were similar universally in Roman times and that the earliest houses still in existence do not vary greatly from those in prehistoric times. The evolution from circular on plan, through rectangular with rounded corners, to 'A-frame' and 'cruck-frame' has been the same throughout most of Europe. Only the availability of local materials has caused much variation in the design.

The most fundamental 'rounded' houses of 'charcoal burner's hut' type would not have been constructed by professional builders, but

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(3) The carpenter building the shops in the Cornmarket in 1310 (Appendix 4/4) was to have the timber from a house on the site. There are other examples of such perquisites.

(4) See Addy (EEH, Chaps 1 & 2) for details of this evolution. Addy quotes Tacitus about the similarity of houses in Roman times and illustrates the continuation of this similarity with photographs of existing buildings.

no doubt the 'A-frame' and 'cruck-frame' houses were. Addy points out that most early houses had the form of an inverted ship[5]. Even 'bay' houses are not far removed from this form.

The 'bay' was a unit of measure used in the 12th and 13th centuries for domestic building purposes. Addy gives examples of houses sold by 'the bay' and refers to Oakham Castle, Rutland, built in the 12th century, which is a '4 bay' building[6]. According to Addy a bay was usually 16 feet (1 perch) in length by approximately $12\frac{3}{4}$ feet in breadth. The traditional explanation of the bay dimensions is that two pairs of oxen occupy 1 perch and that these rural building sizes were related to the accommodation of oxen. Whilst this may well be an explanation, the dimensions also approximate to those which can conveniently be spanned with the timber scantlings which would be used for buildings of this type. It is possible, therefore, that the dimensions of the bays described by Addy have emerged for technical rather than agricultural reasons.

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(5) Addy (EEH, pp 28-29) also refers to the use of names for buildings which have ship origins, eg 'nave' (ship); similarly 'nave' in German is 'schiff' (ship); 'hulk' was a 10th century name for a house; 'hearth ship' is the Norse term for a house.

(6) Addy (EEH pp 32-33): "In deeds and wills of the 16th and 17th centuries houses are very often estimated or described by the number of bays which they contain . . . In Derbyshire hay is sometimes sold by the 'bay', and in the 16th century a 'gulf of corn' was as much as would lie between any two pairs of 'crucks' . . . old surveyors regarded the bay as a standard of measurement."

Teapot Hall, Scrivelsby, Horncastle[7], approximated to the bay dimensions as do several of the cruck-frame buildings, but they are not strictly speaking bay houses.

The bay house is said by Mason[8] to be "perhaps the commonest house type found in the Weald". It "dates at least from the early 14th century but was in use throughout the medieval period and still later as a fully two-storied dwelling".

A study of Mason's illustrations reveals that the dimensions of the bays are different from those given by Addy and that the Wealden bay is far from constant in size. It varies from approximately 10 feet to 16 feet in length and from 13 feet to 24 feet in width. Nevertheless, the bay, as a module, existed in the Weald at a time when that district was probably one of the most isolated in England.

To some extent, then, the design of the domestic buildings which comprised much of the building need of the Individual Client was prescribed. The local craftsmen were familiar with the module and used local materials to provide the shelter which the client sought. The craftsman's training and experience together with the

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(7) "Tea Pot Hall - All roof, no wall", local couplet describing the famous, but now demolished A-frame building in Lincolnshire and the cruck-frame buildings generally. See Addy (EEH pp 19-21) and Lloyd (HEH pp 10-12). But Barley (EFC p 22) mentions a tradition that Tea-pot Hall was, in fact, built early in the 19th century and was not, in any event, "a genuine survival of a primitive tradition". If this were so, the suggestion that the bay and building sizes generally were the result of technical rather than agricultural factors would be strengthened.

(8) Mason (FBW, Chap 2).

client's instructions about the function of the proposed building were enough to enable a contract to be prepared which was sufficiently specific for practical purposes.

One such contract states, for example, that a proposed room, early in the 14th century, is to be 40 feet by 24½ feet (de la longur karaunte pes a de lee vynt e katr pes e demy"). There is to be a wardrobe (20 feet by 14 feet), five doors, a bay window and two windows on the west side (Appendix 4/2).

Mason, who has probably studied as many buildings of this type, together with the associated manuscripts, as anyone suggests that most, if not all, vernacular architecture was the product of collaborative designs involving both client and craftsman(9).

THE WORDING OF THE AGREEMENTS TO BUILD

This 'home grown' character appears to have gone beyond the design into the preparation of the agreements. Even a superficial study of medieval documents is sufficient to discover that the writers generally did not consider consistency to be an essential requirement of their spelling, nor were they above borrowing words from another language. The result is often a quaint mixture of Latin, Norman French and the vernacular. The agreements of the Individual Clients, however, were more liberal in their use of spelling variations and 'foreign' words than those of the other clients.

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(9) The suggestion attributed to him is from a conversation, not from a published work. In addition to the works in the bibliography, Mason has published many papers in the collections of the archeological and record societies in South-East England.

An example appears above in the statement of the dimensions of the proposed room (Appendix 4/2). In addition, the five doors, bay window and two windows appear as "synk uss, un vay wyndou" and "deu fenestr's". Many of the other agreements include similar wording.

Further support of Mason's suggestion about the design of buildings for the Individual Client is given by Garner and Stratton:

> English house building from the middle of the 15th century down to the end of Henry VIII's reign was thoroughly indigenous, based on the later developments of English Gothic architecture, that it owed little to foreign sources and that it was not wholly extinct until many years after the death of Elizabeth.(10)

THE USE OF DRAWINGS

The contracts in Appendix 5 support Mason and Garner, and Stratton. In only two instances do the agreements mention drawings being used. Six agreements refer to the proposed work being based on the design of another building and in no case is there mention of drawings being provided by a third-party. Indeed, of the eight agreements where there is any mention at all of drawings or a 'model', only four were for residential building works. The others were for church extensions or works to a castle, types of building which it will be remembered from earlier in the chapter comprised only some of the contracts for Individual Clients.

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(10) Garner and Stratton (DAE p 17)

Appendix 5 gives the percentages of contracts for all types of client which referred to drawings or some other basis of the design. A comparison with contracts for Individual Clients is given in figure 9.2. Where 'drawings are referred to' in the table they were probably prepared by the craftsman employed on the works. Bess of Hardwick's accounts include an entry "24.12.1551 Item given to Roger Worde, my master's mason, for drawing my masters platt xxs"(11) which does not suggest the introduction of a craftsman especially to draw up the plans. Similarly, a Chancery suit(12) in the first quarter of the 16th century refers to a house built by two carpenters for an alderman of London "according to a platte thereof made by your said oratours and delyveryd" (to the client).

EXECUTION OF THE WORKS

Ditchfield(13) writing of manor-houses of England says:

> The Tudor squire himself superintended the building, watched the laying of each stone and beam, paid the workmen, kept the accounts, arranged the plans and the conveniences of the house according to his liking, and cared not to copy classical models or foreign details.

Ditchfield's statement is an over-generalisation as any such broad statement must be but it contains a fair measure of accuracy. A study of the papers of medieval landed-gentry often shows the great extent to which the squire or lord was away from his estates.

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(11) Stalybrass, B "Bess of Hardwick's Buildings and Building Accounts", Archeologia, lxiv, p 35.

(12) See Salzman (BE p 15), Early Chancery Proc, 489, No 6.

(13) Ditchfield (MHE p 30).

His absences would often have made it impossible for him to have given the personal superintendence which Ditchfield suggests. In any event, he was sufficiently provided with stewards, clerks and junior members of the family for it to be unnecessary for him to pay the workmen and keep the accounts himself. But Ditchfield's statement was nevertheless correct insofar as supervision, payment of workmen and accounting generally were tasks performed by members of the squire's staff and not by an outside agency.

Accounts for works at Petworth[14] between 1347 and 1353 contain the statement: "And for agreement with a carpenter for making a new and setting up the woodwork" etc "by a contract for the whole 10s". And a similar item refers to stonework by a mason for the same kitchen. The materials were paid for separately, so it appears that the task of bringing together the 'labour only' contractors and the materials fell to the client or, in this instance, to his steward.

Most of the accounts of the major households include payments to masons, carpenters and labourers for building this wall or that framework. The bricks were normally bought from the brickyard and the timber from another source if it was not available on the estate. Cartage of the materials appears as separate items.

By contrast with the arrangement described above, there are other entries in the Petworth accounts for the same period which tell a different story. One item refers to a contract "ad tasc ingrosso"

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(14) Sussex Record Society Vol 55, pp 23-82.

"with a man for repairing glass windows of the chapel and chamber . . . by view of the bailiff, 10s.8d." and another, for work on a mill at Duncton, says: "and for the whole timbering of the water-mill and . . . mudwork newly made, by a contract for the whole . . ."

These two items, which are typical of others, show that even for comparatively minor maintenance works contracts were used in which the craftsman undertook to supply both labour and materials. The contractor was usually a craftsman, sometimes described as a master-craftsman. The fact that he was, say, a mason did not prevent him from undertaking works involving other crafts. The carpenter working on the mill at Duncton who is mentioned above included 'mudwork' in his contract. The mason building a malt-house in Exeter in 1478 undertook to build the mud walls on stone sleeper walls, a roof of 3 crucks and a drain to carry the water (Appendix 4/90).

The other agreements in Appendices 4 and 5 include numerous similar arrangements. No doubt the contracting craftsman sub-contracted or employed other craftsmen to undertake the work which was not within his own competence, but by virtue of the contract the client was relieved of the problems of supervising a number of separate contractors in the manner indicated by Ditchfield.

Barley (EFC, p 16) suggests that "the builder (of medieval houses) most concerned was not the mason but the carpenter". An examination of the contracts for domestic type building works for Individual Clients, shown in Appendix 5, indicates that masons were

contractors for 8 compared with 18 projects for which carpenters were contractors. Barley's suggestion appears therefore to be justified because contracts with masons accounted for most of the projects for Individual Clients in which the building to be constructed was a chancel, chapel, extension to a castle or project other than for a building of domestic type.

It appears, then, that one cannot generalise about the method of building used by the Individual Client. He used contracts to a much greater extent than the other clients if one relies on the evidence of the surviving agreements, but it must be remembered that the random accounts of individuals (orders, bills, etc) would have less chance of survival than the contracts, so it would be wrong to assume that he relied over-much on contracts. It seems likely, however, that the use of contracts was in direct proportion to the 'size' of the client. That is to say, the individuals without stewards or bailiffs to relieve them of the keeping of accounts and supervision of works in progress tended to employ contractors who supplied everything necessary to provide the client with the building he needed.

SUMMARY

The classification of 'Individual Client' as used in this chapter includes clients of different social classes and financial standing. Their main building need was for domestic accommodation. Shops, mills, brewhouses, taverns, etc, represented less than 25 per cent of the building work they commissioned. The volume of building work by Individual Clients did not vary over the period 1300-1540 if the surviving contracts can be used as a guide.

No doubt the Individual Client had much the same problems with regard to financing his building works as exist at the present time. He usually lacked the benefactors who made possible much of the Collective Client's building development and the power of the Crown and Church to raise funds. He usually approached a local craftsman and between them they worked out a design based on local materials and empirical criteria.

The Individual Client was usually the user of the finished building so he was intimately concerned with the design. Unless the building was of the most basic nature the Individual Client at the lower end of the socio-economic scale tended to contract out of responsibility for the actual construction and relied on a craftsman, most usually a carpenter, to produce the required building.

The Individual Client with wealth and social status tended to employ craftsmen and labourers direct and supervise the works himself or through members of his household.

Generally, however, the relationship between the Individual Client and the man who managed the actual building work has changed less since medieval times than that between the constructor and the other clients(15).

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(15) Based on a comment by R T Mason.

CHAPTER 10

THE PATTERN OF THE ORGANISATION FOR THE PERIOD

THE CLIENT

- Crown, Church, collective and individual
- their use of contracts

THE CLIENT'S NEED

- the need expressed by 'Building Type'
- the changing emphasis
- a table of 'the clients' need for buildings - by building type'

FINANCE AND FINANCIAL CONTROL

- sources available to the various clients
- control

THE DESIGN AND THE DESIGNER

- the influence of the client
- design by master craftsmen
- the clients' employment of contractors (Table)
- types of building designed and built by the various craftsmen (Table)
- the attribution of design to clerics
- craftsmen as administrators
- education and training of craftsmen

THE BUILDER AND EXECUTION OF THE WORKS

- the integration of design and production

ORGANISING THE RESOURCES

- the manpower
- the plant and tools
- the materials

CONTRACT TYPE/PROJECT VALUE RELATIONSHIP

- determination of project size by duration or value
- table showing type/value relationship

CONCLUSIONS

In Chapters 6 to 9 the relationship between the Crown, Church, Collective and Individual 'Clients' in the construction process and the people who designed and built the actual buildings was discussed.

In this Chapter the overall pattern of the organisation between the Norman Conquest and the Dissolution is considered with a view to suggesting generalisations which can be said to be typical of the period.

THE CLIENT

Both Crown and Church were important clients of the medieval Construction Industry. It would be difficult to quantify the percentage of the total output of the industry which was carried out for the Crown and Church but there is little doubt that for the whole of the period the majority of the industry's resources were employed by them.

During the whole period the King was powerful but insecure. He spent much of his time travelling in his Kingdom supported by a substantial household in the field and an armed guard.

The King encouraged and supported the Church. This was particularly so immediately after the Conquest in 1066 but the support continued until the 16th century even if it waned as the years went by.

The power of the Church was different from that of the Crown. A King could command a sheriff to make a building ready ". . . as he

loveth his life and chattels", but a contract which bound a carpenter to complete his work "sub pena excommunicationis" (under pain of excommunication) (Appendix 5/14) might be just as binding on the contractor. The pageantry of the bishops' courts and the splendour of their entourages was second only to that of the King. The importance of the Church as a client of the Construction Industry diminished toward the end of the period.

The nature of the Collective and Individual Clients varied considerably. On one hand there were the substantial corporate clients such as the colleges of Oxford and Cambridge and on the other individual who extended his house by the addition of a single room. Little is known of these clients before 1300 but a picture emerges from the contracts used in Appendices 4 and 5, after that date. Furriers, taveners, millers, mercers, nobility, gentry, yeomen, groups of parishioners and town stewards - all entered into contracts for building works.

It has already been suggested in Chapters 8 and 9 that it would be wrong to rely too much on the contracts contained in Appendices 4 and 5 as indicators of the level of activity by the respective clients. Nevertheless, they may suggest trends, and a comparison of the number of contracts entered into in each of the 50 year periods between 1300 and 1540 by each of the client groups is given in figure 10.1.

The decreasing number of contracts for the Crown shown in the table may be due to the growth of the Office of Works with its establishment of clerks of works and master craftsmen.

Period / Client	1300 -49	1350 -99	1400 -49	1450 -99	1500 -40	Totals (Nos.)	Totals* (%s)
Crown	3	12	0	0	3	18	14
Church	4	9	9	4	4	30	23
Collective	2	3	12	8	13	38	29
Individual	11	6	9	13	7	46	35
Totals	20	30	30	25	27	132	101

Figure 10.1 The placement of contracts by Clients

* to the nearest whole number

Collective Clients used contracts increasingly over the years. Most of the contracts in the later years were between the colleges and master craftsmen.

The number of contracts placed by Individual Clients does not vary greatly period by period. But the most remarkable fact that emerges was referred to in Chapter 9, namely, that the 'smaller' clients used contracts to a much greater extent than the Crown and the Church. This is particularly remarkable in the light of the great volume of building work carried out for the powerful clients compared with that carried out for the Collective and Individual Clients.

THE CLIENT'S NEED

Examples of the Client's need have been given in Chapters 6 to 9. The most notable difference between the needs of the clients was probably one of scale when considering the 'shelters' which were the common denominator of most of their building needs.

An analysis of the Client's need by Building Type during the period 1300-1540 using the contracts in Appendices 4 and 5 produces the table figure 10.2. From this table it appears that houses, sometimes built in conjunction with shops or similar accommodation, formed 30 per cent of all building work. The Individual Client sponsored 69 per cent of the houses built. Apart from the period 1350-1450, when there are relatively few contracts, the housing output did not vary greatly over the whole period.

Churches, priories, etc, formed 27 per cent of all building work.

Period	1300–49					1350–99					1400–49					1450–99					1500–1540					Grand Totals	Grand Totals as %ages
Building Type \ Client	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals		
Bridges/quays etc	0	1	0	0	1	1	0	0	0	1	0	1	2	0	3	0	2	1	0	3	0	0	0	0	0	8	6
Mills/brewhouses etc	0	0	0	0	0	0	0	0	1	1	0	1	0	1	2	0	0	0	3	3	0	1	0	1	2	8	6
Castles	1	0	0	1	2	3	0	0	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	4
Community halls etc	1	0	1	0	2	4	1	2	1	8	0	0	4	0	4	0	0	1	0	1	0	0	0	0	0	15	11
Shops	0	0	0	1	1	0	3	0	1	4	0	1	0	0	1	0	0	0	1	1	0	0	0	0	0	7	5
Churches/Priories etc	0	3	0	0	3	4	5	1	0	10	0	5	2	6	13	0	1	3	1	5	1	2	3	1	7	38	27
Colleges/Schools etc	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	1	2	0	3	0	0	8	0	8	15	11
Houses	2	0	1	10	13	0	1	0	3	4	0	2	0	2	4	0	0	2	9	11	2	1	2	5	10	42	30
Totals	4	4	2	12	22	12	10	3	7	32	0	10	12	9	31	0	4	9	14	27	3	4	13	7	27	139	100
Totals as %-ages	18	18	9	55		37	31	10	22		0	32	39	29		0	15	33	52		11	15	43	26			

Figure 10.2 The Client's need for buildings - by Building Type. 1300 - 1540 (prepared from Appendix 5)

The Church was the sponsor of many of the buildings of this Building Type. The Church's sponsorship of building works was greatest between 1300-1399 and represented 60 per cent of the total output. During the period 1400-1449 Individual and Collective Clients built 60 per cent of the religious buildings with the Individual Client playing the largest part. During the last 90 years of the period (1450-1540) 66 per cent of this Building Type was built by the Collective and Individual Clients with the Collective Clients building 50 per cent. The college authorities were a substantial sector of the Collective Client in this instance, but, as can be seen from Appendices 4 and 5, groups of parishioners building a tower, chapel, etc, were also present. Much of this ecclesiastical building work was for college chapels, aisles, new towers, etc, structures which have, traditionally, been provided by parishioners or similar benefactors.

The rise and decline of the Building Type which has been named "Community halls, etc" in Appendix 5 is in marked contrast to the development of "Colleges/Schools, etc". Each of these Building Types represents approximately 11 per cent of the contracts during the whole period; but whereas the demand for Community halls, etc, appears to have virtually come to an end by the middle of the 15th century, the 15th century saw the beginning of the real growth of educational buildings - a growth that was to continue into the 17th and 18th centuries. The table suggests a movement from Crown to Collective Client as far as these two Building Types are concerned.

The first two of the Building Types listed in Appendix 5 (and in

the table) - bridges, quays, mills and brewhouses, etc - each represent approximately 6 per cent of the contracts, and such projects appear to have been distributed quite evenly throughout the whole period. They were slightly more frequent than shops (5 per cent) and castles (4 per cent). Contracts for shops were most frequent in the second half of the 14th century but otherwise appear to have been distributed quite evenly.

Contracts for works to castles do not appear after the end of the 14th century and such works as were carried out were usually of an 'improvement' nature.

FINANCE AND FINANCIAL CONTROL

The King commanded great resources but he was not economically invulnerable. In Chapter 6 reference was made to Henry III's difficulty in paying the wages of his workmen and his command to his treasurer to "obtain, by loan or by any other means" in order that the building of Westminster Abbey should continue. Generally, however, the wealth of the Crown was such that the Crown was the most important client of the Construction Industry during the period.

Rents and tithes provided most of the finance used by the Church for building works but donations from all social classes towards specific building projects were a substantial source.

Tolls, local rate levies and appeals to benefactors provided funds for Collective Clients. Tolls and levies were generally the source for the forerunners of the parish, town and city councils; appeals

to wealthy individuals or interested groups were frequent sources for the universities and colleges.

The Individual's sources of finance and motives for investing in building works have probably changed the least in comparison with other clients from medieval times to the present day. The merchants or entrepreneurs borrowed from money-lenders or invested their profits to build a tavern, mill or new house; the landowner invested some of his income to improve his country seat or local church(1).

Control of finance was largely a matter of scale. The King, as the largest client of the Construction Industry, had an evolving establishment for financial control of his building projects - an establishment which started with sheriffs and payments from the wardrobe and ended with an Office of Works comprising influential surveyors, masters and numerous subordinates. The Church relied on its clerics to control finance; and as the Church was closely involved with the universities, particularly during and shortly after their foundation, many clerics held the purse-strings during the early life of the colleges. Later, committees took over as fund-raisers and controllers.

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(1) "Sir Thomas of Hemgrave" rebuilt Hengrave church early in the 15th century and the widow of another Thomas, Sir Thomas Kytson built the chapel out of the household accounts in 1540 (Gage, HAH p 60). A bequest by Sir Thomas in 1419 "for the reparation of the church of St Bennet in Norwich, forty shillings; and for the building or reparation of the chancel of the church of Mutford one hundred shillings" (to be disposed of by four of the principal inhabitants) (Gage, HAH p 90) is typical of others.

Stewards and bailiffs controlled finance for building for those Individual Clients who were substantial enough to employ them, but few clients who did not employ such assistance on a full-time basis appear to have used a third-party as cost controller or surveyor(2).

As 74 per cent of all the contracts in Appendix 5 made provision for the contractor to be paid as the works proceeded there is little doubt that the method of relating 'payment' to 'work value' was common to all clients and building types. In 38 per cent of the contracts there was reference to some form of bond or surety for satisfactory completion of the works by the contractor.

THE DESIGN AND THE DESIGNER

Every client is his own architect to some extent and the previous four chapters are full of Kings commanding that the roof and windows of this building shall be built in the manner used on another, or of churches, rows of shops, houses, halls, bridges, indeed almost every Building Type, being built to the same style as another building. The client knew what he liked and what he wanted(3). Seventeen per cent of the agreements contained in Appendix 5 make reference to the design of the proposed building being based on that of another building or model. The Church, as a client, used another building or model as a basis on 35 per cent of its contracts,

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(2) Only two of the contracts in Appendices 4 and 5 mention financial control by a third-party. Both occur during the period 1350-1399; one was for the Crown and the other for repairs to York goal. The second contract (Appendix 4/29) was a three-party contract concerning the Duke of York, a canon and two carpenters in 1377.

(3) See Chapter 17 for reference to Salzman, BE, p 2

the Collective Client on 24 per cent, and the Individual Client on 20 per cent. None of the contracts for the Crown make such reference.

It was not, however, unknown for clients to give detailed briefs of the buildings they intended should be built. Of these perhaps the comprehensive 'will' of Henry VII for Eton College, referred to in Chapter 6, is the best recorded. We do not know to what extent the King was assisted by his Office of Works with the drafting of the brief, but the impression obtained is that it was largely of the King's making. Certainly Henry VIII was involved in the design of his buildings and Chapters 7 to 9 indicate similar involvement on the part of the other clients.

However competent the client might have considered himself to design his own buildings there is no doubt that it was necessary to entrust part of the business to another. Who was this other?

In the previous four chapters ample evidence has been given that contrary to the previously held belief, it was undoubtedly the master craftsman who acted as architect for medieval building.

In only 5 per cent of the agreements referred to in Appendix 5 is there mention of the design being prepared by a third party. It seems reasonable, therefore, to use feature 5, 'Contractor', in Appendix 5, as an indicator of which craftsmen provided the design for building projects. From the table in figure 10.3 the impression that masons were the principal craftsmen/designers is confirmed. Fifty per cent of all the contracts were placed with

Period	1300–49					1350–99					1400–49					1450–99					1500–40					Grand Totals	Grand Totals as %ages
Client / Contractor	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals	Crown	Church	Collective	Individual	Totals		
Mason	0	1	1	5	7	9	4	1	2	16	0	3	4	4	11	0	2	5	4	11	0	2	7	2	11	56	42
2/+ masons	1	0	0	0	1	2	1	1	0	4	0	0	3	0	3	0	0	0	0	0	1	0	2	0	3	11	8
Carpenter	1	1	1	4	7	1	2	0	2	5	0	4	2	3	9	0	1	5	2	8	1	2	3	4	10	39	30
2/+ carpenters	0	0	0	0	0	0	1	1	1	3	0	1	1	0	2	0	0	1	3	4	1	0	1	0	2	11	8
Plasterer	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Plumber	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Blacksmith	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1	1
Other Craftsman	0	2	0	0	2	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	0	0	0	1	1	5	4
Other combination	0	0	0	1	1	0	0	0	0	0	0	1	2	2	5	0	0	0	0	0	0	0	0	0	0	6	4
Totals	3	4	2	11	20	12	9	3	6	30	0	9	12	9	30	0	4	11	10	25	3	4	13	7	27	132	100
Totals as %ages	15	20	10	55		40	30	10	20		0	30	40	30		0	16	44	40		11	15	48	26			

Figure 10.3 The Client's employment of Contractors - by type of Craftsman 1300 - 1540
(prepared from Appendix 5)

Note The 'Grand Totals' contained in this table differ from those in the previous table because some of the contracts included more than one 'Building Type'

Masons (either single masons or partnerships of masons), compared with 38 per cent placed with carpenters. Combinations of craftsmen (a mason and a carpenter, for example) represent only 4 per cent of the contracts. There was very little variation in the pattern of employment period by period. The distribution of each 'type of craftsman' and the distribution of contracts to the various craftsmen types both follow a consistent pattern.

For this reason it appears to be unnecessary to attribute the contracts to 'type of craftsman' period by period, although it is interesting to see who designed and built what over the period as a whole. The table shown as figure 10.4 suggests that masons designed and built most castles, community-halls and churches, whilst carpenters accounted for the greater proportion of houses and shops. The design of the other Building Types was shared more equally between masons and carpenters. No account is taken in these remarks of the comparatively minor part played by the other contractors.

Several examples have been given in earlier chapters of craftsmen designing buildings for specific clients-types, but many craftsmen worked for more than one of the client types and can fairly be used to illustrate the pattern of the period as far as design by craftsmen is concerned.

Henry Yevele, mason, 'The Wren of the 14th century' as he has been described, was the most famous designer during the period under consideration. Yevele was mentioned in Chapter 6 as one of the

Contractor \ Building Type	Bridges/quays etc	Mills/brewhouses etc.	Castles	Community-halls etc	Shops	Churches/Priories,etc.	Colleges/Schools, etc.	Houses	Totals	Totals as % ages
Mason	3	2	5	8	1	21	6	10	56	40
2/+ masons	2	0	0	1	0	4	2	2	11	8
Carpenter	3	2	1	2	5	7	4	22	46	33
2/+ carpenters	0	2	0	2	1	1	2	3	11	8
Plasterer	0	0	0	0	0	0	0	1	1	1
Plumber	0	0	0	1	0	1	0	0	2	1
Blacksmith	0	0	0	0	0	1	0	0	1	1
Other Craftsmen	0	1	0	0	0	2	0	2	5	4
Other combinations	0	1	0	1	0	1	1	2	6	4
Totals	8	8	6	15	7	38	15	42	139	100
Totals as % ages	6	6	4	11	5	27	11	30	100	

Figure 10.4 Types of Building designed and built by the various craftsmen 1300 - 1540 (prepared from Appendix 5)

Note The difference between the total shown on this table for the contractors (139) and the total shown in Appendix 5, feature 5, is caused by there being 7 contracts which include more than one 'Building Type'. The contractors for these contracts were all carpenters.

King's 'Masters'[4]. Salzman refers to him as "consulting architect" to Lord Cobham at his castle at Cowling in 1386, for an aisle and porch built on to St Dunstan's Church in Tower Street to his design in 1381, and for other buildings built "by his advice"[5].

Linked with Yevele's name was that of William Wyndford when, in 1390, repairs at Winchester were done "by the order and advice" of the two master masons[6]. Papworth (SEB) presents a well-documented case for stating that Wyndford was the designer of many of the buildings previously attributed to William Wykeham. Papworth also makes out a strong case for crediting the design of other Wykeham buildings to master-craftsmen, generally master masons[7].

Papworth was, almost certainly, the first student of the medieval clerks of works and masters to reverse the established view that the clerks of works (and other clerics) were the architects of medieval buildings.

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(4) See Appendix 2 for sources of information about Yevele.

(5) Salzman, BE p 13

(6) E 491, 21; Foreign R 13 Ric II, A.

(7) The 19th century biographers of Wykeham had connected his name, as architect, with five important buildings: Windsor Castle, Queensborough Castle, Winchester College, his Oxford College and Winchester Cathedral where he was in charge of alterations. His disconnection from these buildings as their designer does not detract from his contribution as financial controller and administrator on major building works. He was, indeed, one of the greatest clerks and surveyors of works of the period.

Another mason who is well established as a designer is John Rogers. Rogers was born between 1495 and 1510 and he practised at the end of the period under consideration. Shelby[8] traces Rogers' career as lodgeman (stone-cutter) and stone-setter at Hampton Court between 1533 and 1535 until in 1541 he finds him as master-mason at Guines. Rogers' experience as a draftsman (platmaker) covered three types of plat:

i plans of buildings and engineering works (such as the castle and town walls at Guines)

ii elevations, and

iii birds' eye views (as of those of Hull Manor).

But Shelby is of the opinion that whilst Rogers was without doubt a designer most medieval plats were "not technical working drawings, but were plats devised for the benefit of the patron who wished to see at an early stage what his building would look like upon completion".

Shelby points out that most of the plats lacked the dimensions or scale necessary if they were to be of use as working drawings[9].

If, as Shelby suggests, Rogers stood at the "turning point" in the "development of architecture as a profession separate from the building crafts", a development which was to be "a long, slow process that was not formally completed until the 19th century", Rogers had not, I suggest, rounded the corner. The separation had not occurred. Rogers served "as a working mason, master mason,

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(8) Shelby, JR p 4.

(9) ibid, p 146.

land surveyor, architectural and topographical draughtsman, architect, military engineer, hydraulic engineer, technical building consultant, administrative clerk, military spy and diplomatic attache"[10].

It is appreciated that the majority of the larger gothic buildings, being of stone, were the product of the mason's craft. But what of the other master craftsmen as designers?

It is clear from Appendix 5 that the carpenter was the only other craftsman who competed with the mason as contractor/designer, 50 per cent of the contracts being with masons and 38 per cent with carpenters. It must be remembered, however, that the greater proportion of the contracts were for smaller works and represent only a small part of the output of the Construction Industry. Perhaps between 60 and 80 per cent of medieval buildings were designed by masons and 20 to 30 per cent by carpenters.

Carpenters frequently rose to premier administrative appointments, and Chapter 6 provides numerous examples. Alexander the carpenter was appointed one of the first 'King's Masters' in 1256 when Henry III made craftsmen responsible for his building works in place of the "sheriffs and other officers" by whose hands he had previously "suffered much damage". James Needham, a carpenter, was Surveyor-General of the King's Works in the first half of the 16th century (Appendix 3, Project No 8).

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(10) ibid, pp 2 and 3.

Carpenters and masons are frequently found with equal status in the upper echelons of the organisation structures of larger building works, as can be seen from the descriptions of 'projects' in Appendix 3.

The carpenter's role as a designer is not, however, as well illustrated as that of the mason. There is no doubt that their mere presence in an organisation structure as 'master carpenter' indicates involvement in design, but specific references to them as designers are rare compared with such references to masons in that role.

Perhaps some comparison of the occurrence of references to masons and carpenters can be found in Chapter 1 of Salzman's "Building in England down to 1540". A precise count of the references to masons as designers would be difficult, but it is true to say that they are numerous, whereas there is only a handful of references to carpenters as designers. If confirmation of the predominance of the mason in the designer role is required the title of the chapter "Masons and Architects" supplies such confirmation. There is no chapter "Carpenters and Architects"(11).

It is perhaps significant that such references as Salzman makes are taken mainly from the building contracts which make up his Appendix B and provide the basis for Appendices 4 and 5 of this paper.

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(11) For further accounts of masons as designers see Knoop and Jones, MM or Salzman, BE.

None of the other craftsmen can be seriously considered as the designers of buildings. The plasterer, plumber, blacksmith and glazier would no doubt have designed the parts of the building which came within his craft, but the shape of the building would have been determined by the mason or carpenter before the subsidiary craftsmen became involved. The fact that some 90 per cent of the contracts analysed in Appendix 5 were with masons and carpenters indicates the relatively small part played by the subsidiary craftsmen.

The manner in which the master-craftsmen obtained the skill and knowledge necessary for them to be able to design and manage building works is outside the scope of this paper. It is, however, a subject which has been studied at considerable length, and sources of information about the education, training, craft rules and mathematical knowledge of the craftsmen, and in particular the masons, are given in Appendix 2.

To conclude this summary on design and the designer as they had evolved and developed towards the end of the period it is difficult to improve on Shelby when he was writing about building works of a military nature[12]. The wording endorses the comments made in earlier chapters with reference to the Crown, Church and other 'clients' and their respective designers.

> . . . design of a new work was often the result of a co-operative endeavour, in which an initial plan might be devised on the spot by the surveyor in conjunction with one or more advisors, both military and

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(12) Shelby, JR p 87.

technical. This plan would be submitted in the form of a plat to the King and his ministers, who would make changes or approve the plan as presented. Work on the project could then get under way.

THE BUILDER AND EXECUTION OF THE WORKS

Communication has been defined as "the transfer of meaning" between people, and modern management theory places great importance on the need for people within an organisation to be able to communicate with each other.

It is a well-established fact that people communicate best with those whose background, upbringing, education, training and experience generally is nearest to their own. Sharing experiences, especially when the parties are at an impressionable age, creates psychological bonds between them which make the transfer of meaning more effective and tend to give them a sense of common purpose. They think alike.

It is found, too, that organisations function more effectively when the lines of communication are short. The fewer the people in the line, the less risk there is of the meaning changing as it passes from person to person.

In human terms, then, everything was in favour of success for the medieval Construction Industry. Designer and production manager had undergone similar training in the same technology; they were craftsmen of the same craft. Quite probably they had grown up together as children. There was no problem of communicating the

designer's meaning with regard to the design to the man who would manage the production process because, on a smaller project, the production manager probably was, himself, the designer. On a larger project the production manager was almost certainly one of the design team; but if he were not the fact that both designer and production manager were craftsmen with identical training created a unity of design and production[13].

The next link in the chain of command was as strong as that which existed between the designer and the production manager. The mason at the quarry, dressing the stone or incorporating it into the building, had undergone or was in the process of undergoing, the same training as the production manager. The mason at the quarry today might be Surveyor General of the King's Works before his career ended. The road to the top was open to an ambitious craftsman.

Such a man was John Rogers[14]. At his prime Rogers, whose progress through the craft was mentioned earlier in this chapter, was not only the technical supervisor of construction but also an administrator directly involved in spending and accounting for money on one of the largest projects undertaken in the first half of the 16th century. Rogers was by no means unique. There are numerous examples in Chapters 6 to 9 of craftsmen reaching high positions. Perhaps Surveyor General James Needham, a carpenter by training, who administered the building of Nonsuch Palace for Henry VIII illustrates the prospects for the craftsman as well as any.

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(13) This relationship can be seen in several of the 'projects' in Chapters 6 and 7.

(14) Shelby, JR. This biography of Rogers gives a full account of his work and status at Boulogne.

The period between 1300 and 1500 was a happy one for the Construction Industry in another respect. Real earnings and money wages were above food prices for the whole of the period. It is doubtful if the economic status of the craftsman was ever to be as good again[16].

Another factor which probably contributed to the unity of the medieval Construction Industry was its 'classless' nature. The Industry did not attract men from the upper classes of society. In the first part of the period, it is true, the administration and financial control of projects were usually in the hands of the clerics and upper classes, but this condition changed in the 13th century with the promotion of craftsmen to the top appointments in what was to become the Office of Works. Socially, as well as economically, the position of the craftsman had progressed, by the end of the period, to a peak from which it was to decline steadily thereafter.

ORGANISING THE RESOURCES

In practical terms execution of the works involves organising the resources, the manpower, the plant and materials to the right place at the right time and assembling the materials to meet the client's need. This paper is concerned more with the relationship of the

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(16) Knoop and Jones, MM, p 185, has a table showing the relationship of food prices, money wages and real earnings. Real earnings, which had kept ahead of food prices by approximately 10 points (between approximately 90 and 110) for the 200 years between 1300-1500, appear to have dropped early in the 16th century to between 80-60 on the index during the next 200 years. Food prices during the period 1500-1700 rose to approximately 680 and money wages rose to approximately 350 on the index. Thorold Rogers, "Six Centuries of Work and Wages" p 326, finds that "the fifteenth century and the first quarter of the sixteenth were the golden age of the English labourer".

professional roles than details of the process but a look at the task of organising the resources and assembling the materials is necessary to explain the relationship.

The Manpower

Assembling the manpower on site frequently depended on the power and influence of the client. The Crown not infrequently impressed craftsmen and labourers from within a considerable radius of the construction site and occasionally had them escorted to the site by armed troops(17). The Church lacked the power of the Crown and church building sometimes came to a halt whilst royal building works took priority. Even less influential clients relied on the length of their purses and the availability of labour.

The officer responsible for ensuring a supply of manpower to the site was usually, on larger projects, a sheriff, clerk of works, comptroller, purveyor, or other administrator. Occasionally a master mason or carpenter might recruit his own men, but he was more usually involved in recruitment when highly-skilled men were required or when the project was too small to justify a separate administrator.

It was the master's responsibility to advise on the number of craftsmen (of various grades) and labourers which should be recruited. Once the men were on the site the masters deployed the men. The clerks were responsible for time-checking and calculating wage-payments but they deferred to the masters on contentious issues.

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(17) Knoop and Jones, MM, Ch 4, Salzman, BE, pp 34-37, and Harvey MOW give examples of press-gangs, armed escorts and threat of imprisonment as methods of obtaining manpower for royal building works.

The fifteenth and first quarter of the sixteenth century might well have been the golden age of the English labourer[16] but this did not preclude work being scamped, strikes, absenteeism, or refusal to do more than a certain amount of work in a day or complete work which another had started. One brief contemporary passage indicates the scale of building works at Wolsey's College at Oxford and the loss of production due to poor supervision and idleness[18]:

> The woorkefolke for lack of goode overseers
> Loytered the tyme, lyk false tryfelers.
> There weare thus manye, a thousand (at the leaste)
> That thearon weare woorkeynge, still daye by daye
> Their payments contynued, their labours decreaste,
> For welneare one haulfe did naughtis els but playe.

Each master craftsman was responsible for the men and workmanship in his craft. The Master of Works might well be a master mason and have overall responsibility for the organisation of the works, but technical responsibility for the work remained with the master craftsman of each craft. This pattern emerges in the examples given in Chapters 6 and 7 and from the smaller projects carried out by contract referred to in Appendices 4 and 5.

Plant and Tools

After manpower, plant and tools are frequently the second resource to be considered when analysing or synthesizing the ingredients of

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(18) See Knoop and Jones, MM, Ch 7 and in particular p 184 for refusal to work. See Salzman, BE, pp 25-29, for examples of Scamped work and fraudulent work, and Forrest, "History of Grisild the Second" (quoted by Salzman and Jones, EH) for the state of working at Oxford. Reference to a labour dispute at Exeter Cathedral occurs in Appendix 3, Project No 4. Cook, EC, p 201, mentions the Lady Chapel at Chester which was erected without foundations, and quotes a 13th century evensong (p 179):
"And deare Lord, support our roof this night, that it may in no wyse fall upon us and styfle us, Amen."

building. Fundamentally, plant can be considered as the means by which materials are brought from the point from which they were won to the point at which they come to rest in the finished building. Tools are the means by which the materials are shaped and fixed. The line between plant and tools is often fine but precisely where it is drawn is not too significant as far as this paper is concerned.

Organising the transport of the materials to the building site was frequently the task of the client or of an administrator on his behalf, but at Beaumaris it was the 'master' rather than the 'clerk' who was the prime-mover in making the pontoons, clayes and barges which were to transport the materials across the sea to Anglesey(19).

Water was the only means by which materials could be transported from the mainland to Anglesey, but even when other means were available water was often to be preferred to the poor roads and tracks which were the alternative. A long water route was often preferable to a short land-haul. It must have been unusual for the barges and boats to be made on the spot, as they were for the castle at Beaumaris; occasionally however, if the client was constantly using waterways, as were the wardens for London Bridge, he would own boats. More frequently the boats would be hired. To hire boats appears to have been the King's intention when he ordered the Sheriff of Essex "to have the timber for the work of our castle of Dover which has been felled in our wood of Kingswood outside Colchester, carried by boats to Dover, and the cost which

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(19) See Appendix 3, Project No 6.

you shall incur in doing so . . . shall be credited to you . . ." (in 1223, Appendix 1(9)).

Knoop and Jones (MM pp 45-47) point out that the cost of transport was a substantial part of the total cost of building works and that it is to be assumed that those responsible for building operations gave the problem of carriage very careful consideration. Knoop and Jones suggest that, in some cases, clients organised transport departments of their own, but there appears to be little evidence of this except in such instances as mentioned above at London Bridge, where building work on one project was going on almost continuously over a period of many years. Generally, building work proceeded on an ad hoc basis and boats or carts were hired locally as and when required.

There are instances of 13th century entrepreneurs in the form of masons who, in addition to working on the building of Vale Royal Abbey (1278-80)[20] in their craft for a daily wage, owned horses and carts which they hired to the Crown complete with drivers.

Similar enterprise occurred at Adderbury in 1413-14 when the vicar and the bailiff were paid for carting stone from Taynton to Adderbury.

During the building of Nonsuch Palace (1538-47) numerous small carters and farmers from a radius of about 20 miles carted on contract[21].

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(20) Knoop and Jones, (VRA, p 30).

(21) The extent to which yeomen farmers benefited from the building of Nonsuch was remarkable. The land holdings of some grew substantially after the building.

At the 'Individual Client' end of the scale carting was also undertaken by local carriers when the demand exceeded the, usually small, estate carting resources. There are numerous records supporting the broad picture indicated above[22].

For short hauls of light loads the wheelbarrow has been popular for many years. Wheelbarrows, which had one wheel, two handles and legs, have changed very little in form since the middle of the 13th century[23]. There were various hand-carts with a variety of names during the period under consideration, but for purposes of this paper it need only be said that wheelbarrows, handcarts and hods (and similar equipment) appear to have been supplied by the client for use by the workmen[24]. The same can be said of most of the plant used on building sites.

Transporting materials vertically required some sort of crane, pulley-wheel or rig with the accompanying ropes, slings, lewis and similar tackle. Carpenters were well versed in making catapults and other machines of war, so they were competent to make cranes, winches and pile-drivers when called upon to do so.

Major items of plant, such as cranes, were often lent or sold to another building owner after they had served their purpose on the

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(22) Carriage frequently gave rise to payment so there are numerous accounts to support a general statement about the methods employed. The best collection of information appears in Salzman, BE, Chap 22. Knoop and Jones, MM pp 45-48 also contains many references.

(23) See drawings which are attributed to Matthew Paris, c 1250. James MR "Illustrations to the Life of St Alban" (Clarendon) Plate 47. Salzman also uses this as Plate 4 (BE).

(24) Many names and types of hand-cart are described by Salzman, (BE, pp 352-4).

project for which they were originally built. The carpenter was the craftsman most usually concerned with erecting these machines. Cranes were in constant need of new ropes, brackets, wheels and greasing if the numerous entries in accounts from the 13th to the 16th century are to be believed[25].

Scaffolding and centering have changed little in principle since the 12th century. The timber was often felled near the building-site by the carpenters employed on the works and secured with lashings[26]. The organisation of these temporary works was the responsibility of master craftsmen.

Knoop and Jones state that the most usual arrangements regarding the provision of tools were:

" (i) for those responsible for the building operations to bear the cost of sharpening, battering and steeling the tools,

(ii) for those responsible for the building operations to provide the irons, points, gadds, chissels, etc the making of which from rods of iron cannot have been very different from the 'mending' or battering of the same,

(iii) for the masons (in many cases at least) to provide the more expensive tools, such as trowels, squares, levels, plumb rules and various axes."[27]

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(25) Salzman (BE, pp 322-329)

(26) ibid, pp 318-322. See Appendix 3, Project No 2 for an account of the rebuilding of Canterbury Cathedral where the master mason William of Sens was injured when centering collapsed.

(27) Knoop and Jones, MM, pp 61-2.

Items (i) and (ii) above certainly apply to carpenters and labourers, as well as masons, but item (iii) may suggest a greater ownership of tools by craftsmen than some evidence indicates. Indeed, Knoop and Jones themselves refer to the "large stock of tools (listed in an inventory), presumably the property of the Chapter" at York Minster in 1399, adding that there was no evidence that they, the Chapter, sold the tools to the masons.

Other inventories of smiths' tools in the 14th and 15th centuries list tools, large and small, which were used but not owned by the smiths(28). There is no doubt about responsibility for tools during the building of Vale Royal Abbey (1278-80). 20 hatchets and 48 irons were purchased from the masons joining the strength in 1278 ". . . because it is the custom that their tools, if they bring any, shall be bought".(29) Salzman (BE, Chap 21) gives numerous examples of tools of every type being supplied and sharpened by the client, but some support of the Knoop and Jones item (iii) above arises from the purchase of an adze for working old timbers at Restormel Castle in 1343 "because the timber was so full of nails that the carpenters would not set their own tools to it"(30). It may be, however, that 'joinery' tools (which is what the tools may have been) did not come in the same category as 'building' tools.

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(28) Inventories drawn up when a fresh clerk of works took charge at Rochester in 1363, E 465, 28 and at Shene in 1444 and 1473 (E 503, 12 and 13).

(29) Vale Royal Ledger, p 196.

(30) E 461, 11.

Some indication of the contribution made by less important clients with regard to the supply of plant and materials can be seen from the contracts in Appendices 4 and 5. Sir John Byssopesdon, when building a gate-house; an abbot, a cloister rebuilding; another knight, a kitchen tower; a bishop, a bridge (and others) all undertook to provide carriage for the work they were having carried out. On three of the four contracts mentioned above the client undertook to provide the scaffolding as well as the transport.

Scaffolding and centring were often provided by the client even when all the materials were being supplied by the contractor(31).

To generalise, perhaps to over-generalise, it is probably true to say that plant and tools were the responsibility of the client on the majority of projects. It was the task of the administrator to organise plant as far as the building site, from which point the master craftsman took responsibility for moving the materials to the position at which they came finally to rest.

The Materials

There is no shortage of information about the way in which materials were acquired for medieval building works. The fabric of building was, traditionally, won locally (until 19th century transportation made it possible to cover England with Welsh slate), and the client, particularly the powerful client, often owned the locality(32).

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(31) Contracts 6, 25, 30, 31, 59, 71 and 88 refer.

(32) Water transport was occasionally the exception. Hence the Caen stone which formed the walls of many of the major buildings in the South and East of England.

When Henry III was building his castle at Winchester he used wood from "our forest of Windsor for timber for the work" (Appendix 1 (3)). Stone and gravel for Beaumaris Castle was quarried from the nearby mainland. Salzman records numerous instances of ecclesiastical buildings being built from stone dug locally during the 13th to 16th century(33). The Collective Clients and Individual Clients operated in a similar manner, as the contracts in Appendix 4 confirm. The same arrangements hold true for most building materials.

Responsibility for providing the materials was with the client when he was powerful and wealthy. Less influential clients tended to 'contract out' of their responsibility and rely on the contractor to include for the provision of materials as part of his contract. The word 'tended' has however, been used advisedly as in only 51 per cent of the contracts analysed in Appendix 5 did the contractor undertake to provide all the labour, plant and materials necessary to carry out and complete the works.

CONTRACT TYPE/PROJECT VALUE RELATIONSHIP

It is difficult to determine the extent to which the size of a project affected the organisation structure on projects which were built by contract. An attempt has been made in Appendix 5 to determine project size in terms of value and by the duration of the project. Neither value nor duration provide reliable bases for comparison. Project values are unreliable as the extent to which the client supplied plant or materials varied from project

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(33) Salzman, BE, Chap 7 1232, friars of Exeter for church; 1242, prior near Nottingham for convent. 1429, parishioners of Warfield for repair of church, and others.

to project. The duration of the project is also unreliable as relatively few men occasionally worked for long periods on some projects.

An analysis can, however, be made of the relationship of Contract Type to Project Value, and the table in figure 10.5 uses the Contract Types and Project Values provided in Sections 7 and 9 of Appendix 5. The remarks in the introduction to Appendix 5 should be kept in mind when considering the table. The project value, '-£100', used in the table, combines headings 7a, b and c from Appendix 5. This combination appears to be justifiable as the majority of the projects in the -£100 combination are between £10 and £50 in value (heading 7b).

The table provides somewhat negative results. There appears to be no exceptional relationship between contract type and project size. It is not, for instance, true to say that the client generally contributed more (or less) of the materials and plant on larger (or smaller) projects. Statistically the relationship of contract type to project value is unremarkable.

Almost all the '£500-' projects were carried out during the period 1350-99 and during that period contracts in which clients contributed plant and materials were far in excess of statistical expectation.

period	1300-49				1350-99				1400-49				1450-99				1500-40				grand totals	grand totals as %ages
Project Value / Contract Type	-£100	£100-£500	£500-	totals	-£100	£100-£500	£500-	totals	-£100	£100-£500	£500-	totals	-£100	£100-£500	£500-	totals	-£100	£100-£500	£500-	totals		
labour only	1	1	0	2	1	1	0	2	6	5	0	11	4	1	0	5	4	1	0	5	25	19
labour+plant+materials	10	2	0	12	9	1	4	14	12	2	0	14	11	0	0	11	10	5	1	16	67	51
client contribution	6	0	0	6	4	8	2	14	3	2	0	5	8	1	0	9	4	2	0	6	40	30
totals	17	3	0	20	14	10	6	30	21	9	0	30	23	2	0	25	18	8	1	27	132	100
totals as %ages	85	15	0		47	33	20		70	30	0		92	8	0		66	30	4			

Figure 10.5 Contract Type/Project Value Relationship - 1300 - 1540 (prepared from Appendix 5)

PART III

DISSOLUTION TO THE ESTABLISHMENT OF THE PROFESSIONS

(Mid 16th to Mid 19th Century)

CHAPTER 11

THE HISTORICAL SETTING: 1550-1850

(including an introduction to the format of Part III)

HISTORICAL SETTING

- the change from a rural to an industrial country
- population growth
- the transfer of power and wealth
- a desire for fashionable homes
- undermining guild privileges
- the industrial revolution
- the emergence of the 'corporate client'
- corporate needs and accountability

THE FORMAT OF PART III

- the use of project synopses for Chapters 12 to 16
- tables of designers of buildings

During this period England changed from being a predominantly rural community to become one of the most advanced industrial countries in the world. Cities such as Bristol and Norwich which, with populations of approximately 30,000, had long been the largest centres outside London, were overtaken by 'villages' such as Manchester and Sheffield. The country's population grew from approximately 3,500,000 in 1550 to 7,000,000 by 1750, from which time it grew to 20,000,000 in 1850. The power of the Church which had been reduced with the dissolution of the monasteries passed, in part, to a few 'noble' families upon whom the Crown had relied for support. With the power went wealth, and families like the Cecils and Howards built the 'great houses' such as Burghley, Longleat, Kirby Hall and Wollaton Hall. Kenilworth Castle was turned from a fortress into a palace and the Great Lake which had acted as a defence to the castle became a pleasure lake. The day of the castle as a defensible home was over and its place was taken by fashionable houses modelled on the classical orders.

The nobility were by no means the only beneficiaries of the transfer of wealth. Below the nobility in the social scale the squirearchy developed as the upholders of the law and administrators of local affairs. Whilst some might well be typified by Squire Western in "Tom Jones" as uncouth yokels, they too indulged their fancy to build their own homes, which, as the period progressed, were often taken over by successful bankers and merchants who altered or demolished them to make way for something more fashionable.

The merchant venturers, next in the social order, came into their own whilst Elizabeth was on the throne with the development of trade

with Russia, India and North America. Their building needs were in many ways greater than those of the nobility and squirearchy as it was they who, directly or indirectly, provided the market-outlets which were necessary if the industrial revolution, which was to come in the 18th century, was to prosper. The building-needs of the workers is referred to below.

It is probably true to say that the Civil War had less effect on the development of the Construction Industry than the Fire of London in 1666. The aftermath of a war is usually a spate of rebuilding, but the aftermath of the Fire of London was the under-mining of the Guild privileges to allow 'foreign' craftsmen to assist with the enormous volume of building works which the fire created. The influence and prestige of the craftsman had been reduced by the abolition of many of the Holy Days after the dissolution; his role as designer was decreased by the demand for buildings in a style with which he was unfamiliar, and now he lost much of his sense of unity as his guilds and clubs became less effective.

The doubling of the population between 1550 and 1750 would by itself have created a need for building, but its effect was increased and accentuated by the movement of the population from the rural to the industrial areas; from scattered villages to concentrated towns. 1750 was, however, only the beginning of the period of greatest development. The increase in production of iron (from 15,000 tons in 1737 to 250,000 tons in 1806); the inven-tion of the steam engine and development of the inland waterways in the second half of the 18th century; the improvement of roads

and building of railways - all contributed towards the second industrial revolution which commenced in the middle of the 18th century. Unlike the first revolution at the beginning of the 17th century which produced 'cottage industries', the second produced William Blake's "dark, Satanic mills" that in turn brought about the "barracks for cheap labour, not homes for artisans" which were built on a vast scale during the last century of this 300 year period.

Inevitably the Construction Industry grew and evolved to meet the growing and exacting demands of a host of new clients. Whilst there were still numerous individual clients sponsoring houses and other buildings, there were, in the last century of the period, many more 'corporate clients'. Central government required public buildings and coastal defences against possible invasion by Napoleon. In addition, canal, railway, and industrial companies (both public and private), and the municipal corporations which grew from the Municipal Corporations Act of 1835 found themselves competing for the Construction Industry's resources.

These corporate clients (and central government) often needed their new building quickly; and they were accountable to a third-party, usually in the form of shareholders. Their buildings were often more complex than many built by the Construction Industry in former times. These factors made necessary a re-organisation of the established construction process.

The format of Part III of this paper is, therefore, different from that used in Part II. Synopses have been made of twenty projects

carried out during the period covering nearly every Client and Building Type. These projects, which form Appendix 6, are used to demonstrate the nature of the organisation used on the projects as bases for statements made in Chapters 12 to 16. The headings used in the synopses are similar to the titles used for Chapters 12 to 16 and follow the same order. The sequence is, generally:

- a study of the client, his building need and resources
- the design of the building and the person responsible for the design
- the value and scope of the works
- the method by which cost was controlled
- the organisation of the production process.

With a view to determining trends in the relationship between design and production, six 'Tables of Designers of Buildings' giving the backgrounds, training and practices of the designers are included as Appendix 7. The conclusions drawn from these tables are given in the other chapters which make up Part III.

Sources

Clapham, Sir John "A Concise Economic History of Britain" (Camb U P, 1963)

Trevelyan, E S H, Vols 2 - 4.

"The Oxford History of England", Vols 8 - 13.

CHAPTER 12

THE CLIENT: HIS NEEDS, NATURE AND FINANCE

1550 - 1650

1650 - 1750

1750 - 1850

THE TYPE OF BUILDING

THE CLIENT'S INVOLVEMENT IN THE DESIGN

1550 - 1650

The general shift of power from Church and, to a lesser extent from Crown to Collective and Individual Clients was touched upon in the last chapter.

Between 1550 and 1650 men like Sir John Thynne at Longleat, Sir William Cecil at Burghley, Robert Cecil at Hatfield and several others were building the stately homes of England. They were powerful men who knew what they wanted and had the resources to satisfy their whims. They obtained and studied books on architecture and borrowed or stole ideas from one another. In 1568 Cecil wrote to Paris for a book on architecture which he had seen at Sir Thomas Smyth's, and Sir Thomas himself had six editions of Vitruvius in his library. He too built a house, Hill Hall, Essex, in the classical manner(1).

The clients mentioned above were frequently away from home, and surviving correspondence makes it possible to examine the relationship between the client and his steward and the involvement of the client in the design of his house.

Sir John Thynne at Longleat, often away from home, and at one time imprisoned in the Tower of London, sent written instructions at least once a week, sometimes more often. He was everything 20th century architects and builders dread in a client. He was constantly changing his mind, capricious, overbearing and abominably rude. His letters to his steward were, however, positive

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(1) Pevsner, N 'Hill Hall', Architectural Review, May 1955.

statements of what he required to have done and gave specific instructions about the thickness of walls and the types of materials to be used[2].

Robert Cecil was equally involved in the building of Hatfield House and gave instructions about materials to be brought from Nottinghamshire, Devon, France and Italy[3].

The same impression of the client being an integral part of the construction process, not simply provider of the finance, appears in the more modest instances of Sir William More building Loseley House (Appendix 6, Project No 1) and William Dickenson building his, quite simple, home in the centre of Sheffield (Appendix 6, Project No 4). The part played by all these clients in the design of their houses is discussed later; but however great (or small) their part may have been in the actual design there is good reason to agree with Fuller's view of English houses in the second half of the 16th century[4]:

> Indeed now began beautiful buildings in England as to the generality thereof; whose homes were but homely before, as small and ill-contrived, much timber being needlessly lavished upon them. But now many more regular pieces of architecture were erected; so that, as one saith, they began to dwell latius and lautius, but I suspect not laetius.

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(2) Girouard, RS, Ch 1 and Hussey, C "Country Life", 8, 15, 22 and 29 April 1949

(3) Hatfield papers, quoted by Lees-Milne, TR p 106.

(4) Fuller, writing under 1587 "Church History" IX VI 66 (SAC Vol 83, p 17).

Summerson, too, dates the period of the English Renaissance from 1530 to 1610[5].

This awakening awareness of the individual client was found also in the Collective Client, as demonstrated by the colleges of Oxford and Cambridge. During the last half of the 16th and first half of the 17th century there is ample evidence in the records of the colleges of the needs of the client being for more than just shelters of a purely functional nature.

The Crown's Office of Works during this period continued to function in much the same manner as it had before the dissolution. Changes were coming in the training of the men who would occupy the senior appointments in the office, but the needs of the Crown were not changing as quickly as those of its subjects. Summerson notes that Queen Elizabeth herself "built nothing of great importance" (Summerson, AB, p 28).

Finance for Building

Finance for building during the first 100 years of the period came, to a considerable extent, from Britain's overseas trade, and the route the money took was not necessarily from the top of the social tree downwards. Indeed, much of it came in via the developing middle-class to make possible the burst of house-building beneath the social level of the Cecils and Percies. In some ways the

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(5) Summerson, AB, pt 1. See also Girouard, RS, pp 33-49 for an account of Elizabethan "devices" and "conceits" as they related to domestic building during the period. Girouard refers to the Elizabethan preference for novel or ingenious things as expressed in their poetry which coloured their whole life accounting for their "tremendous linear preoccupation" (which was) "a feature peculiar to the age" (pp 35-36).

financial condition of the middle class was better than that of the upper classes in house building matters. Whilst the merchants, minor gentry and squires needed houses to suit their, not inconsiderable, station they were not expected to accommodate a Royal Progress as were the prodigy houses of their social superiors(6).

The outcome was that even the influential, powerful and wealthy Burghley and Hatton spent more than they could afford on houses they did not need(7).

It is possible that some of the less pretentious houses such as Sir William More's, Loseley House, were built more or less out of revenue, if the long period of their construction can be used as an indicator.

Some of the college buildings at Cambridge University were certainly financed from revenue. It was not unknown for a college building to be built over a period of ten or more years, and at Clare Hall,

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(6) See Summerson, AB, Chaps 4 and 5 for a description of the "prodigy" houses built "for the Queen" and Girouard, RS, p 18: "She liked to live at her subjects' expense. With an enormous retinue she moved from house to house; and these were altered or rebuilt to receive her".

A contemporary account of such a visit to the seat of Sir Thomas Gresham recalls how "Her Majesty found fault with the court of the house, as too great; affirming that it would appear more handsome if divided with a wall in the middle . . ." Sir Thomas arranged for workmen to build a dividing wall during the night and ". . . it is more questionable whether the Queen next day was more pleased with the conformity to her fancy, or more pleased with the surprise and sudden performance thereof". ("Fuller's Worthies", quoted in J W Burgan, 'The Life and Times of Sir Thomas Gresham', 1839, Vol 2, 448-9).

(7) Summerson, AB, p 29.

the foundations were left covered up against frost-damage for 3 years "reddy for worke when we found ourselves able to goe on" (Appendix 6, Project nos 10 and 11).

Many of the colleges at both Oxford and Cambridge were blessed with benefactors. A notable example occurs at St John's College, Cambridge, where the Countess of Shrewsbury, the enterprising "foundress", made payments "by so many different hands, to so many different persons, at different times and in different places, there could be no such mystery or secrecy in the thing as has been imagined". (Appendix 6, Project No 6).

Not all benevolence was so mysteriously administered. Occasionally the master of the college "at his own expense" arranged for a college building to be erected. (Willis and Clark, HUC, Vol 2, p 474 at Trinity, 1593). Similarly, at Peterhouse, the "Master's Will" was to sell such of "my plate . . . as will build (the library) three score foote in length and the breadth and heighte to be as the rest of the Colledge is, wt loftes and chimnies . . ." (Willis and Clark, Vol 1, p 28).

Indeed, silver plate, or similar treasure was not infrequently used to finance building works. The repairs to the steeple of Chichester Cathedral in 1562 were paid for from the receipts of the sale of "bullion, plate and ornaments". It was necessary for the Dean and Chapter to obtain a licence from the "Queen in Council" in order to dispose of the Church's treasure (Appendix 6, Project No 2).

A usual source of finance for the colleges was, however, the donations of a number of benefactors. An example occurs in the accounts for rebuilding at Clare Hall (1638-56) which refer to "Rd from Benefactors, Materials, Ingresses etc £3650.10.11" (Appendix 6, Project No 10). In some ways this philanthropic corporate funding was a forerunner of the method of less philanthropic financing used later in the period on business ventures.

1650 - 1750

Between 1650 and 1750 the needs and nature of the client did not change greatly from those described above. Private individuals built houses, colleges, extended or rebuilt their buildings, and the methods they used to finance their building works did not vary greatly from those used during the previous 100 year period although their taste was changing as Englishmen saw more of buildings abroad.

The rebuilding of the City of London after the fire in 1666 is an interesting example of the administration of a major building project. The principle of the client being represented by a committee was in some ways similar to that used by other collective clients such as the Colleges of Oxford and Cambridge which have been mentioned earlier. For the City, however, the building committee was composed of men with greater knowledge of building than that found in a typical college committee.

The six man committee comprised Wren (whose qualifications are listed elsewhere), Hugh May (who had been steward to the Duke of Buckingham), Roger Pratt (Oxford graduate, lawyer, architect,

gentleman - later knighted), Robert Hooke (vicar's son, Oxford graduate, scientist, Professor of Geometry and architect), Edward Jerman ("an experienced man in buildings") and Peter Mills (taylor's son, bricklayer, designer of several buildings)[8]. The committee's principal and most successful task was the preparation of regulations for the rebuilding.

Finance for rebuilding the churches and for part of the road widening was derived from a tax on coal imported into the Port of London. Private individuals and corporations such as the City Companies financed their own building. An indication of the extent of the rebuilding can be gauged from the fact that more than 13,000 houses were destroyed. Their replacement was in Summerson's words "long-drawn-out"[9], as funds became available.

In general, however, the volume of rebuilding in London after the fire was to have considerable influence on the organisation of the Construction Industry and saw a great extension of speculative house building.

One change engendered, in part, by the fire was the type of building sponsored by the Crown. Palace building became an "unthinkable luxury"[10], and hospitals were built at Chelsea and Greenwich. These were undoubtedly Royal works but their commissioning began the move away from buildings constructed primarily for the use of

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(8) See Colvin, BDEA for biographical notes, and Summerson, AB

(9) Summerson, AB, p 121.

(10) ibid, p 138.

the Crown and towards buildings which the Crown sponsored but which were for the direct benefit of its subjects.

Whilst the period 1650-1750 did not see great changes in the needs and nature of the client, his involvement in the construction process was, perhaps, less than it had been in the previous hundred year period. This is a generalisation which would be true to a greater or lesser extent depending on the personality of the client himself, but the period 1650-1750 saw the beginning of the professional designer and an increase in the demand for buildings which tended to isolate the client and user of buildings from the construction process.

1750 - 1850

This was, as outlined in the previous chapter, the period of the Industrial Revolution. It was also the period which included the Napoleonic Wars with the threat of invasion by sea.

1750-1850 saw, too, a rate of growth in the population (from 7 millions to 20 millions) which has not been equalled before or since. The increase in population created a demand for housing which could not be met by individuals building for themselves; large-scale development was necessary and speculative developers met the need in towns and cities all over England. Finance for speculative developments was often a complex matter. A chief concern of the developer was that as little as possible of his (or their) own money should be used. This concern tended to lead to the head-developer arranging for a craftsman/contractor to carry out the building and provide some of the finance. In return

the contractor took a share of the profits from the project[11]. Developers were often ambitious building craftsmen and architects, but entrepreneurs of most social classes and various backgrounds dabbled in speculative housing development[12].

About the building of the factories which gave rise to the escalation of housing need less is known. The businessmen who made pottery, textiles, etc, were concerned primarily with their products and used whatever buildings were available. It is remarkable that of the thousands of projects listed by Colvin after the biographies of the architects in his biographical dictionary, very few are for industrial buildings.

The Prinxton China Factory (Appendix 6, Project No 15) occupied a converted building for some of its life. When it became necessary to add to the existing buildings the owners do not appear from the 'Factory Book' to have taken much interest in the building works. John Coke and Co, the factory owner, financed the building cost from a loan at 5 per cent rate of interest.

Five per cent was the rate paid by 'the Court' when building the House of Correction and Sessions House at Lewes referred to in Project Nos 14 and 16 in Appendix 6, although, ultimately, the building cost was recouped by a levy on the rates. The client on both these public buildings was represented by building committees comprising members of the court who were serviced by a salaried clerk.

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(11) Summerson, GL, pp 78-9, gives several examples of this.

(12) ibid, Chap 5.

This period was one of reassessment of role and reorganisation as far as the Crown (Office of Works) was concerned. Sir William Chambers was architect to the King and a Commissioner of the Board of Works from 1760 and was appointed Comptroller in 1769[13]. During his reign as Surveyor the Office of Works was well conducted, in marked contrast to that of his successor, James Wyatt. Wyatt was Surveyor from 1796 to 1813, but as early as 1806 serious enquiries were carried out into the conduct of the office. Between 1813 and 1815 the Office of Works was subject to investigations by the Commissioners of Audit as a result of which the "New Office of Works" came into being[14]. In 1851 the Office was to become a Ministry with direct responsibility to Parliament[15].

The outcome of the investigation into the Office of Works, particularly the investigations between 1813 and 1815, was to have considerable effect on the future structure of the Construction Industry.

The buildings undertaken for the Office of Works included most building types. Chambers' principal work was Somerset House, but several houses - the Royal Pavilion, Brighton, Buckingham Palace (and other palaces), a race-stand at Ascot Heath, the British Museum, the Law Courts, the House of Lords, the General Post Office, Public Record Office and the New Houses of Parliament - illustrate the range of works undertaken at that time.

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(13) Summerson, AB, p 256

(14) Colvin, HKW, Vol 6, Ch 3 and 4.

(15) ibid, p 249.

The relative importance of different 'Building Types' over the period indicates the changes in demand which influenced or were influenced by the various clients.

THE TYPE OF BUILDING

Figure 12.1 attempts to indicate the demand by Building Type during the period. It is based on the information contained in the tables which make up Appendix 7. An explanation of the tables is given at the commencement of the appendix.

The lines in figure 12.1 are relative but as they represent only twenty designer/architects' involvement during each of the 50 year periods they do not quantify the demand over the whole period.

Residential buildings represented a consistently high involvement of designers over the whole period. After the Dissolution, activity in church building was slight until the 17th century when the aftermath of the Fire of London and the expansion of the towns during the Industrial Revolution produced an increase in church-building in much the same way as village church building blossomed in the 13th to 15th centuries. The Educational Building line mainly comprises the construction of the university buildings until the middle of the 18th century, at which time the volume of this work decreased and there was an increase in school building which continued until the end of the period. The lines representing Church Building and Health and Welfare Building (hospitals and 'houses of correction') run almost parallel after 1650. The other lines indicate increases in activity as the period progressed.

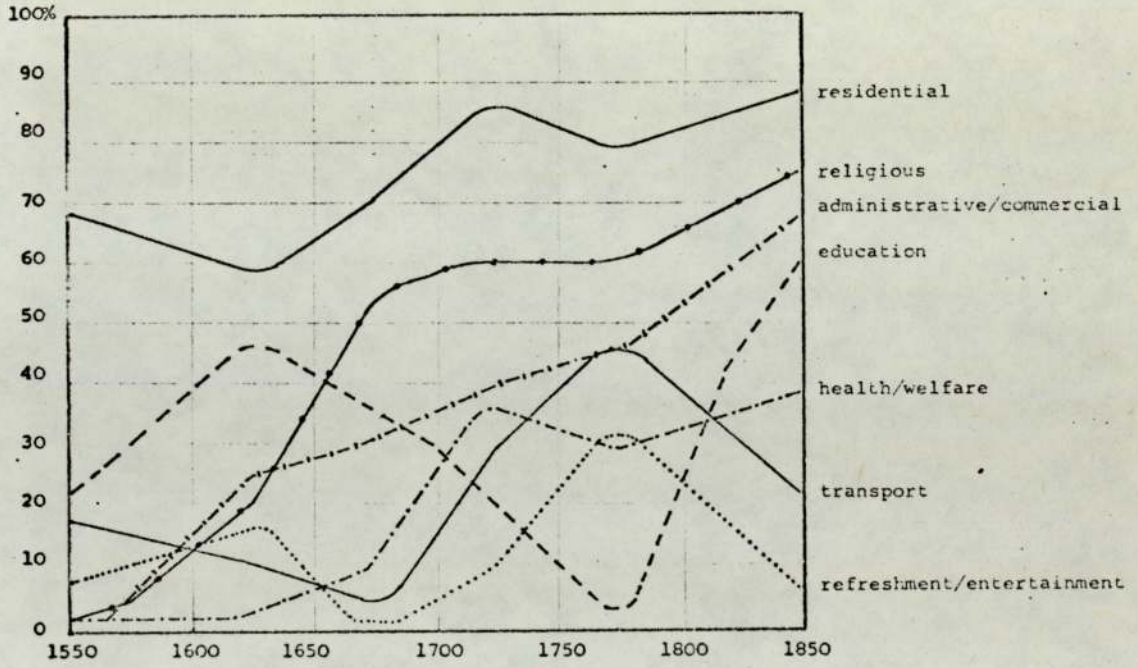

Figure 12.1 Type of Building

THE CLIENT'S INVOLVEMENT IN THE DESIGN

The manner in which the client's involvement in the design of his buildings decreased between the mid 16th and 18th centuries can be seen in the orientation of the numerous books about building and architecture written during that period.

Perhaps the first English book about building was written by Dr Andrew Boord (physician to Henry VIII and his Court) in 1549(16). It was "the boke for to lerne a man to be wyse in buildying of his house for the healthe of his body . . . for a good husband to lerne".

The book contains advice about choosing the site for a house; on the subsoil which is to be preferred (gravel mixed with clay or rock); upon the aspect (chief prospects to east and west); and on the advantages of an elevated situation. Boord's advice runs contrary to the usual practice for the period as most substantial houses were, in fact, situated in valleys(17). All in all, Boord's advice about building was sound and in advance of his time. His warnings of the health hazards in mid 16th century dwellings and domestic life make interesting reading(18).

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(16) Quoted by Lees-Milne, TR, Ch 8.

(17) Boord's advice agrees, however, with the findings of William Harrison writing his "Description of England" in the second half of the 16th century. Harrison says "Each one desireth to set his house aloft on the hill, to be seen afar off . . ." (Girouard, RS, p 34).

(18) Boord's advice included warnings: ". . . beware of pissing in drafts . . . permit no common pissing place . . . beware of emptying of pisspots and pissing in chimneys." He also advised the reader to lie 'first on the left side after the climb into bed but to beware "of venerious acts before the first sleep, and specially beware of such things after dinner, or after a full stomach, for it doth engender the cramp and the gout and other displeasures".

John Shute's, "First and Chief Groundes of Architecture" published in 1563 is aimed much more at the client than the professional designer or constructor. Shute was a member of the Duke of Northumberland's household and he was sent by the Duke to Italy to study the masters of architecture in 1550[19]. Though he describes himself as "painter and architecte" there is no record of his designing any buildings, and Summerson finds it "difficult to find a connexion between Shute's book and contemporary buildings".

His book leans heavily on Vitruvius, and some of the wording and ideas are very similar to those put forward by Boord. The impression the book gives is that of an introduction to the subject of architecture for the gentleman wishing to design a house for himself or demonstrate a knowledge of the subject to his peers. Some 40 of the 54 pages are concerned with "the maner, forme and order" of architecture as laid down by Vitruvius.

Sir Henry Wotton, "that learned and ingenious Gentleman"[20] and amateur architect undoubtedly addressed his "Elements of Architecture", published in 1624, to the client. "Builders (he says, referring to clients) should bee as circumspect as Wooers; lest when all is done that Doome befall us" (p 6). Wotton, too, refers to Vitruvius as "our principal Master", saying,

> Well building hath three conditions,
> Commoditie, Firrmness and delight (p 1)

These words or words very similar occur regularly in later books by most of the authors mentioned below.

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(19) Summerson, AB, p 17.

(20) Lloyd, HEH, pp 87-90.

Almost forty years later, in 1663, Sir Balthazar Gerbier, "courtier and diplomat, miniaturist and architect, pamphleteer and promoter"[21] published his "Counsel and Advise to all Builders". Some 40 of the 100 pages are devoted to dedications to the Queen Mother, the Archbishop of Canterbury and numerous Earls, Knights and Gentry before Gerbier advises, "whosoever is disposed to Build, ought in the first place to make choice of a skilful Surveyor . . .". He goes on to describe the duties of Architects and Clerks of Works and it is clear from his comment; "As for the Builder and Propriator" (it is best for him to buy his own materials and) "have his works done by the Rod or square" (p 61), that Gerbier is addressing the client.

In the second half of the 17th century William Leybourn aimed his book on building at a wider readership than the amateur architect. Indeed, Leybourn does not mention the word architect. It is clear from the introduction to the book that the 'builders' mentioned in the formidable title "A platform for Purchasers, Guide for Builders, Mate for Measurers" should be taken as owners or developers, not contractors.

The first edition of the 'Platform' was published in 1668 when the rebuilding of the City of London was in progress and the purpose of the book to set "rules and directions both to Buyers and Sellers, Landlords and Tenants, Lessors and Lessees, Builders and Workmen in their respective Concernments" suggests that the intended readership of Leybourn's book covered a wide spectrum.

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(21) Summerson, AB, p 85.

The book was a departure from the previous works on building which had been concerned primarily with the classical orders. Laybourn dealt with interest rates, prices of materials, the organisation of brick-making, the outputs of craftsmen and the quantities of materials required for specific building works in 138 pages. Pages 139 to 200 in the 1668 edition were devoted to tables "for the mensuration of all such materials as anywise appertain to building . . ." The 1685 edition continued the theme further and will be discussed in a later chapter.

A similarly orientated book was published in 1703, and reprinted in 1726 and 1736. This was R Neves "City and Country Purchaser and Builders Dictionary". Clearly the 'Builder' of the title is the client because the author, whilst discussing under the heading 'Building', says: "and let me persuade all Builders to make choice of such Surveyors and Workmen as understand . . ."

Venterus Mandey's "Mellificium Mensionis" or "Marrow of Measuring" is another work in the second-half of the 17th century which is concerned more with the mathematics of building than with the classical orders. Mandey's dedication of his book to the Benchers of Lincoln's Inn suggests that it is intended for the client rather than the designer or contractor.

By the middle of the 18th century books on building were aimed much more at the professional designers and constructors. Isaac Ware's "Complete Body of Architecture", published in 1756, was intended to "serve as a library on this subject to the gentleman and the builder" but it was not for the casual reader. Ware's intention

was that it should "supply the place of all other books" and his work runs to 748 pages. The author makes frequent references to "the honour of the architect" (p 40), his "skill" (p 40) and his "province" (p 657). Ware's book was the most comprehensive but there were numerous others between, say, 1725 and 1825 directed towards the student of architecture or the craftsman with aspirations(22).

There seems to be sufficient evidence to say that by the middle of the 18th century the person commissioning the works had largely ceased to be "the builder", by which name he had been known since the 13th century, and had become the 'client' with much the same involvement in the construction process as he has today.

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(22) See 72: 013 (42) (early works) at the RIBA Library for numerous 18th and early 19th century works on building by Halfpenny, Batty and Thomas Langley, Salmon and others.

CHAPTER 13

THE DESIGN AND THE DESIGNER

INTRODUCTION

THE CAMBRIDGE DIARY

EXAMPLES OF THE EVOLUTION OF DESIGNERS (in 50 year periods)

STATISTICAL EVIDENCE

CRAFTSMEN, GENTLEMEN AND PROFESSIONAL ARCHITECTS

- craftsmen-designer/architects
- gentlemen-architects
- professional architects
- Robert Mylne - profile of an architect, surveyor and civil engineer

THE PARENTAL BACKGROUND OF THE ARCHITECTS

REGIONAL VARIATIONS IN THE EVOLUTION OF DESIGNERS

THE SEPARATION OF THE DESIGNER FROM THE CONSTRUCTION PROCESS

INTRODUCTION

"Commoditie, Firmness and delight"; "solidarity, conveniency and ornament"[1]. The essentials of the design were largely determined by these requirements and by the more specific requirements of the client for whom the building had to perform a function.

What gave 'delight' and was acceptable as 'ornament' varied during the period. The Elizabethans and early Stuarts "blatantly and nakedly" used their houses as status symbols[2]. Size, symmetry and witty patterns were features which the clients understood and which the building craftsmen were able to produce. A contemporary writer wrote "divers men . . . doo dailie imagen new devises of their owne to guide their workmen withal"[3] and this comment epitomises the process by which buildings were constructed in the first part of the period.

Later, as Vitruvius was rehashed by Shute, Wotton and Ware (to mention but three) and classical architecture was reborn in England the liberal artists took over from the mechanical artists. A design process was established which has survived, with some changes, to the present time.

THE CAMBRIDGE DIARY

The college and other buildings which make up Cambridge University

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(1) The first quotation is from Wotton's book which is quoted, word for word, by Langley in his (see Chapter 12). The second is from Gerbier.

(2) Girouard, RS, p 32.

(3) Harrison, "Description of Britaine", quoted by Girouard, RS, p 41.

provide an illustration of the evolution of the designer from craftsman to independent practitioner.

Cambridge University has been selected to provide a diary of building-design events between 1550 and 1850 for the following reasons:

- it is in a city in which there was continuous building activity for the duration of the period.
- the same Building Type was built throughout the period.
- there were several different Clients (the various colleges and the University itself) so it cannot be said that it demonstrates the organisation adopted by only one Client.
- Cambridge is a provincial city and, perhaps, more typical of the rest of England than London.
- the records are extensive and have been fully used by Willis and Clark in their authoritative history of the University.

The Willis and Clark history has been the main source of information used in preparing the diary. Reference to that work has been acknowledged by giving the volume and page numbers; eg (1/25) after each reference. Other sources, almost entirely Colvin's "Biographical Dictionary" and Pevsner's "Buildings of England", have been acknowledged in the usual manner.

The diary does not include every reference to designs and designers but sufficient references are given to indicate the pattern for the period.

1559-60 The first reference to a design during the period appears at Trinity (College) in an account "To Mr Russel for his paynes in commynge from London, to devise the chappell worke £1.3s.4d" (2/566). This work was, perhaps, furnishing rather than building but it demonstrates the use by the college of a consultant.

1562 Ralph Symons, a freemason, appears as "a well mynded man . . . the workmanship where of touching the stone worke hath been wrought and performed . . . verye diligent and carefull" (2/693). This is not a reference to design but it provides a picture of a craftsman/designer because there are later references to Symons as a designer. Indeed, Willis and Clark describe him as "architect" on page 693 and elsewhere.

1565 At Gonville and Caius, Dr Caius the master of the college, "traced out for the architect . . . the very form and figure (of the college)" from which Willis and Clark conclude that another person had been employed to execute the designs (3/528). There is no mention of the name of the designer.

c 1570 A column and sundial was "the work of Theodore Haveus of Cleves, a skilful artificer and eminent architect" at Gonville and Caius (1/182). The entry is interesting for its early use of the word 'architect' but there is no other record of Haveus practising as an architect. Little is known about him.

1595 At Trinity, there is reference to plans but no mention of the architect. There is also an item about a payment for "plottes" of 49s 6d but, again, no name is given (2/465-8).

Willis and Clark comment on more than one occasion about the absence of information about designers. This absence is remarkable when one considers the detailed information on almost every other aspect of the building works. They assert that the design can be attributed to one of the craftsmen, usually a mason, when there is no evidence to the contrary. This assertion probably applies generally to building works before the end of the 17th century. There are further mentions of anonymous designers below.

1595-1612 The college building works at St John's are given as the "great work of this master" (of the college) in Baker's "History" but the "platts and uprights" are described as "drawen by the said Simons or Wigg or their assignes" (both free masons) in the agreement between the college and the contractors. ((2/250) and Project No 6 in Appendix 6).

The attribution of the building works to the master of the college in this instance, when it is clear from other evidence that the designer and constructor was a mason, shows how easily confusion about the 'architect' of early building works could arise.

Project No 6 establishes Symons as a designer of buildings in addition to being a contractor. His name appears also at Trinity between:-

1604-12 when he is found "measuring Halles in London". During this period he was in partnership with another mason, presumably Wigg, (2/491), and he is recorded as having "sett downe a plott for the same (Trinity College) and the lowest price" (2/517).

The design and construction functions are clearly combined in the one man. The arrangement appears to have been similar to the present-day 'package deal'.

1617-37 At Gonville and Caius there was no mention by name of the designer of the substantial works although John Westley, a mastermason, was the "builder" (1/186-93).

1623 At St John's, Henry Man, a carpenter drew 'plots' for the library. He was paid £7 7s 0d for the plots and "his journies to London and Northampton" (2/267).

Another instance where the design was for work of furnishings rather than construction but it indicates the competence of the craftsman as a designer.

1628-32 Of the chapel at Peterhouse College, built between 1628 and 1632, Willis and Clark note that "Geo Thompson was the free-mason but there is no record of the person who made the design" (1/41).

1638-42 At Emmanuel there is, again, reference to building works "according to a plotte drawne" but not to the designer (2/698).

1638-84 Clare Hall accounts include an entry in 1638-9 "To Thos Grumball for a Draught of a bridge 3s." (1/96 and Project No 10), but although there is frequent mention of the craftsmen working at this college between 1638 and 1664 there is no mention of any designers.

Not until 1684 is there reference to designs, when Robert Grumbold was paid "for drawing a designe for ye building" (1/104 and Project No 11). Grumbold's name occurs again, below.

1663 Christopher Wren was the architect for the new chapel at Pembroke (1/128) - "an entirely competent, if somewhat unimaginative, essay in classical architecture", says Colvin (BDEA, p 701).

Wren, son of a rector, nephew of a bishop, anatomist, Latin scholar, Fellow of All Souls, Professor of Astronomy and surveyor was, perhaps, the first 'architect' in any way approaching the Chapter 3 definition to be employed at Cambridge University. Later Wren buildings are:

1668-73 Emmanuel College Chapel and Gallery which was, to some extent at least, a co-operative design with the dean, Sandcroft (2/703-9).

1670-1 Possibly, the Bishop's Hostel, Trinity College which was in the style of a building by Wren at Oxford even if drawn by the contractor, Robert Minchin, a carpenter (2/555).

1676-84 The library at Trinity for which Wren "comprised the whole designe in 6 Figures (so that) he who takes the generall management upon him may have a prospect of the whole and make all parts inside and outside corresponde well together" (Wren's letter to the Master of Trinity: 2/534).

The Wren letter suggests that he, as designer, would not be involved in the construction of the building. The man who took upon himself the management of the Trinity College Library was master mason Robert Grumbold who was himself, later, to design several buildings at the university.

1682-1714 The north range of Clare Hall was designed and built by Grumbold. He designed a chapel, which was not built, for St John's in 1687, the new Printing House in 1696 and other building works for the university.

Colvin describes Grumbold as a mason who subordinated his own craftsmanship to classical discipline and whose designs rank high among those of his fellow master builders. The Grumbold family were master masons for most of the 16th and 17th century (Colvin, BDEA, pp 250-1). Knoop and Jones describe Robert Grumbold as "the last great mason-architect of the old kind in England" (Knoop and Jones, DMA).

References to Grumbold are of payment to him "for drawing the scheme of the new printing house" (3/133) and that the "East Front of the gateway in the west range of Clare Hall was designed by (him)" in 1705 (1/112).

1697 Willis and Clark find that "no name of an Architect is mentioned" in connection with the building of St Catherine's Hall in 1697 (2/101) but Robert Grumbold's name and that of a "Mr Elder, surveyor, for his journey from London" are given at the beginning of the accounts, implying, the authors suggest, they were responsible

for design. Colvin, however, (BDEA, p 191) finds no other mention of Elder as an architect or surveyor.

Another mention of design at St Catherine's is for the "woodwork" for the building which was designed by a "Mr Taylor, joyner of London (who was paid)£1.1s.6d". Another example of an independent designer because the work was executed by a carpenter, John Austen (2/101).

1676 Yet another occurs at Emmanuel, where John Oliver and Edward Pierce made designs for the woodwork of the Chapel which were executed by Cornelius Austin (2/707).

Oliver was an eminent surveyor, one of four appointed to supervise the rebuilding of London after the fire (Colvin, BDEA, pp 423-4). Pierce was a competent draughtsman and sculptor who also took on masonry contracts (Colvin, BDEA, pp 454-5).

1677 Robert Hooke prepared designs for Magdalene. (Colvin, BDEA, pp 295-6).

Hooke was an Oxford graduate, scientist, professor of geometry and secretary to the Royal Society who turned to architecture when aged 31 (Colvin, BDEA, p 295).

1710-14 Nicholas Hawkesmore, at All Souls College, made a moving appeal to conserve parts of the existing buildings rather than pull them down and build anew as the client was disposed to do at that time (3/280).

Hawkesmore was a farmer's son who started his working life as a clerk to a magistrate and afterwards assisted Wren who heard of his "early skill and genius" for architecture (Colvin, BDEA, p 272).

1714 The last mention of Robert Grumbold in this diary concerns his part in work to the gate-house and west front of Christ's College. His name is mentioned in the college papers in a way which prompts Willis and Clark to suggest he may have played a part in the design, but as the building is described in the history as "Dr Lynford's work and to a pattern set by him" Grumbold's precise role as the designer is uncertain (2/223-4).

1716 Another design by an "undertaker" (contractor) appears on university buildings when Coleman is recorded as "drawing the plan" (3/31). 'Coleman' may or may not have been William Coleman, joiner, who was esteemed by Vanbrugh (Colvin, BDEA, p 150), but 'undertaker' would certainly have meant 'craftsman' at that period.

1718-26 At Gonville and Caius College, John James received 20 guineas for designing the chapel (1/195). There is no doubt about James' background. John James, born circa 1672, a parson's son, had a good education and was employed as Storekeeper and assistant Clerk of Works at Greenwich between 1699 and 1718. He had been concerned with the design of other buildings during this period but the chapel at Caius was one of the first buildings for which he had an independent commission (Colvin, BDEA, pp 314-16).

In 1723 "Mr James and Mr Dicconson" were paid 20 guineas for "coming to Cambridge measuring the ground and drawing the plans" of

university buildings (3/44). William Dickinson's measuring and clerical background with Wren gave Dickinson prestige similar to that of James. Dickinson was a second generation surveyor.

1720-69 At almost the same time as James was designing the chapel at Caius, Sir James Burrough, master of Gonville and Caius from 1754, began acquiring a reputation as an amateur architect for eight colleges and a church in Cambridge. (Colvin, BDEA, p 108). At Caius, in 1725, he was "empowered to agree rates with the men that are to dig the Trenches" (minute 20 July 1725).

1722-49 Burrough was involved in the building of the Senate House (1722-30). James Gibbs took "with him to London Mr Burrough's Plan of the Intended publick Buildings (Senate House) (to) make what improvements he shall think necessary upon it, and that the said Mr Gibbs be imploy'd and retained to supervise and conduct the said work" (3/537).

Gibbs was the younger son of "a gentleman of an ancient family" who had "a great genius to drawing". He travelled through France, Germany and Italy and studied architecture under an Italian surveyor to Pope Clement XI (Colvin, BDEA, p 229).

1724-49 Gibbs designed the New Building at King's and he was designer at Caius where he was paid expenses because he had been caused "considerable trouble . . . in making exterarordinary (sic) drawings for plates . . . that were made upon account of unhappy differences" with Sir Thomas Gooch, master of the college. Gibbs was the architect of buildings at Oxford and elsewhere in England.

Burrough and Gibbs practiced during much the same period and the following references indicate the range of Burrough's practice over a considerable period of time:

1735-43 "Mr Burrough of Caius College" received a piece of plate valued £10 "in consideration of the trouble he has been at on the College Account" in 1735, and in 1743 "the Burser gave Mr Burrough fifty pounds in consideration of his Designing and overseeing the Execution of the New Building" (1/35-37).

1740 At Corpus Christi, James Burrough was referred to as "that ingenious Architect" (1/295).

1742 The contract for the new hall, Trinity, refers to "Mr Burrough of Caius, one of ye esquire Bedells being ye architect" (1/228).

1745 Burrough gave a design for rebuilding the library the engraving for which is signed "James Burrough, Architect" (3/538).

1753-8 The University Library was designed by Stephen Wright (3/66). Wright was trained in the Office of Works. He was Clerk of Works at Hampton Court and assistant to William Kent. He designed several houses and churches but the library was his only building in Cambridge (Colvin, BDEA, pp 716-7).

1756-82 After Grumbold, Wren and Burrough (in chronological order if not in order of importance) comes James Essex as one of the designers whose influence extended over several different colleges.

Essex was the son of a carpenter and joiner. He was educated at a grammar school in Cambridge and studied architecture under Burrough. He practised his father's craft at the same time as designing various buildings with Burrough. He established himself as an architect specialising in the Gothic style (Colvin, BDEA, pp 197-9).

Essex designed buildings or parts of buildings at eleven Cambridge colleges and other buildings in Cambridgeshire and Essex. He was supervising works designed by others between 1749 and 1755, and in 1764 was referred to as "carpenter" on one of the Burrough projects. On the day of his death Burrough talked business with "Mr Essex (the Builder)" (Colvin, BDEA, p 109).

A few references from Willis and Clark about Essex are given below:

1756-60 At Queen's, Essex designed the river front in the Italian style. It was, in the words of the president, Dr Plumptre; "planned and executed by Mr Essex, an eminent architect and man of good understanding and character in Cambridge" (3/542).

1758-61 Buildings at Christ's College were described as "under the plan and direction of Mr Essex" (2/224).

1769 A bridge at Trinity Hall was "executed under the direction of Mr James Essex, the Architect and Surveyor of the College" (1/215).

At Downing, James Essex was instructed to purchase land and draw a plan etc. for works which were not built (2/756).

1779 Of Essex's collection of materials for a history of Gothic Architecture, Tyson wrote "no one alive understands the technical part but himself".

Essex emerges as a strong character. Early in his career, whilst in his mid-twenties, he successfully established that it was he and not Masters, the Bursar of Corpus Christi, who made a design for that college when Masters had Essex's plan published as his own (Masters). He was designing buildings until two years before his death (Colvin, BDEA, p 197).

1784 One of the last instances of a design being prepared and the works executed by the same craftsmen occurs with the building of a lecture room in the Botanic Garden. It was agreed to "apply to Mr Brettingham for a plan". This plan was not accepted and eventually the client "adopted a plan suggested by Mr Bradwell, bricklayer, and Mr Kaye, carpenter . . ." which was built by those craftsmen (3/153).

Brettingham, self-styled "architect, son of Matthew Brettingham, bricklayer" (Colvin, BDEA p 94) had few works to his credit but nevertheless the preference of Bradwell and Kaye is interesting. However, even if Brettingham was rejected, the day of the craftsman as designer at Cambridge University was, to all intents and purposes, over from that time forward. The future designer was to approximate to the chapter 3 definition of an architect and be

other than craft-trained.

From the time of the Brettingham refusal until the end of the 18th century three architects were active at Cambridge.

1784-1800 James Wyatt (2/758), Sir John Soane (1/197) and William Wilkins, senior (Colvin, BDEA pp 673-4) appear at Downing and at Gonville and Caius.

James Wyatt was sixth son of a timber merchant and farmer who practised as a builder and architect. James spent six years in Italy and had "polished manners and polite accomplishments". He was an RA and FSA and very successful architect (Colvin, BDEA, pp 722-3). Of Sir John Soane nothing need be said and of the Wilkins family more is said below.

By the end of the 18th century, architecture at Cambridge was primarily the province of the gentleman; the main problem was the manner in which the right man was to be selected.

1804-6 The first few years of the 19th century saw the beginning of architectural competitions. At Downing, James Wyatt submitted designs for the college which were rejected. A competition was held for which designs were submitted by George Byfield, William Wilkins, Lewis Wyatt and Francis Sandys. In 1806 the Court of Chancery ordered the designs of Wilkins and Lewis Wyatt to be submitted to the judgement of three architects, George Dance, J Lewis and S P Cockerell. The Wilkins' design was favoured (Colvin, BDEA, p 733).

What manner of men were the competitors? Mention has been made above of James Wyatt - one of several Wyatts spanning three generations who practised building and architecture.

Byfield had served as a pupil of Sir Robert Taylor and was later, in 1813, described as "an eminent architect" with a reputation for public buildings extending over several counties (Colvin, BDEA, pp 115-7).

Lewis Wyatt was a brother of James and had been a pupil of his uncle. He exhibited at the R A and enjoyed distinguished patronage (Colvin, BDEA, pp 732-4).

Sandys' training is obscure but he had travelled abroad, had Lord Bristol as a client, exhibited at the R A and was an FSA (Colvin BDEA, pp 526-7).

William Wilkins' family illustrates the metamorphosis from craftsman to 'professional' architect in two or three generations which was not unusual in the 18th and early 19th century and which can be seen also in the Wyatt family.

The first known William Wilkins was a plasterer and stucco-worker whose son, another William, followed the craft until he became a competent draftsman and subsequently practised as an architect. His designs were mainly for buildings in East Anglia and included work to the Master's Lodge at Gonville and Caius. The William Wilkins who won the competition at Downing went from grammar school to Caius, where he was sixth wrangler, and then spent four years

in Italy and Greece. He was an R A and a Professor of Architecture. He erected buildings in several counties and wrote a number of books (Colvin, BDEA, pp 674-7).

1818-24 Another architectural competition occurred for the Observatory. A synopsis of this project is given in Appendix 6, Project No 18. Thirteen designs were submitted and that of John Meade was accepted.

Meade was the son of a surveyor who exhibited at the R A. He trained in his father's office and attended the R A Schools (Colvin, BDEA, p 385).

1829 For extension of the Museums, Lecture-Rooms, Schools etc an architectural competition was held between Cockerell, Rickman, Burton and Wilkins. The syndicate responsible for the extension gave a brief for the competitors which specified the schools, rooms, etc, including sizes and relationship of rooms in some instances. Such details as the number of persons to be accommodated in lecture-rooms and provision of sunlight "in the middle of the day" were included in the brief. But the syndicate took care to point out that they were "merely suggesting . . . but leave it to the Architects . . . no particular style of Architecture is prescribed" (3/102-5). The competition was controversial but eventually a design by Cockerell was accepted (Colvin, BDEA, p 675).

Charles Cockerell, the winner of the competition, was the son of a quite eminent architect and surveyor. He was educated at Westminster before entering his father's office and travelling

abroad. His designs included most building types (Colvin, BDEA, pp 144-7). Of the competitors, Wilkins has already been mentioned.

Rickman was a self-taught draughtsman having practised as a doctor and a clerk to a cornfactor. He has two pages of buildings to his credit in Colvin (BDEA, pp 498-501).

The other competitor was Decimus Burton. Burton was the tenth son of a builder who received practical training with his father and entered the R A Schools. His designs covered most of the counties in south-east England (Colvin, BDEA, pp 109-113).

1834-45 The architectural competition for the Fitzwilliam Museum involved thirty-six architects. George Basevi presented the winning design but he was killed before the building was completed (3/203-10).

Basevi was "probably the most brilliant of Soane's many pupils". His designs were executed over most of southern England as far north as Lincolnshire (Colvin, BDEA, p 63).

1831-2 Seven architects competed with designs for the Pitt Press building. Edward Blore was commissioned (3/138). Blore was the son of an historian and he drew the illustrations for one of his father's historical works. He was appointed "special architect" to William IV and to Victoria for part of her reign (Colvin, BDEA, pp 78-82).

1815-50 Architectural competitions were by no means the only

method of obtaining designs in the first half of the 19th century; architects were also individually selected. This diary is concerned with the design process rather than personalities but brief biographical notes of a selection of the architects are given below to indicate the background and training of the designers at Cambridge during the first half of the 19th century.

1815-32 Charles Humfrey at Clare Hall (1/111), Emmannual College (2/716) and Anatomical Museum (3/156). Son of a carpenter, pupil of James Wyatt, student at R A Schools. Exhibition at R A (Colvin, BDEA, p 303).

1821-2 Sir Jeffrey Wyatville at Sidney Sussex (2/741 and 748) son of an architect, pupil of architect uncle, architect to George IV. RA, FSA, holder of foreign decorations, architect for two pages of buildings in Colvin, BDEA, pp 736-9.

During the last twenty five years of the period at least eight architects are named by Willis and Clark each of whom prepared designs for one building. In addition, Anthony Salvin designed eight buildings and Sir George Gilbert Scott designed the church of St Mary the Less and, beyond the present period, other Cambridge buildings. All had backgrounds similar to those described above.

EXAMPLES OF THE EVOLUTION OF DESIGNERS

To what extent can the Cambridge Diary be considered as presenting a truly typical picture of the evolution of the designer from craftsman to independent practitioner throughout the country?

The Oxford English Dictionary gives the first occurrence of the word 'architect' as 1563. Papworth[4] says; "In the 'Dictionary' of Sir Thomas Elyot, fol 1538, occurs 'Maister of the Workes, a deviser of buildyng, architector et architectus'" but he suggests the title 'architect' appears to have been introduced into English books about the end of the reign of Queen Elizabeth[5]. Lethaby says the word 'architect' first appears in 1510 "in a professional sense" but he does not give the source of this early use[6].

Girouard says ". . . there were no Elizabethan architects. In England at the time 'architect' both as a word and a concept was so alien and unfamiliar as to be meaningless. For the architect was a revival or product of the Renaissance"[7]. Summerson suggests that to "introduce the word 'architect' with all its later associations into the Elizabethan picture is to confuse the issue hopelessly. Nothing remotely like an 'architectural profession' existed. The word was rarely used in the sixteenth century and its connotation was in every sense ornamental"[8].

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(4) Papworth, SEB, p 194

(5) ibid, p 186

(6) Lethaby, WR, "Westminster Abbey", p 362.

(7) Girouard, RS, p 20.

(8) Summerson, AB, p 24.

The image of the architect, as set out by Shute in the 16th century and 17th century writers on architecture, was of the architect as a designer rather than as the co-ordinator, or master builder, of the works. The Vitruvian qualities required by an architect were usually listed:

> . . . he ought first to be a very good Gramarian, then to have experte knowledge in drawing and protracting the thinge, which he hath concevied, . . . good sight in Geometrie . . . in Opticke . . . in Arithmeticke . . . he must be very perfect . . . in History . . . in Musyche . . . in Phisicke . . . not ignoraunt in Astronomie . . . in Philosophie, very experte. (p 14).

Armed with this general education the student of architecture required a knowledge of "the maner, forme and order" of architecture as expounded by Vitruvius (which Shute set out in 34 pages) and an opportunity to make the Grand Tour of Italy and (ideally but not necessarily) Greece.

About architecture Shute says - and he is echoed by his successors - it is:

> (by the common consent of many notable men) as Cesarius sayth . . . of all artes, the most noble and excellent, Contayning in it sundrie sciences and knowlaiges wherwyth it is furnished and adourned . . . (p 14)

There is considerable documentary evidence of craftsmen as designers right through the period and particularly during the second half of the 16th century and 17th century(9).

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(9) See Girouard, RS, for examples of the Smithson family's designs; Lees-Milne, TR, for reference to the craftsman's role; Knoop and Jones, DMA; to mention a few of the many sources.

A Rutland wage assessment of 1610 which fixes the wage of a "free-mason which can draw his plot, work and set accordingly"(10) leaves no doubt that design was regarded as part of the duties of a freemason in the 17th century.

The reference to the mason working and setting according to the 'plots' suggests, too, that the plots were more than just pictures for the benefit of the client.

One hundred years later Neve wrote, "The drawing of Draughts is most commonly the work of a Surveyor, tho' there be many Master-workmen that will contrive a Building, and draw a Draught, or Design thereof, as well as most (and better than some) Surveyors"(11).

John Shute, the Author of "The First and Chief Groundes of Architecture", first published in 1563 (but with subsequent editions in 1579, 1584 and 1587) described himself as "painter and architecte" and, if not the first was one of the first in England to do so. It has been noted in Chapter 12, however, that there is no record of him designing any buildings.

Inigo Jones (1573-1652) is generally considered to be the first professional architect in England - the first "whose technique is based upon study and whose function is supervisory rather than executive"(12).

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(10) Archaeologia, Vol 9, p 200.

(11) Neve, CCP, p 130. The book had 1703, 26 and 36 editions.

(12) Carr-Saunders and Wilson, "The Professions", p 176. For a fuller account of Jones see Summerson, AB, Chaps 7, 8 and 9.

Inigo Jones was not a gentleman by birth. He was the only son of a London clothworker and he first appears as a "picture maker" to the Earl of Rutland. Jones travelled in Italy whilst in his twenties, probably in the company of the Earl of Rutland. He designed masques for the Court of James I, becoming Surveyor of the King's Works in 1615. The post of Surveyor of the King's Works (the most coveted in the industry) was administrative rather than creative; but Jones retained personal involvement in designing many buildings with skill which causes Summerson to compare him with Rubens as "an individual of altogether exceptional genius whose vision and energy transferred a Mediterranean phenomenon to the still half Gothic north"(13).

Jones was the first professional architect and as such he was atypical. Some examples of designers are given below to illustrate the evolution more typically. The examples are only a few of many and an attempt will be made later to quantify the transition.

1550-1600 Robert Smythson and William Gonerson, both master masons and sons of building craftsmen, are described by Girouard as "mason-architects" and worked on and designed works at Longleat (Girouard, RS, Chap 1). Allen Maynard, another mason, also worked at Longleat (1563-6) and his "influence, in particular, on the ultimate design of the house was to be very considerable" (ibid).

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(13) Summerson, AB, p 62. Jones may not, as suggested above, have been a gentleman by birth but he might well have been one of the men Ackerman referred to in "Architectural Practice in the Italian Renaissance" when he said, "if a man was not a gentleman before practising architecture, he became one after" (Journal of the Society of Architectural Historians XIII, No 3 (1954) 3).

John Symonds, a joiner with mason's tools, prepared a plan for a house at Kyre Park, Worcestershire in 1588 (Summerson, AB, p 26).

1600-1650 John Akroyd and John Bentley, masons from Halifax, and Nicholas Stone, a sculptor and tomb-maker, were all involved in the design of buildings in Oxford (Knoop, Jones, DMA, p 7). Members of the Smythson family continued the mason-architect tradition over much of the Midlands with houses at Worksop, Hardwick and Kirkby during the first half of the 17th century and, indeed, into the second half. John Bentley went from Oxford to Kyre Park in 1611 "to drawe . . . a newe platte" for Sir Thomas Bodley (Summerson, AB, p 27).

1650-1700 saw a continuation of the craftsman-architect tradition, but men such as Nicholas Hawksmoor, Wren and the other professional architects most of whom started life in other professions appeared on the construction scene.

A compromise situation appears to have occurred with the building of some country houses between 1667 and 1690 if William Winde's method of operation can be used as a guide. Colvin lists eight substantial buildings designed by Winde in his biographical dictionary (pp 682-5). He gives evidence (p 7) that Winde determined the architectural features of the building in consultation with his client and then assembled a team of craftsmen who submitted designs for the decorative features - ceilings, pediments, and gateways. Their 'draughts' were signed and dated by the architect to show they had been "allowed". Both plasterer and carver designed their own work in this way at Castle Bromwich and

Colvin suggests that their draughtsmanship is, if anything, more accomplished than that of Winde himself. This arrangement was probably similar to that adopted at Petworth House (and no doubt many others) as mentioned in Project No 12 in Appendix 6.

1700-1750 Thomas Gilbert, described on his memorial as "Gent Architect and Master Builder", also continued the family business as quarry owners and masons (Colvin, BDEA, p 237). Much the same can be said of Henry Hester, a master bricklayer who undertook contracts to build whilst, at the same time, "making a draft or plan for a new church" and measuring other bricklayers' work (1713-1720) (Colvin, BDEA, p 282). William Halfpenny "architect and carpenter" designed buildings but is best known for his numerous publications between 1720 and 1760 (Colvin, BDEA, p 261). More remarkable was John Gwynn, who "was originally a carpenter" but became an architect "by industrious study". Gwynn was not only a carpenter and architect but a writer, friend of Boswell (who described him as "a fine, rattling fellow") and Dr Johnson's match in conversation. His designs extended over most building types (Colvin, BDEA, pp 254-6). By the first half of the 18th century, however, not many men were entering architecture as 'professionals', as Campbell's 'The London Tradesman' (pp 155-8) published in 1747 indicates when he says, "I scarce know of any (architects) in England who have had an Education regularly designed for the Profession. Bricklayers, Carpenters etc all commence Architects; especially in and about London, . . . there appears now and then a Man eminent in this Way, but an Inigo Jones is scarce to be met with in several Ages".

Campbell's account provides a good picture of architectural practice in the middle of the 18th century. He describes the architect as

> the Person who draws the Design and Plan of a Palace, or other Ediface; where he describes, in Profile, the whole Building, in all its proportional Dimensions; every Member of the Building is exactly delineated; all its Ornaments ranged in their proper Order; and every Part of the Ediface appears to the Eye in Miniature in the same Disposition as they are intended in the real Work. Beside this Plan he generally forms a model in Wood . . . both which gives his Employer a distinct View of the Design. When the Employer has fixed upon a Plan, then they agree upon the Price, and the Architect either undertakes the whole Work, for a certain Sum, or is paid for superintending the Work only; in either case all the Workmen are generally of his own chusing, and such as he believes capable of executing their several Branches in the proposed Work.

Campbell recognises two types of architect. The first

> may understand all the Mechanic Rules of Architecture, and yet have no more Taste in Building than a blind Man of Colours. . . An Architect of this Stamp is able to execute a Plan ready drawn, or imitate a Building ready raised; but when Situation . . . obliges him to alter his Dimensions, he is at a Loss . . .

The 'complete' architect requires

> "taste . . . acquired by Travel, and a careful Study of the Works of the most celebrated Masters . . . (and) . . . properly ought to be of no other Employ . . . must be a Judge of Work, and how far it is executed to his Design . . . must know all the secrets of (all the crafts) . . . and (be) a Judge of the Materials each uses in his Way." The architect's "education ought to be Liberal, and his Head Mathematically and Geometrically turned . . . but above all, eminent in Design and Invention."

Campbell says

> "the Business is profitable; few men who have gained any Reputation but have made good Estates."

1750-1800 During this period men who practised architecture and were at the same time builders, timber merchants or property speculators were by no means uncommon(14). There were also many men who turned to architectural practice after following a craft. An advertisement in the 'Norwich Mercury' in 1753 demonstrates this when Robert Brettingham advertised that he "is leaving off his business as Mason, he intends to act in the character of an Architect, in drawing plans and elevations, giving estimates, or putting out work, or measuring up any sort of building, for any Gentleman in the County". Two months later he was appointed as an architect for building the Octagon Chapel in Norwich(15).

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(14) See Colvin, BDEA for confirmation of this. Thomas Ivory combined the roles of architect, builder, timber merchant and property speculator in Norwich. He also built and acted as sole proprietor of a theatre for some ten years (ibid, p 310). John Eveleigh combined almost as many roles in Bath(ibid, p 201).

(15) ibid, p 94 quoting Wearing SJ, "Georgian Norwich and its Builders", pp 6-10.

This was a period of transition from craft to architectural practice over one or two generations for a number of families with roots in the building industry. Families like the Gwilts, Brettinghams, Hiornes and several others demonstrate this trend. The Hiorne family is mentioned again later.

There were also numerous instances of men being trained as architects, usually as pupils in the offices of other architects, architect/builders or architect/surveyors as the graphs later in the chapter show. Architecture was on the way to becoming an established profession by 1788 when Sir John Soane wrote:-

> The business of the Architect is to make the designs and estimates, to direct the works, and to measure and value the various parts; he is the intermediate agent between the employer, whose honour and interest he is to study, and the mechanic whose rights he is to defend. His position implies great trust; he is responsible for the mistakes, negligences of those he employs; and above all he is to take care that the workmen's bills do not exceed his own estimates. If these are the duties of an Architect, with what propriety can his situation, and that of the Builder or Contractor, be united?

Soane's definition of the 'business of the Architect' is echoed in a dictionary dated 1797 where 'architect' is defined as "a professor of the art of building, a builder; the contriver of anything" (Thomas Sheridan, London) and by Peter Nicholson in his "Architectural Dictionary" of 1819 which says he should be "skilled in the art of building forms and estimates, designs of edifaces etc"

and that he "directs the workmen, conducts the work, measures and makes the whole . . ."

1800-1850 The definition given above is repeated, in essence, in evidence given before a Select Committee enquiring into the conduct of the Office of Works and Public Buildings in 1828 to which reference is made at some length in Chapter 15. In reply to a question; "What do you call the responsibility of an architect?" Lt Col Stephenson, the Surveyor General of the Office, said: "Principally for the general design of a building, the construction, the correctness of estimate, and for the materials and workmanship". In answer to the next question Stephenson admitted that he had no power to displace an architect (Parliamentary Papers, 1828, pp 332-3).

The combination of the designing and estimating functions within the office of the architect was stated elsewhere in the evidence given to the Select Committee (p 399) when Henry Rowles, a Builder, explained that the architect's office "consists of two departments, one the drawing clerks . . . the other the measuring clerks . . ."

Whilst there was still a number of architects qualifying and practising in the 19th century who combined building, statuary, masonry, landscape gardening, surveying, civil engineering and valuation with architectural practise the profession had largely separated from contracting(16).

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(16) Francis Greenway, son of a mason, pupil of John Nash, opened a yard in Bristol in 1805 with his brothers and did business as "stonemasons, architects, builders etc" and at the same time offered "his services to the public in the capacity of Architect, Statuary and Landscape-Gardener" (Colvin, BDEA, p 247). John Fallows in 1831 advertised that he "devotes his time in designing Building Plans, Elevations etc, making Specifications

(Cont)

Many men such as Phillip Hardwick, J Jenkins and Sampson Kempthorne, to mention three at random of the many listed by Colvin in his biographical dictionary, entered the Royal Academy Schools and/or an architect's office as pupils in order to train as architects. Some indication of the extent of this method of training is given in the graphs below, which demonstrate trends over the whole period.

STATISTICAL EVIDENCE

It is possible to produce statistical evidence to confirm or refute the impression of an evolution from craftsman-designer, through gentleman-architect to professional architect which emerges from the examples given above.

Appendix 8 contains six tables, each spanning a 50 year period and tabulating information about twenty designers practising during the period. The features which make up the tables are described in the appendix. In addition to the tables an analysis has been made of a sample of 27.5 per cent of the 'architects' contained in Colvin's "Biographical Dictionary of English Architects, 1660-1840" to ascertain their backgrounds, training and the type of practice in which they were engaged.

Figure 13.1 shows the increase in the total number of designers between 1650 and 1850. The most dramatic increase coincides closely with the period of the Industrial Revolution: almost 300 per cent in 100 years. Those who most closely resembled the Chapter 3 definition of 'architect' are shown with a broken line.

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(16) Cont and Estimates . . . surveys, measures and values every description of Artificers' work" (ibid, p 203). Phillip Hardwick, referred to below, was a civil engineer (ibid, p 263) as was Robert Mylne, discussed later in the chapter.

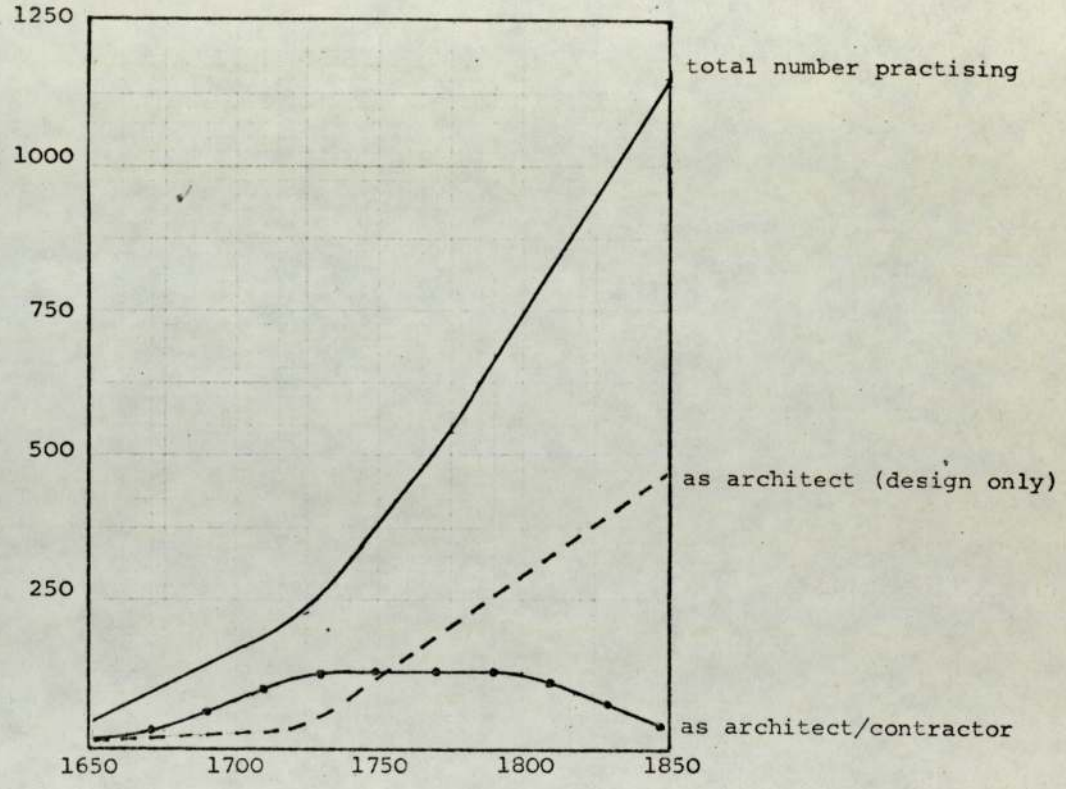


Figure 13.1 The number of Architects practising between 1650 and 1850

The increase in the number of architects follows a similar pattern to that of the 'total number' but the rate of increase during the last two periods in the figure is not as sharp. The pattern of architect/contractors is quite different. Early in the 18th century their numbers decreased slightly and the rate of decrease became slightly sharper during the last period. Figure 13.2 endorses the trends indicated in Figure 13.1.

Comparison of the 'architect' practice line in Figure 13.1 with the 'as designer' line in Figure 13.2 shows that the former precedes the latter in time and suggests that need led to the training of men to become architects. Towards the end of the period, however, the training line began to converge with the practice line as the need was met.

Figures 13.1 and 13.2 have been prepared from the analysis of the sample referred to above and they are consistent with the figures below which were prepared from the six, 50 year period, tables although they do not agree with them in all respects.

Figure 13.3 shows the sources of training adopted by architects. Not surprisingly, the vast majority of architects received their training with craftsmen for most of the period with a sharp decline towards the end of the period as the professional architects took pupils into their offices and students entered the Royal Academy Schools. There is an inconsistency in Figure 13.3 in the 'A' line and, perhaps, the 'C' line. It seems unlikely that the 'A' line dropped to zero as indicated in the figure and the improbable trend has been ignored for the purposes of this comparison. No

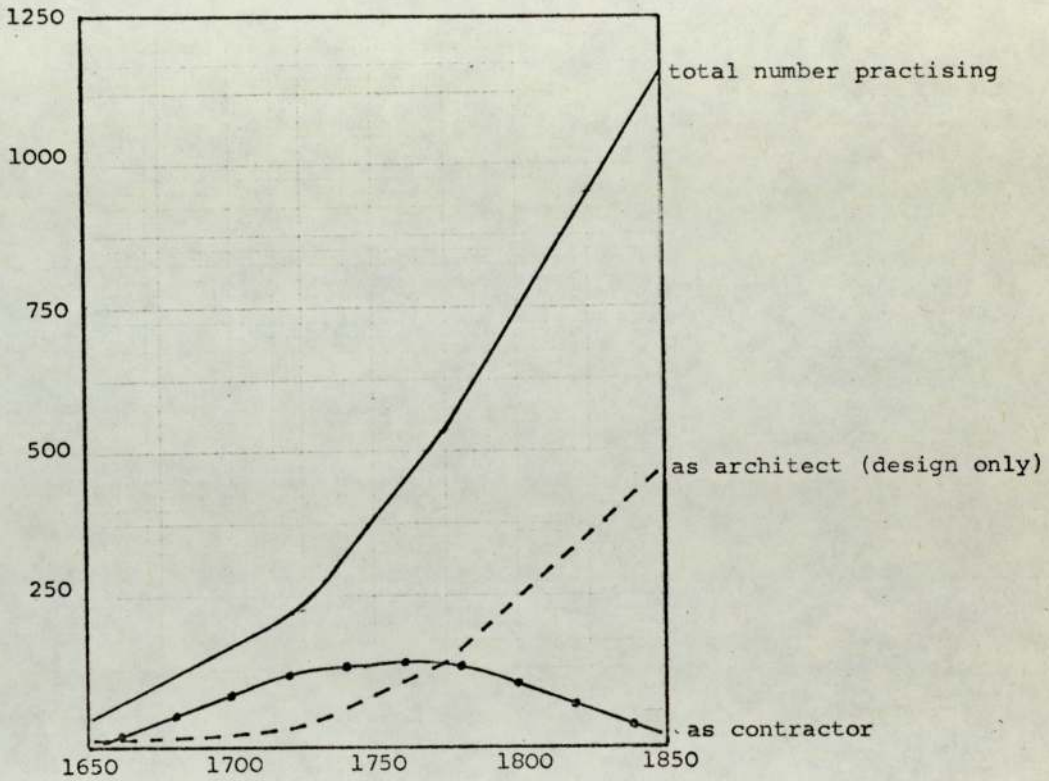


Figure 13.2 The training of Architects between 1650 and 1850

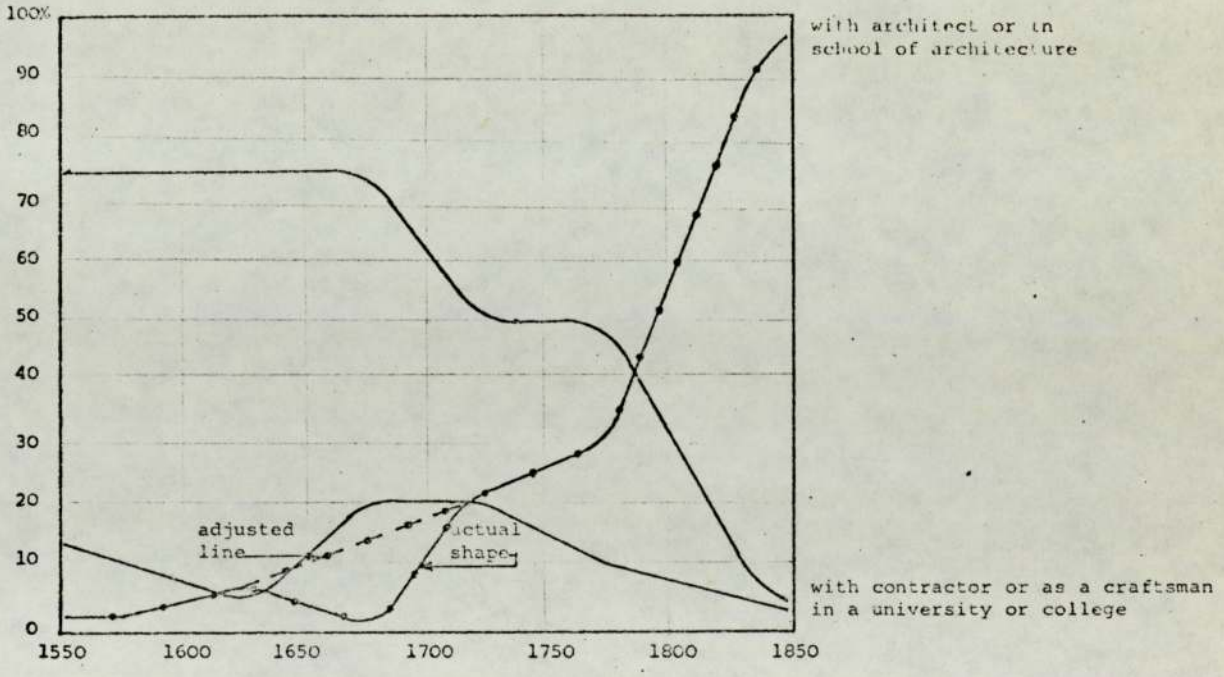


Figure 13.3 The sources of training

compensatory adjustment has been made for the less pronounced inconsistency on the 'C' line. Indeed, the line denoting the percentage of architects educated at a university or college may be slightly misleading as it does not include the architects who trained in the Royal Academy Schools towards the end of the period.

A more detailed analysis of the sources of education and training can be made from Figures 13.4 - 13.7 on the next pages. These have been prepared from Feature 2 in tables 1 to 6 of Appendix 8.

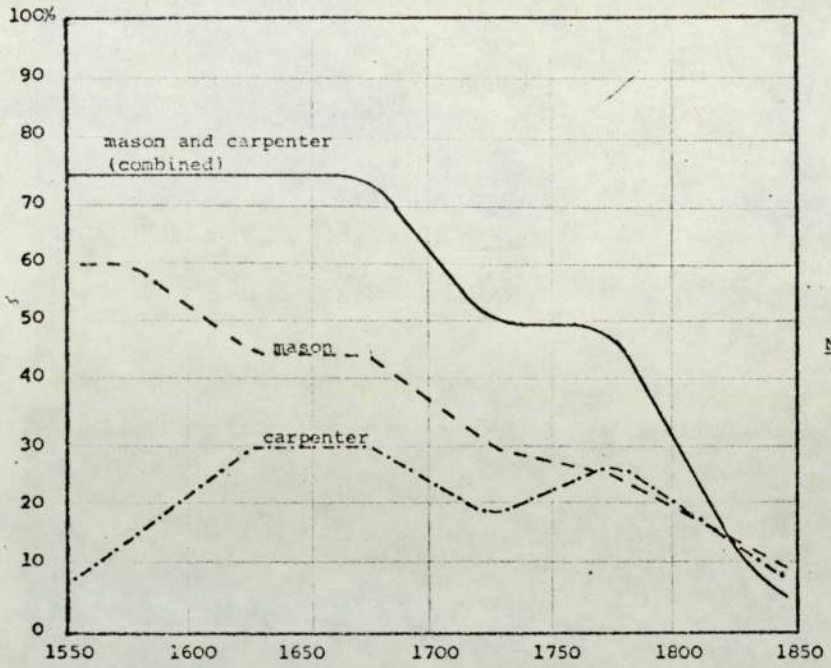
Figures 13.4 and 13.5 are self-explanatory and Figure 13.6 has, as a broken line, the possible shape the solid line could adopt if allowance were to be made for architects entering the Royal Academy Schools. It was by no means unusual for a student to be entered at a school of architecture before or at the same time as he became a pupil to an architect.

CRAFTSMEN, GENTLEMEN AND PROFESSIONAL ARCHITECTS

It is clear from the examples given above that there were three main methods of entry into architectural practice and that the influence and numerical predominance of the practioners from any of the methods of entry varied during the period. The practitioners can be classified as craftsmen-designers/architects, gentlemen-architects and professional architects.

Craftsmen-designers/architects

The craftsmen-designers/architects were knowledgeable about the technology and sometimes more acceptable to the client in that they



Note between 1800 and 1830 'contractor' displaced 'craftsman'

Figure 13.4 With craftsmen or contractors

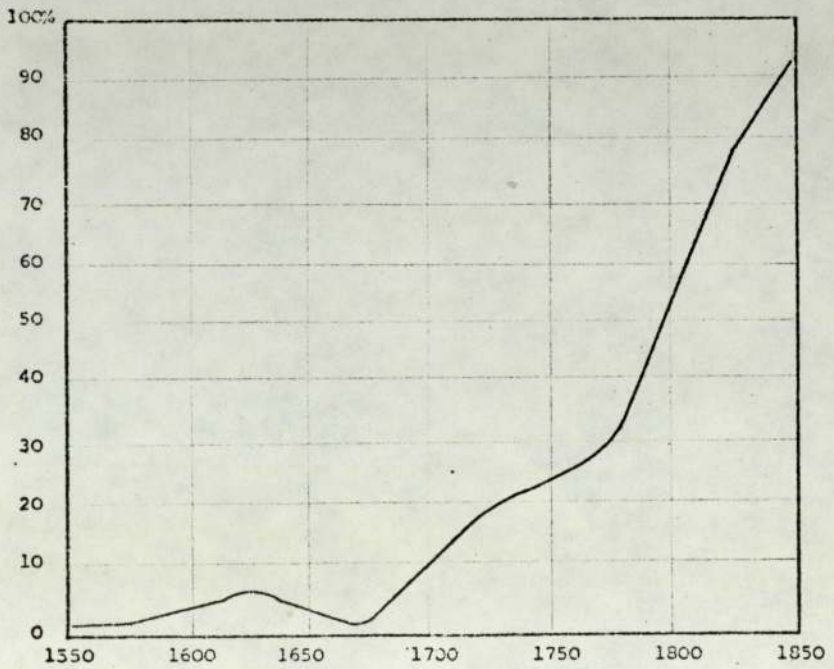
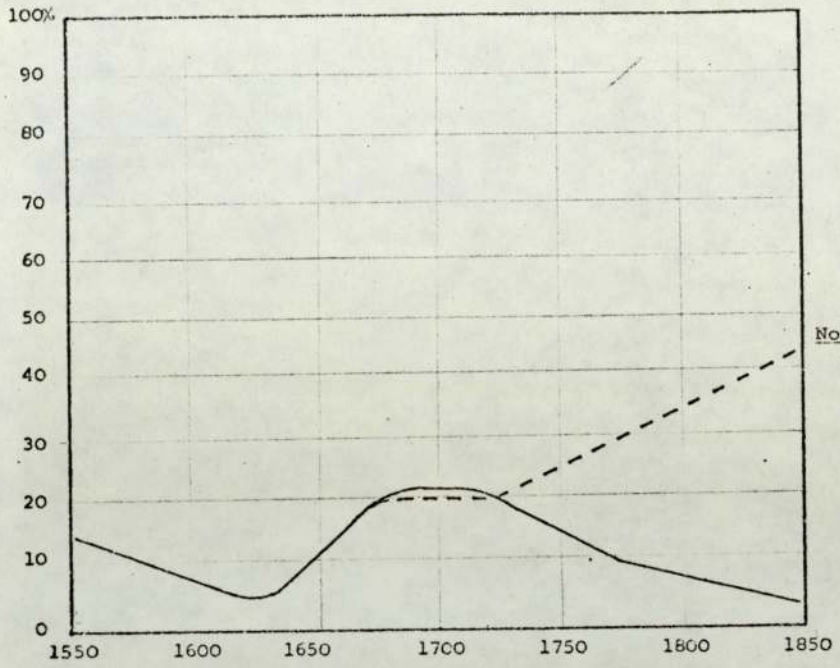


Figure 13.5 With architects or in schools of architecture



Note the broken line indicates the possible shape of the line if allowance were made for education in schools of architecture

Figure 13.6 At a university or college (other than a school of architecture)

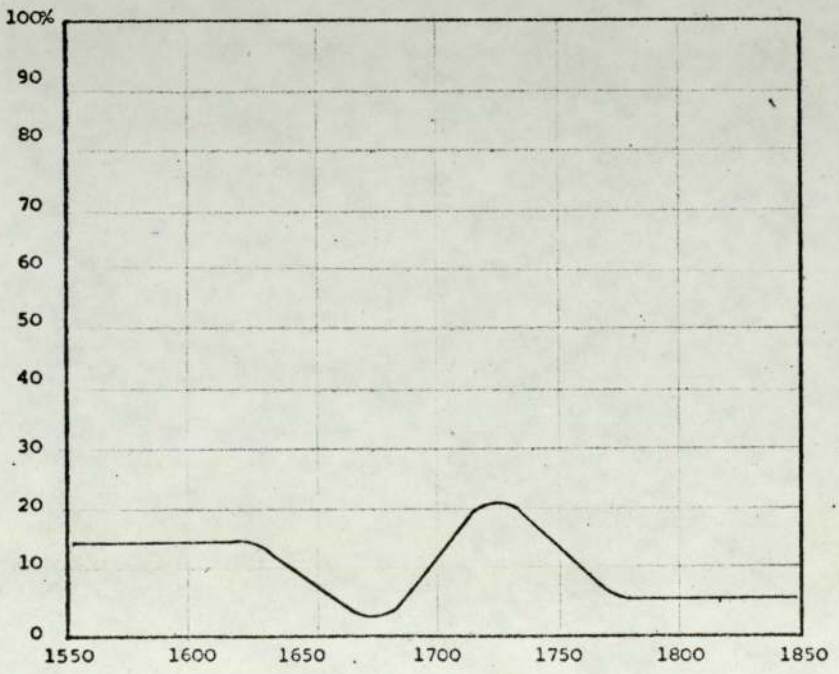


Figure 13.7 Other (unspecified)

"would do as they are directed"[17] whereas the artistically-minded architect would not.

The craftsman-designer/architect was not, however, able to make the Grand Tour which was required by Shute as a qualification necessary for an architect, nor did he have the academic background required by Shute and his successors. But even if the craftsman-designer/architect lacked the sophistication required by the gentleman building a house he was often better qualified to design other types of building. He continued to flourish until well into the 19th century and he could achieve social as well as financial success[18]. The "home-bred Architect", to use Sir Roger Pratt's words, was the only designer capable of relating the design to the technology and of designing buildings which he or his fellow craftsmen could construct and fully understand[19]. To a large extent these men continued the medieval tradition, and while they continued to practise as architect-builders design was not divorced from production.

Gentlemen Architects

By the middle of the 17th century dabbling in architecture was established as a fashionable pursuit for a gentleman. John Webb, who was a pupil of Inigo Jones, commenting on Sir John Denham's

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(17) Thomson, GS, "Letters of a Grandmother", 1732-35 (Cape 1943, p 52). The Duchess of Marlborough, 1732, complained about Vanbrugh's behaviour during the building of Blenheim Palace. Further reference to this relationship is made in Chapter 16.

(18) That it was possible for the craftsman to succeed as a designer at the beginning of the 17th century, at least, is evident from the mural monument in Wollaton Church, near Nottingham to master-mason "Robert Smythson, Gent, Architector and Surveyor unto the most worthy house of Wollaton . . . 79 year d 15 October, 1614".

(19) Gunter, R T The "Architecture of Sir Roger Pratt" (OUP, 1928 pp 60-61).

appointment as Surveyor-General, circa 1660, said, "though Mr Denham may, as most gentry have some knowledge of the theory of architecture, he can have none of the practice, but must employ another". Evelyn described Denham as "a better poet than architect"(20).

Webb is an early example of professional architect and although it is known that he was educated at Merchant Taylor's School nothing is known of his parentage beyond the fact that he was of a Somerset Family. There could, perhaps, be a measure of professional jealousy and social prejudice in his remarks about Denham. Nevertheless, the wording "as most gentry" indicates a general interest on the part of the gentry, and the second reference to his need to "employ another" to attend to matters other than "the theory" indicates the somewhat superficial limits to the knowledge of many of the gentlemen-architects.

Evelyn's remark; ". . . a better poet than architect" is echoed by Gilbert Scott about James Edmeston (to whom he was articled) some two hundred years later when he described him as "better known as a poet than as an architect"(21).

In his treatise on architectural practice in 1660 Sir Roger Pratt implies that any gentleman should be able to "handsomely contrive" a design for himself, or if not that he should "get some ingenious gentleman who has seen much of that kind abroad and been somewhat versed in the best authors of Architecture" to make a design for him(see 19 above).

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(20) ibid, p 171

(21) ibid, p 189

This indicates that Shute's 'Grand Tour' as a qualification for an architect still prevailed at least 100 years after Shute's book was first published.

The way was, then, open to anyone with the resources to acquire a liberal education and make the Grand Tour to become an architect. The sons of gentlemen with artistic leanings were not slow to enter, or rather create, the architectural 'profession'. In the event, the number of Architects, expressed as a percentage of the whole, who undertook the Grand Tour was small[22], and indeed it is likely that architectural training was not taken very seriously by the aristocracy if Lord Chesterfield's letters in 1749 to his son who was considering architecture as an occupation are typical. He wrote:

> It would not be amiss if you employed three or four days learning the five Orders of Architecture, with their general proportions; and you may know all you need to know of them in that time. Palladio's own book of architecture is the best you can make use of for that purpose, skipping over the lowest mechanical parts of it, such as the materials, the cement etc.

And in a second letter two months later;

> You may soon be acquainted with the considerable parts of Civil Architecture; and for the minute and mechanical parts of it, leave them to masons, bricklayers, and Lord Burlington; who has, to a certain degree, lessened himself by knowing them too well.

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(22) A study of Colvin's Biographical Dictionary reveals very few 'gentlemen-architects' who followed the, supposedly, established course of training.

The 'lessened' Lord Burlington was a notable exception in that he travelled on the Continent and took architecture seriously. Indeed, his opinion was sought by other architects on their designs.

But the gentleman who wished to be thought of as an architect and considered it incumbent upon himself to design at least one country house could no doubt get by with as superficial a training as Lord Chesterfield proposed for his son. By the middle of the 18th century the craftsmanship of the masons, carpenters and bricklayers was still such that they could be relied upon to settle technical matters for themselves and construct satisfactory buildings from the basic plans and elevations provided by the amateur architects. The intelligent craftsman had the pattern books to inform him about Palladio and his training (more exacting than that of his architect) to instruct him about the 'mechanical parts' of his craft. Shelby writes:-

> As the medieval traditions of design withered away before the impact of classical forms, the working masons found themselves ignorant of the principles underlying those forms, so that they became more dependent upon the architect to supply them with details for their work.(23)

This statement is correct as far as it goes but it makes no mention of the dependence of the architect upon the craftsman. Most gentleman-architects and many professional architects during the 300 year period had little knowledge of the technology of building. It was not, indeed, considered necessary or desirable for them to concern themselves with technology as the letter from Lord Chesterfield to his son, quoted above, shows.

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(23) Shelby, JR, p 148

The gentleman-architect might, as Sir Roger Pratt - himself an architect - suggested in 1660, "give you a design on paper, though but roughly drawn"[19] but he was incapable of putting a building together and was forced to rely on the training of the craftsman he employed for the technology.

The universities were a breeding ground of 'gentlemen' or 'amateur' architects in the 17th and 18th centuries, as Sir James Burrough, Master of Gonville and Caius, (mentioned earlier) demonstrates. Burrough designed eight buildings (or parts of buildings) for the colleges at Cambridge, Great St Mary's Church, Cambridge and an altar-piece at Canterbury Cathedral between 1728 and 1763[24].

Other such architects were George Clarke, Fellow of All Souls, Oxford, politician, Lord of the Admiralty, and Henry Aldridge, DD, Dean of Christ Church. Both designed or advised on building works at Oxford in the last quarter of the 17th or first quarter of the 18th centuries. Clarke, in particular, illustrates Sir Roger Pratt's point about gentlemen-architects' "roughly drawn" designs as Clarke's drawings were "often crude and amateurish"[25].

Not all gentlemen-architects were Burlingtons, Chesterfields or persons merely desirous of creating an impression. William Samwell (1628-76) was a competent architect who was described by a contemporary writer, circa 1670, as one of the "gentleman by birth who supplemented their inadequate private income by acting

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(24) Colvin, BDEA, pp 108-9

(25) ibid, pp 141-2 for Clarke and pp 37-8 for Aldridge.

as architects and artistic advisers"[26]. The gentlemen with inadequate private incomes could not rely on occasional commissions from wealthy friends and it was they who turned professional and made up a substantial part of the professional architects who became established during the 18th century.

The Professional Architects

Between the amateur architects and the craftsmen architects there developed between 1700 and 1800 the professionally-trained architects who were, in the first half of the 19th century, to make up the bulk of the founder-membership of the Institute of Architects.

The professional architect of the 17th to early 19th centuries was often from a family with strong connections with the construction industry. Colvin's "Biographical Dictionary" contains numerous surnames, one of which Hiorne, occurs several times and links fathers and sons, brothers or uncles and nephews[27].

The Hiorne family had been masons in Great Tew, Oxon since, at least, the early 17th century. The brothers William and David established themselves as leading masons and architects in Warwick in the middle of the 18th century. Their works included church building (and repairs), houses, bridges, a shire-hall, goal and offices. An inscription on a plate records that the Shire Hall, Warwick was by "Mr William and David Hiorne of Warwick surveyors and builders of this hall Richard Newman Mason David Sanders carpenter 1754".

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(26) Quoted by Ketton-Cremer, Felbrigg, "The Story of a House" p 56.

(27) Colvin, BDEA, pp 284-88.

William Hiorne's son Francis (1744-89) succeeded him as an architect and builder. Francis continued his father's specialisation as an architect in the Gothic manner. He also continued the family tradition of church building and repair. He was elected a FSA in 1784, held office as Mayor of Warwick on three separate occasions and acted as Treasurer to the Corporation for eight years and as Bridgemaster to the County during the same period.

Another such family was Mylne; and because there are few architects in (only moderately successful) practice whose every-day lives have been recorded a synopsis of information about Robert Mylne is given below(28).

Robert Mylne (1733-1811)
- profile of an architect, surveyor and civil engineer

Robert Mylne is as far as is known, the only private practitioner of the 18th century whose diary for a period of almost a half century has survived to the present day.

The diaries, with a biography by Richardson, (ref Richardson, RM), provide an opportunity to reconstruct the nature of a practice. It is not suggested that Mylne's was a typical practice but it was probably not very different from that of many an architect/engineer of the period. This synopsis contains information about him under the following headings:-

a) The Man and his Practice

b) A Table of his activities

An extract from his diary for the year 1766 is given in Appendix 8.

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(28) Although Mylne's practice was successful he was not one of the best known architects.

a) The Man and his Practice

Robert Mylne's father was surveyor to the City of Edinburgh and another Mylne practised as an architect during the first half of the 18th century. The Mylne connections with the building industry started at least as early as the 16th century with Mylnes appointed as master masons to the Crown. Little is known about Robert's early training in Scotland but at the age of twenty-one, in 1754, he travelled in Europe and attended classes in Italy. He was particularly interested in continental bridges and aqueducts. These structures were to make up much of his practice in due course.

Mylne designed many private houses and buildings in the classical style. His works extend from Hampshire to Scotland and from Belfast to East Anglia. Stationers' Hall, London and the buildings at Inverary Castle are probably his best known buildings. Blackfriars Bridge and Hexham Bridge were probably the best known of his civil engineering projects but he was very active in the construction of the inland waterways which were expanding in the second half of the 18th century.

At his peak Mylne employed several draughtsmen and clerks. His practice was renowned for the quality of draughtsmanship which came from his office. Mylne personally inspected and sometimes altered his assistants' drawings to accord with his own ideas of what was required. His designs included candlesticks, picture frames, a burial place and the usual details of interiors. Examples of the extent of his detailing can be seen in the diary contained in Appendix 8 for days 10th and 26th June, 22nd July and others.

Mylne was an excellent technologist and in his later years he was regularly engaged as an expert on inland waterway enquiries, on the use of explosives and on the various machines which made up the engineering side of construction. He was a respected member of many committees. His thoroughness and powers of observation are exemplified in Appendix 8 for days, 6th February to 3rd April and others.

Many of the reports to which his diary refers concern estimates of cost and the value of property and land. Rents, leases and insurance claims were all part of his practice. He advised on forms of contracts for use by other practitioners. Examples of Mylne as a valuer occur in the diary for days 23rd April and 17th November.

Surveys of land and buildings made up part of Mylne's practice. The 25th and 26th December 1794 were spent surveying Gesop Creek and viewing the shore at Gosport, and examples of building surveys can be found in the diary for days 15th January, 31st May and 5th December. Often these surveys were made in connection with evidence he was to give at, for instance, the House of Lords or at enquiries for land purchases by the various canal companies. Mylne was not content merely to design and leave the execution of the work to others. He carefully supervised the work for which he was responsible, personally set out foundations and studied the effect of action he had taken with regard to construction techniques. (See dates 17th February to 14th April, 26th April, 18th October, 16th December and other diary entries). Much of his time was spent travelling in connection with his practice. Typical diary

entries about his travels can be seen in dates 9th to 14th July, but one of his most remarkable periods of travel occurred between April 17th and May 3rd, 1785. Omitting the details, the diary reads:-

April 17	Set out for Northumberland. At Ware (where he made site visits).
April 18	Travelled all night.
April 20	At Newcastle.
April 21	(Examined bridge). Set out for Hexham. At Bywell (examined dam head).
April 22	Survey Con bridge. Examined Dilston Bridge. At Hexham.
April 25	Left Hexham . . . Alston . . . Penrith. At Shap.
April 27	At Chester . . . At Conway
April 28	At Amlwch . . . Anglesea.
April 29	At Beaumaris
April 30	At Conway
May 1	At Shrewsbury
May 2	At Broadway
May 3	. . . Arrived in London.

Mylne's diary did not waste words on his private life. "Mother died" (2 April 1778), "Son Tommy died" (27 October 1782) and "Returned to London. Elected member of the Royal Society" (21 May 1767) are typical. Nevertheless, he found time to be a founder member of the Architects' Club and a member of the Engineers' Society. Other diary entries which make up the 'personal' line in the table in figure 13.8 below, include items such as "Dined with Mr Brett and Capt Phillips. Payed Bill - £3 7s 6d" and

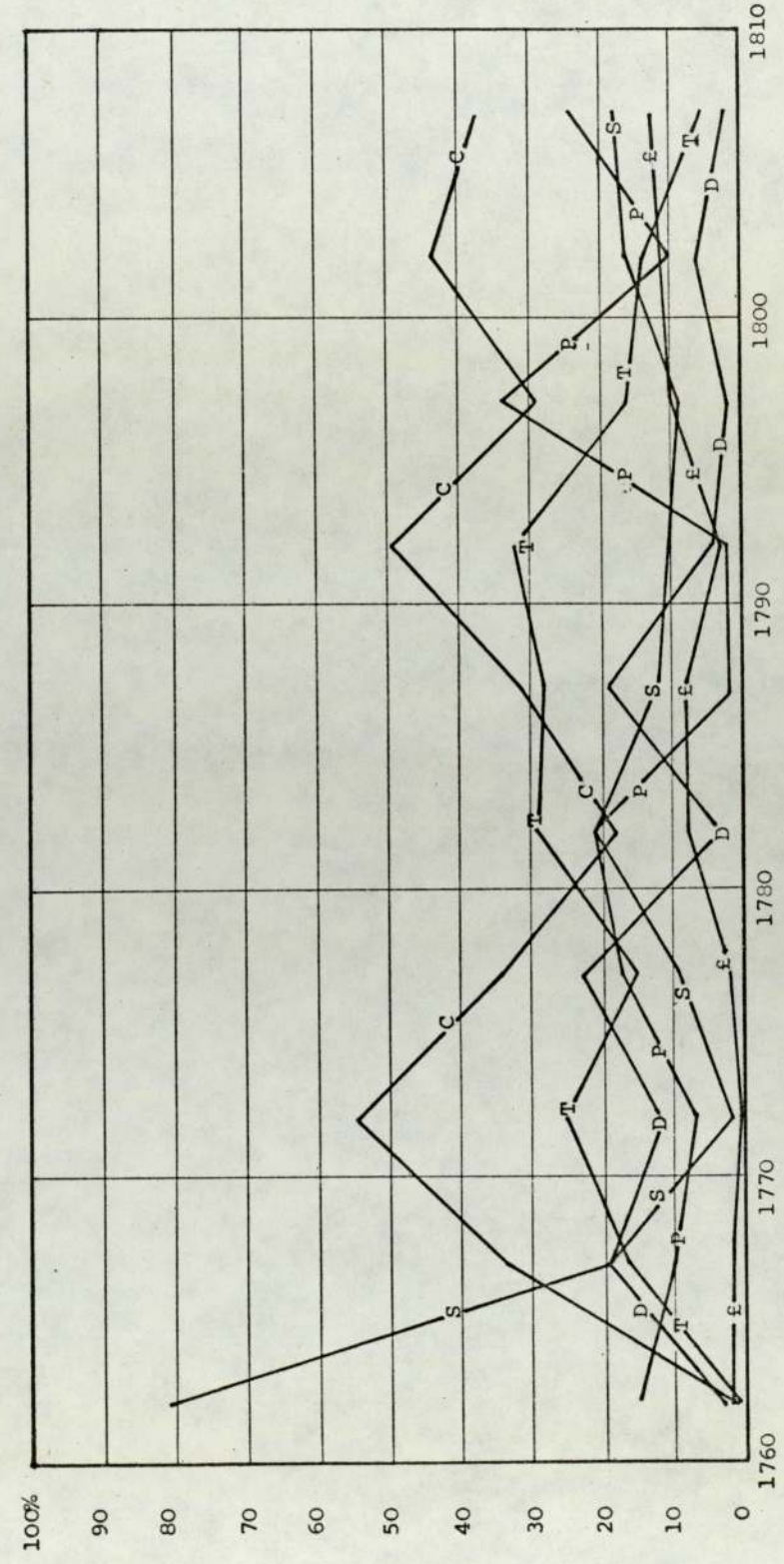

Figure 13.8 Table of Robert Mylne's Activities (1762-1807)

brief mentions of his own investments and finances. See also the diary entries on 10th February and 7th October.

b) Table of Robert Mylne's Activities

The object of the table which is given as Figure 13.8 is to quantify Mylne's activities from the diary entries.

His diary runs from 1762 until 1810, the year before his death. The table has been compiled from entries during the years 1762, '67, '72, '77, '82, '87, '92, '97, 1802, '07. Allocation for the activities plotted on the table has been somewhat arbitrary but a measure of the relative importance of the activities can be made. See heading (a) above and Appendix 8 for information about the diary entries on which the table is based.

Key

D - Design (regardless of subject)

C - Consultation or Survey (including attendance at enquiries, committee meetings and reports (oral and written) of a technical nature but excluding advice on value or estimates).

£ - Valuation or Estimate (of land or property or proposed works)

S - Supervision (of work for which he was responsible)

T - Travel (in connection with his practice other than journeys of only a few miles from his home).

P - Personal activities (as indicated in (a) above).

The activity lines represent the percentage of Mylne's total time spent on the activity as indicated by the diary.

It is evident from the table that, with the exception of the period between 1762-6 when Mylne was closely and personally involved in the supervision of the construction of Blackfriars Bridge, the activity which occupied most of Mylne's time was consultancy. This involved him in a considerable amount of travelling and, indeed, the line on the table representing travel runs almost parallel with the consultancy line. Design and supervision run together as less important activities, no doubt because Mylne employed others to undertake those activities on his behalf. Mylne's opinion was often sought regarding estimation of building cost and the valuation of property. The time he devoted to this activity increased over the years and for the last 15 years of his working life more of his time was devoted to matters of cost and value than to design.

THE PARENTAL BACKGROUND OF THE ARCHITECTS

Earlier in this chapter reference was made to families with strong connections with the construction industry. Examples were given of such families and an attempt has been made below to determine to what extent the impression of continuity is valid.

The tables below, Figures 13.9 to 13.13 have been prepared from the tables and sample analysis in Appendix 8. The figures should be read together.

The line in Figure 13.9 which represents 'craftsmen/contractor' as the occupation of the father shows how strong the connection with the construction industry was in the families of architects, particularly during the first 200 years of the period.

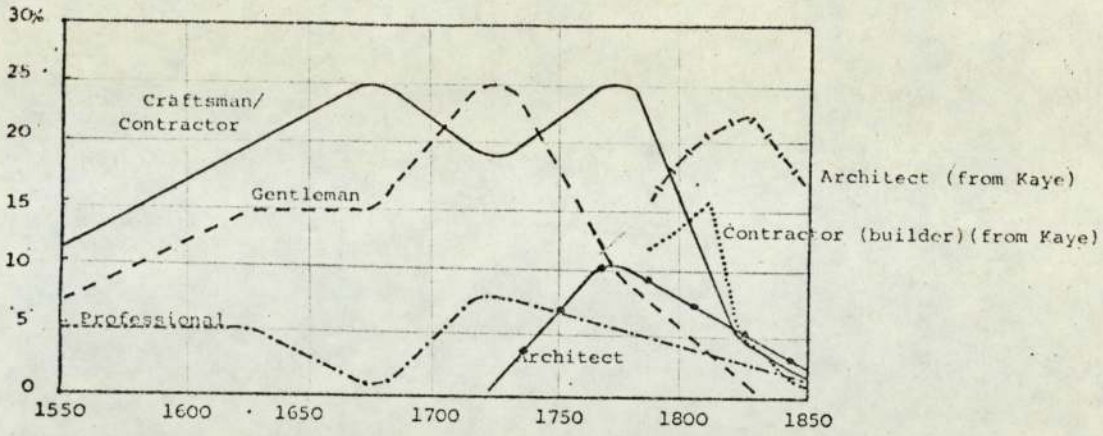

Figure 13.9 The occupations of the fathers of architects

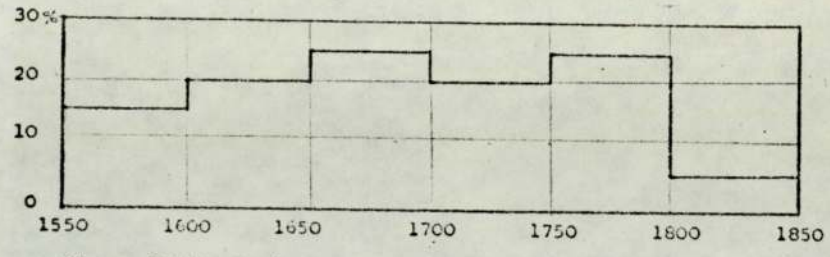

Figure 13.10 Craftsman/Contractor father

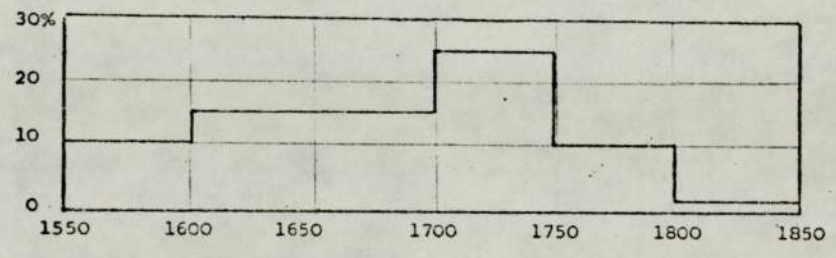

Figure 13.11 Gentleman father

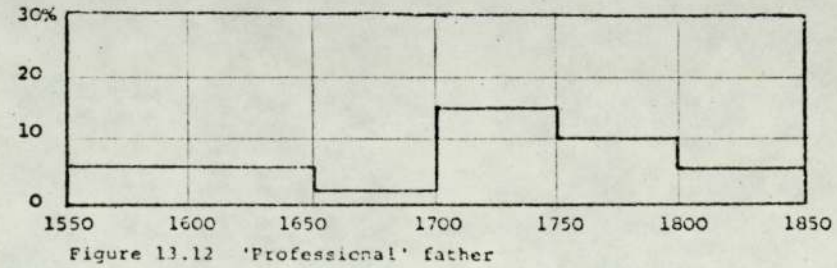

Figure 13.12 'Professional' father

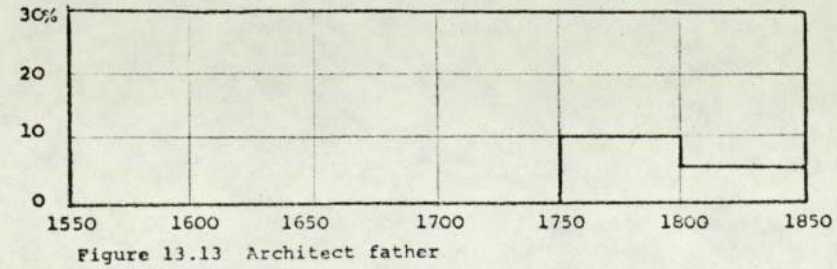

Figure 13.13 Architect father

The graph confirms the interest in architecture by 'gentlemen' during the first half of the 18th century. This declined as the approach to architecture became more 'professional'. It may not be coincidental that by the middle of the 18th century the quality of craftsmanship generally had fallen. The best and more intelligent craftsmen were often themselves practising as architects, and unless the amateur 'architect' had more than a superficial knowledge of the technology he would find it difficult to practise.

The line in Figure 13.9 representing the 'professional-fathers' follows a profile similar to that of the gentleman-fathers; indeed, in the earlier years it is often difficult to separate the two occupations. The 'architect-father' line commences in 1750; before that time architects cannot be said to exist.

Kaye makes an analysis of the "father's occupation" (of architects) between 1790 and 1850 which he based on the Dictionary of National Biography[29]. Those architects who achieved an entry in that dictionary are almost certainly atypical of their profession. An analysis as carried out in the tables shown in Figures 13.10 to 13.13 is more likely to be representative of the whole spectrum of practitioners. Kaye's percentages for architect and contractor (builder) fathers have been included in Figure 13.9. The percentages for architect-fathers are considerably higher than those derived from data contained in Appendix 7 but not dis-similar in shape. After the initial sharp rise Kaye's contractor-father line

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(29) Kaye, DAP, p 51.

follows very closely the craftsmen/contractor line prepared from the data in Appendix 7.

REGIONAL VARIATIONS IN THE EVOLUTION OF DESIGNERS

The Cambridge diary and the various examples of designers/architects in practice indicate that the evolution of the design-function occurred on much the same time-scale throughout the South and Midlands.

In the North, however, the separation of design from production and the emergence of the architect probably occurred later than in the South and Midlands.

Early in the 19th century John Dobson became a pupil of David Stephenson, a leading builder and architect in Newcastle. At the same time he studied perspective under Boniface Moss. Dobson practised in Newcastle where he found that "'although he was (with the exception of Ignatius Bonomi) the only professional architect between Edinburgh and York . . . the demand for his services had to be created", and that the employment of builder-architects such as Dodds and Stephenson was still the rule'(30).

It would be imprudent to base an assumption of late (or under-) development on one quotation but Figure 13.14 which has been prepared from the tables in Appendix 8 lends support to the assumption. It is noticeable that the percentage of architects

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(30) Colvin, BDEA, p 176. The wording within the single quotation marks is from Colvin; that within the double quotation marks is, presumably, a quotation from a memoir by Dobson's daughter, "A Memoir of John Dobson".

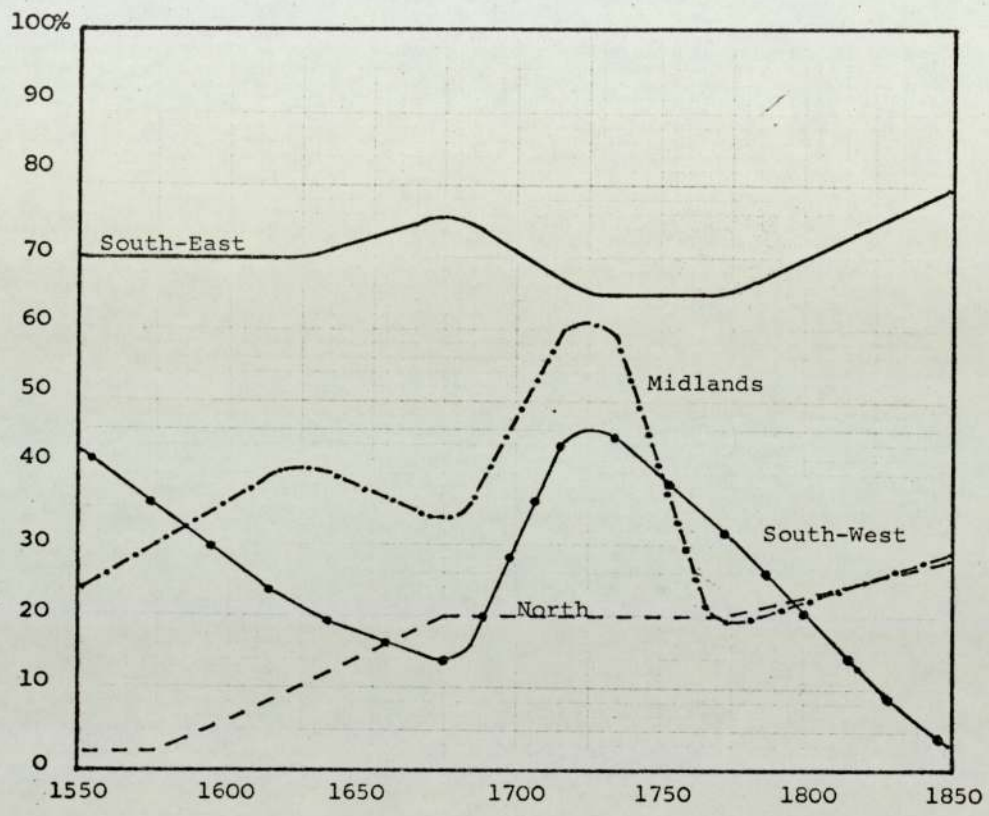

Figure 13.14 The distribution of architects by regions

practising in the South-East is far higher than in any other area; but as 'South-East' includes London some allowance must be made when comparing the South-East line with the others in the figure. Both the Midlands and the South-West lines are, however, higher than the North line so that there seems little doubt that the North contained fewer architects than the other areas. It is also noticeable that the North was later developing and did not reach the level of activity prevailing in the Midlands until 1750. This final increase in activity coincides with the period of the Industrial Revolution which may be responsible for it, as the effects of the Industrial Revolution were greater in the North than in the South.

THE SEPARATION OF THE DESIGNER FROM THE CONSTRUCTION PROCESS

From the examples and figures given above it is clear that during the 17th and 18th centuries many architects either acted as architect-builders (the most usual arrangement for those whose origins were based in the crafts) or indulged in building speculations in which, frequently, they were professionally involved. Colvin's "Biographical Dictionary" contains numerous examples of both architect-builders and speculations. The extent to which the architect's contractor role was accepted as common practice is apparent from Campbell's account of architectural practice in 1747, recorded earlier in this chapter, where he says: "the Architect either undertakes the whole work, for a certain sum, or is paid for superintending the work only". Campbell does not appear to consider this commercial involvement inconsistent with the high ethical and educational standards which he lists as being necessary equipment for an architect, although it must be admitted

that Campbell adds "I scarce know of any (architects) in England who have had an education regularly designed for the Profession".

In 1788, forty one years after Campbell's description of architectural practice, Sir John Soane's description of the 'business of the Architect', also quoted above, asked the question about the architect: "with what propriety can his situation, and that of the builder or contractor, be united?" All the indications are that Soane led the cause of separation rather than followed it. Three years later, in 1791, 'The Architects' Club' was formed to be followed in 1792 by 'The Surveyors' Club'. Bolton alleges that Soane's definition of an architect was adopted by the committee of the Architects' Club(31). Whether or not Bolton is correct in his allegation, it is clear from Soane's notebook that the members of the Architects' Club met in 1792 "to define the profession and qualifications of an architect"(32).

In 1796 Robert Mylne, one of the original members of the club, put forward a proposition to control architects' soliciting. Failure to comply with Mylne's proposition would lead to the architect being "considered as acting contrary to the Established Practice derogatory to the honour of the profession of an Architect"(33). Kaye suggests that Mylne's proposition was designed to protect the architect against the unscrupulous client and the builder's

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(31) Bolton, PJS, p 620 - quoted by Kaye, DAP, p 60.

(32) ibid, p 67.

(33) ms Sir John Soane Museum, Correspondence Cupboard, I, V, A (Kaye, DAP, p 59).

measurer[34]. The principal objectives of these exclusive early associations were directed towards protection of their members.

Both the Architects' Club and the Surveyors' Club dissolved to be succeeded by others which met a similar end until the Architectural Society was formed in 1831.[35]

The Architectural Society had as an objective "the advancement and diffusion of Architectural Knowledge"[36] but despite an attempt by T H Wyatt in 1833 to widen its horizons and so make it more of a 'professional' body it "remained little more than a library for architectural students until it was merged in 1842, with the Institute of British Architects"[37].

By the end of the first quarter of the 19th century the distinction between the roles of the architect and builder was clearly established in the minds of the architects if not in the minds of the public at large. This is evident from an account of a brush between an architect and counsel which occurred in 1817[38]:-

> "You are a builder, I believe?"
>
> "No Sir; I am not a builder; I am an architect."
>
> "Ah well, builder or architect, architect or builder - they are pretty much the same, I suppose?"
>
> "I beg your pardon; they are totally different."
>
> "Oh, indeed! Perhaps you will state wherein this difference consists."
>
> "An architect, Sir, conceives the design, prepares the plan,

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(34) Kaye, DAP, p 59
(35) See Kaye, DAP, Chaps 5 & 6 for an account of these societies.
(36) Laws and Regulations of the Architectural Society (Kaye, DAP, p 63)
(37) Kaye, DAP, p 65
(38) Reported in 'Builder' Vol 20, p 795. Colvin, BDEA, p 23 suggests that the case was probably that of Chapman, Gardiner and Upward v De Tastet (1817); that the architect was Daniel Alexander and the counsel Sir James Scarlett.

> draws out the specification - in short supplies the mind. The builder is merely the machine; the architect the power that puts the machine together and sets it going."
>
> "Oh, very well, Mr Architect, that will do. A very ingenious distinction without a difference . . ."

During the years which preceded the formation of the Institute of British Architects there had been numerous meetings and discussion about the nature of such a society. A major problem was the extent to which the design function should be separated from the others. A number of architect-surveyors practised in a manner not very different from the Chapter 3 definition of quantity surveying and they attempted to keep the two functions together in one body. In the event, however, the Institute of British Architects adopted aims and regulations which provided for "expulsion of any Fellow or Associate, either for having engaged since his election in the measurement, valuation, or estimation of any work undertaken or proposed to be undertaken by any building artificer, except such as are proposed to be executed or have been executed under the Member's own designs or directions; or for the receipt or acceptance of any pecuniary consideration or emolument from any builder . . ."(39)

The above regulation also prevented a member from "having any interest in or participation with any trade contract, or materials supplied at any works (which he had) been engaged to superintend". In this way the separation of the design function from the others in the construction process was brought about and the transition from medieval craftsman-designer to architect accomplished.

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(39) Institute of British Architects, Address of the Institute of British Architects, explanatory of their views and objects, and the Regulations proposed at a meeting, held July 2nd, 1834.

CHAPTER 14

FINANCIAL CONTROL AND ADMINISTRATION

INTRODUCTION

- (examples of early use of the word 'surveyor')

THE SURVEYOR/ARCHITECT RELATIONSHIP

THE ORIGINS OF SURVEYORS AS FINANCIAL CONTROLLERS

THE EMERGENCE OF THE MEASURER

THE SEPARATION OF THE DESIGN AND FINANCIAL CONTROL FUNCTIONS

THE MEASURER'S ROLE

- measurer or surveyor?
- reimbursement and fees

ESTABLISHMENT OF THE QUANTITY SURVEYING PROFESSION

- Moon v The Guardians of Witney Union
- a Parliamentary Enquiry
- towards a Standard Method of Measurement

INTRODUCTION

Financial control and administration in the Construction Industry has been the responsibility of a surveyor from at least the 15th century. A definition of 'surveyor' is given in Chapter 3. Some early examples of the use of the word, taken from the Oxford English Dictionary are given below to demonstrate the financial control connotations.

1440 (Capgrave) "he was survyour to all that there were . . . and he paid her hyer"

1442 (Rolls of Parliament) "sercheours and controllours and surveours of serchis"

1472 (ibid) "controller and surveyor of the King's Works"

1540 (Elyot "Image Government") "surveyors and others that gathered the revenues of his crowne"

1543 (Act 9 The Statute of HV) "wardens and surveyors and ministers of the exchanges . . ."

1555 (Act 2 and 3 Phillip and Mary, Ch 8, para 1) ". . . shall elect two honest persons to be surveyors and orderers of the works for amendment of the highway"

1631 (Weaver "Account of Funeral Monuments") "this man was a master mason or surveyor of the King's stoneworks"

Papworth[1] makes references to the surveyor's role in 1359, 1361, 1364 and 1366 and gives examples of monks appointed as surveyor

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(1) Papworth, SEB,(pp 188-205)

"supervisorem" and Wykeham as "custodem et supervisorum". The first use of the word as such he gives as occurring in 1417 and 1422 with: "Notre amé Esquier Robert Rodyngton, surveour de la construction de noz Toures à Portsmouth" and "une surveiore de les oveignez de chastell et villes de Northgales". The latter post had been held by a Clerk of Works in 1338.

Indeed, the transition from 'Clericus Operationum' to 'surveyor' occurred early in the 15th century. Clerks of Works were in office in the first-half of the 13th century, and whilst their duties were not stated at that time, by 1326 William de Chaillon, who was acting as surveyor or supervisor, was appointed clerk of works with duties which included looking after the building of St Stephen's Chapel and keeping "accounts of receipts and expenditure".

Papworth makes various references to bishops and gentry as Crown supervisors and comptrollers in the 15th century; financial control was the province of the cleric, not the technician, until the 16th century.

Thompson(2) quotes John Fitzherbert's 'Book of Surveying' published in 1523 as the first English printed book to use the term surveying: "the name of a surveiour is a French name and is as moche to saye in Engtysche as an Overseer".

THE SURVEYOR/ARCHITECT RELATIONSHIP

Hunt, quoted by Papworth, in his 'Tudor Architecture', p 24, says

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(2) Thompson, CS, pp 2 and 3

of Tudor times: "it appears, indeed, that in those times the 'Devysor of the Works' acted invariably under a supervising officer who, leaving the artists fancy and genius unshackled, controlled the expenditure of money" and, "it was common to depute the superintendence of buildings to Churchmen, from an idea of their superior prudence and probity".

Hunt's account of the 'Devysor of the Works' (the 'artist' or architect) acting 'invariably under a supervising officer' is consistent with Gerbier's "Counsel and Advise to all Builders" in 1663 which was touched upon in Chapter 12. Gerbier's advice[3] was that 'whosoever is disposed to Build, ought in the first place to make choice of a skilful Surveyor, from whose Directions the several Master workmen may receive instructions by way of Draughts, Models, Frames (etc)'. Gerbier continues:

> "An exact Architect must have the art of Drawing and perspective, ought to know what appertains to each Inhabitant's Conveniency . . ." He reverts to the Surveyor in the next paragraph when he says he "must . . . consider the ground whereon the Building must be erected . . ." (its orientation etc).

It appears from Gerbier's book that surveyor and architect were different roles in the middle of the 17th century and that the surveyor was the superior.

THE ORIGINS OF SURVEYORS AS FINANCIAL CONTROLLERS

The most frequently quoted reference to 'surveyor' occurs in "Henry IV Pt II", written in 1597 and 8. Cost control is the

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(3) Gerbier, CAB, pp 4 and 5

essence of Lord Bardolph's lines. Whilst it is true that Shakespeare is using the construction process to illustrate the deployment of manpower for battle, it is clear that he is recording a process in which cost control is of paramount importance

> . . . when we see the figure of the house then we must rate the cost of the erection, which if we find outweighs ability, what do we then but draw anew the model in fewer offices, or at last desist to build at all?

There is no indication as to the manner in which the cost of erection would be rated but as the client's intention is to "question surveyors, know our own estate", there is no doubt that professional advice was to be sought[4].

The need for a method of financial control became more important as the period progressed. In the previous period the Crown and the Church were largely accountable to themselves. Now there emerged clients with more restricted means or clients who were represented by committees accountable to boards or the public. The surveyor in his role as financial controller was destined, sooner or later, to become more important: new techniques for control were inevitable.

In Part II there is considerable evidence of the Office of Works and the Church as training grounds for surveyors before the

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(4) Controlling the cost of building is the theme of a parable in St Luke 14.28. "For which of you intending to build a tower sitteth not down first and counteth the cost, whether he have sufficient to finish it? Lest haply, after he hath laid the foundation, and is not able to finish it, all that behold it begin to mock him, saying, This man began to build and was not able to finish." The method by which the project cost was to be estimated is not stated.

commencement of the period covered here. Craftsmen often became surveyors, as several of the projects in Appendix 6 demonstrate.

Other sources of surveyors were the 'great houses' as the gentry became more interested in building (or rebuilding) new houses in the second half of the 16th century to look like the houses and palaces in the French and Flemish pattern books.

The gentry outlined the form which the houses were to take and their stewards were responsible for organising and controlling the construction process: purchasing materials, arranging for transport to site, paying the workmen and co-ordinating works in progress.

Roger Ward, steward to Sir William Cecil at Burghley House in the 1550s was one such man, Thomas Wilson at Hatfield in the 1560s was another and John Dodd, steward to Sir John Thynne at Longleat in the 1570s was a third(5). Sir Edward Francis, the Earl of Northumberland's officer at Petworth House (Appendix 6, Project No 5), prepared an estimate of the cost of work to the Grand Chamber and agreed rates in advance with the workmen. Thomas Wilson acted in a similar manner when he reported to the Earl of Salisbury that he had "beaten the rates with the workmen as low as we can get them".

The stewards' duties could probably be summed up in the instructions given by the Earl of Salisbury to Simon Basil (sometime surveyor of

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(5) See Hussey's account of the building of Longleat in 'Country Life', April 1949; Girouard, RS and Lees-Milne, TR, pp 102-106.

the Royal Works) in 1607 with regard to his building works at Hatfield. Basil was to: "repair to my said building and diligently note and consider how much of the work estimated to cost £8,500 is completed, whether the money has been rightly expended and what is still necessary to be done and spent"(6).

But the stewards were permanent servants and not concerned solely with building works. These surveyors, if they can be described as such, were executives rather than designers.

Robert Flood held a number of household offices at Petworth House early in the 17th century and yet, helped by John Dee (a carpenter-contractor), he prepared the detailed 'Computation of the New House at Petworth 1615' from which extracts are given in Appendix 6, Project No 8. The computation is, in fact, a priced bill of quantities which is in many respects similar to a 20th century document.

Towards the end of the 17th century, the role of the surveyor as a separate entity, superior to the designer/architect was coming to an end. Nevertheless, Gerbier's description, referred to above, gained support in 1703 when Neve wrote in his 'City and Country Purchaser' of architect:

> A Master workman in a Building; tis also sometimes taken for a surveyor of a Building viz He that draws the Plot, or Draught of the whole Fabrick; whose business it is to consider of the whole manner and Method of the

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(6) Hatfield Papers, Country Life, Vol 61, p 429

> Building and also the Charge and Expence: In the Management of which he must have respect to its due Situation, Continuence, Receipt, Strength, Beauty, Form and Materials all of which are to be duly deliberated of by the Superintendent (or Surveyor) of a Building; it being wholly committed to his Circumspection and therefore it will be his Prudence to manage the whole Affair advisedly and with great Caution, that all may be so ordered and disposed (in all Circumstances) that it may answer the Design and be consentaneous to Reason.

Neve also mentions a supervisor who would fit the Chapter 3 definition of a Clerk of Works when he continues

> But though the whole fabrick be the care of the Superintendent, yet Sir H Wotton would have a second superintendent (or Officinator) whose Care it should be to choose, (or examine) and sort all the Material for every part of the Structure.

Neve clearly indicates an organisation structure in which overall responsibility rests with the surveyor. The architect ("sometimes taken for a surveyor") is subordinate to the surveyor but both perform similar duties. Nevertheless, all "is to be duly deliberated of by the surveyor", and the Clerk of Works, advocated by Wotton, acts as an inspector and supervisor.

Project Nos 1-12, 16 and 19 in Appendix 6 demonstrate that clients often retained personal contact on expenditure but that design and cost-control were functions which, in the 18th century, were to be considered duties of the architect. The words 'architect' and

'surveyor' were to become synonymous.

By the middle of the 18th century 'architect and surveyor' became an often-used title, the word 'architect' usually preceding 'surveyor'. Colvin's biographical dictionary contains examples of the use of the words in that context.

By 1773, architect and surveyor appear to be separate entities in one man's eyes, at least. In an essay on the qualifications and duties of an architect, attributed to George Dance the Younger, (RIBAJ 1435/XLII/648) the writer says:

> I would likewise observe, the difference between the Architect and the Surveyor will be only this, that whereas the former knows everything himself, that is Essential toward making every Building Strong, Convenient and beautiful; the latter, in those Things that he is deficient in, must seek Assistance from others . . .

By 1773, therefore, the precedence 'vis a vis' the architect and surveyor had changed so that, in Dance's view, the surveyor was less well qualified than the architect.

THE EMERGENCE OF THE MEASURER

Few men were, however, capable of both designing and financial control, and almost before the functions had been combined individuals began to specialise in one or another of them.

Two books published between 1668 and 1700 show the beginnings of a new species of surveyor, the measurer or quantity surveyor who

practised in a manner not dissimilar from that of the Chapter 3 definition of Quantity Surveyor.

The first of these books was Leybourn's 'Platform', 1668. The 'Platform for Purchasers' or 'Mate for Measurers' was far removed from the various treatise on classical architecture which were written for gentlemen-architects and aspiring artisans. The first 102 pages contain tables of interest rates, guides to prices of materials, unit rates, etc. These pages were followed by 32 pages of information about building materials, a description of brickmaking processes and the anticipated manpower output for brickmakers.

Pages 139 to 200 contained tables "for the mensuration of all such materials as any wise appertain to Building as the Carpenters, Brick-layers, Masons, Plaisterers, Glaziers, Joyners, Painters, Paviers and etc". The book contained an advertisement for a Mr Robert Morden who was willing to measure or survey "for Master Builder or Workman".

The second edition of the book contained a section (referred to as a 'book') about measuring building work (which was similar to the modern standard method of measurement). This suggests that measurement of building began to be codified between 1668 and 1685(7).

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(7) These dates are close to the earliest entry in the Edinburgh Town Council Minutes, 25 April 1688, referring to the nomination of John Ogstoun as "measurer" of "slatework, glazier work, mason work and all other work" (Thompson, CS, pp 72-3)

The second book was Venterus Mandey's 'Marrow of Measuring' published in 1682. Mandey, who was trained as a bricklayer, is described as "Mr Mandey the measurer" in accounts for building a house at Barn Elms, Surrey in 1694[8].

The book refers to two measurers being appointed, one for the client and the other for the craftmaster, an arrangement which was still current at the end of the period except that the craftmaster had generally been replaced by the general contractor[9].

These two books, in themselves, do not prove the existence of independent measurers. The techniques and data which they describe would be required by surveyors and architects in order that they could prepare estimates and accounts. What points to the emergence of independent measurers is the advertisements in 'The Platform' and the fact that Mandey was, himself, "the measurer". Clearly too, a procedure (of two measurers being appointed) had been established which is mentioned later as continuing into the 19th century.

Leybourn's and Mandey's books are both addressed to Artificers and men "who do not understand Decimals", but Mandey "omitted nothing which might tend to the making of a Man an expert Measurer"[10].

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(8) The accounts are preserved at Aynho Park, Northants (ref: Colvin, BDEA, p 376)

(9) Reid, YSP ('general remarks') published in 1848 contains a description of the procedure at that time which indicates that the procedure had not changed since Mandey's time. "By the customary method of estimating, two Surveyors are appointed to take out the quantities, one by the Architect and one by the Builder; and it is expected that they will proceed together from the same drawings and specification each writing in their respective books. This must be a judious procedure and ought never to be deviated from: indeed it should be imperative".

(10) Mandey, MM, preface 1-2

To what extent the employment of measurers was a general practice in the construction industry between say, 1680 and 1800 it is difficult to determine. It has been suggested in earlier chapters that the building boom which followed the Great Fire in 1666 accelerated changes in procedure in the construction industry, and measuring would have been no exception. Leybourn's and Mandey's books followed the fire.

Mandey recalls measuring "the Bricklayer's Work of an House, wherein Mr Leonard Sowersby, the late notorious Measurer, was concerned against me". This comment, written in 1682 and recalling an incident of "some years ago", would put the event back perhaps ten years in time towards the Great Fire.

Several of the architects included in Colvin's "Biographical Dictionary" undertook measuring commissions in the 18th century, and Robert Grumbold and James Essex are both found taking payments for measuring for Cambridge colleges during that period(11). "Mr Scarbrow" appears in the Petworth House accounts in 1690 as a surveyor for 8 days' measuring (see Project No 12 in Appendix 6). If he is the same man as the John Scarborough who was "frequently employed by Wren as a measuring clerk" it seems likely that the Office of Works was a training ground for measurers. Several late 17th and 18th century architects started their working lives

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(11) Grumbold is described as "overseeing workmen, carpenters, joyners, painters, plummers, glaziers, smiths etc" and measuring their works in 1678. (Willis and Clark, HVC, Vol 3, p 23) and was paid "for surveying ground for the theater £2.10.0 in 1675" (ibid, Vol 3, p 42. Another account refers to "the whole being measured by Mr Essex and the prices according to the Articles of Agreement £117.11.6" (1756-7) (ibid, Vol 2, p 530)

carrying out clerical duties connected with building works. Clerical duties could equally well lead a man to measuring if his bent was towards administration rather than designing[12]. It will be seen later that measuring appointments were well paid.

Ware's "Complete Body of Architecture" published in 1756 provided for the financial control and work measurement needs of the professional architect in 26 pages. Reference was made in the two chapters which precede this to Ware's 748-page work as being a practical and comprehensive treatise on architectural practice. The "book" which dealt with "the sciences and arts subservient to Architecture" (arithmetic, geometry, perspective and measurement) was no exception. By devoting 26 out of 748 pages to the financial control aspects of architectural practice, Ware, no doubt unconsciously, put the measurer's role in its place as the mid-eighteenth century professional architect saw it.

Nevertheless, Ware's recommendations regarding the methodology of measurement were practical and differed very little from books which were to follow in the next hundred years except in the space devoted to the subjects. The ruling on the paper to be used for recording the measurements was similar to that to be recommended by subsequent authors[13], and the stages used in converting the

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(12) The William Dickinsons (father and son) both provide examples of this between 1670-84, and 1696-1711. The father was "superintending surveyor" and the son was "clerk for taking the accounts of several materials for the said building" (St Pauls) (Colvin, BDEA, pp 173-4)

(13) Moving from left to right across the page Ware's proposed ruling contained the following vertical columns:
Col 1 - for the 'collection' of dimensions used in Col 3
" 2 - for the thickness of, for instance, walls when measuring brickwork
" 3 - for the dimensions (linear, square or cube)
" 4 - for 'timesing' the dimensions in Col 3 should there be several similar dimensions
" 5 - for recording the product of Col 3
" 6 - for the description of the item measured.

'taking off' by means of an "abstract" into a "Bill" remained standard practice until the 1950s. The headings which Ware suggests the bill should contain - digger, bricklayer, slater, carpenter, mason, plumber, joiner, plaisterer, glazier, smith and painter - are not very different from those used today[14].

Some measurers came, then, from the ranks of the craftsmen builders who were often architect-builders, and some from the Office of Works. A third source was the 18th century semi-professional, semi-gentlemen-architects who lacked means to be fully independent but were unable to obtain patronage to practise solely as architects. One of the major complaints of this group was of the more prosperous, purely amateur architects whose need to prove themselves artistically deprived the professionals of commissions. This dilemma was, in fact, a contributory factor to the formation of the professional institutes. Because of the amateurs' activities the professional architects were forced to undertake measuring work as stop-gaps between architectural commissions. There was a tendency for the 'artists' to be separated still further from the measurers as a result.

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(14) Typical items in the "Bill" read:-

	Yards	Feet		£	s	d
			Digger			
To	268	16	cubical of digging out the foundations and clearing away the rubbish at 1s 8d per yard	22	7	8
	Rods	Feet	Bricklayer			
	32	39	of brickwork reduced to 1 brick and ½ in thickness . . . at 5L 15s per rod	184	16	6

THE SEPARATION OF THE DESIGN AND FINANCIAL CONTROL FUNCTIONS

Inevitably, strong feelings arose between the architect-designers and the measurers which led to bitterness. There were no doubt unscrupulous and dishonest measurers in the 18th century but there is little evidence to support Noble's allegations, written in 1836, about the "avaricious" Mr Hele, "the first 'measurer' ever remunerated by a commission on the amount or value of the work"(15). The "very able" albeit avaricious Hele appears to have practised between 1760 and 1770.

From Mandey's book there is, as Thompson puts it, "convincing proof of the existence of a distinct group of London measurers" at the end of the 17th century which continued to function in this manner through to the 19th century(16).

The majority of these measurers were concerned with measuring work after it had been completed because before the second-half of the 18th century many projects were constructed by craftmasters who undertook work within their craft on the basis of a schedule of rates. An example of this occurs with the building of the Radcliffe Camera during 1736-48 (Appendix 6, Project No 13). Estimates were prepared by the craftsmen which comprised detailed measurements with unit rates. From the examples given in the appendix it can be seen that the estimates were often similar to the accounts in value. Indeed, the accounts were often described as being "according to . . . a proposal delivered the (date) by

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(15) Noble, PPA, p 13

(16) Thompson, CS, p 68

the lump". Variations were measured and priced at the rates in the estimate or extra works were paid for as daywork. The Clerk of Works who was "ordered" to transcribe in a book the "several admeasurements of work done . . ." acted as the measurer for the client. Similar arrangements exist on other projects included in Appendix 6 between 1650 and 1800 but the measurer was often a member of the client's staff rather than a professional measurer.

From 1750 until 1850 the extent of 'lump sum' contracting increased and measurers increased in number correspondingly. This was a period when the construction industry was overstretched and when the designers and quantifiers strove for professional status. It was the period when the designers finally rejected the measurers from their midst with the formation of the Institute of Architects, as discussed in the last chapter.

THE MEASURER'S ROLE

Noble, writing in 1836 gives a contemporary account of the measurers[17]. He refers to the period from 1700 to his own time when "the Architect and his assistants ascertained the quantities and data for and determined the value of, the various materials and labour". The "master artificers were not only distinct in their trade or calling, and invariably so employed; but also individually responsible for the due and proper execution of their respective work, at equitable and reasonable rates . . . Hence, arose the practice of measuring by individuals, solely in the character of measurers, as a check against error by the architect, but not in respect to the value of the work: they were paid per diem and their living and incidental

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(17) Noble, PPA, pp 13-20

expenses were all borne by the artificer or workmen". Noble describes the manner in which prices were 'racked up' ". . . by a refinement in the description of detail; . . . of every species of work . . . which advanced both the employment and pecuniary receipt of the measurer and this influenced the rapid increase of that very useful and necessary adjunct to the architectural profession".

Measurer or Surveyor?

The change of title from 'measurer' to 'surveyor' appears to have occurred in the 19th century, since Noble continues, "many unprincipled measurers, yclept 'Surveyors' were frequently exhibiting in courts of law, mainly with the view to bolster up and support excessive prices and claims". He refers to a period, probably between 1775 and 1825 when "the whole profession (fell into) bad repute" but he continues, "Happily the tares were eventually weeded out and a 'remnant was left'; and in due time a new race of measuring surveyors appeared, liberally educated; and some, in their professional pursuits, combined both the theory and practice of architectural composition, improved by foreign research; and they have displayed great professional skill in both departments of their calling, and relieved their own particular avocation from former merited reproach".

Noble's comment in that respect concurs with a dialogue between the Select Committee on the Office of Works and Public Buildings and Lt Col Stephenson in 1828.

How are the measurers selected and by whom? -

They are selected by the professional part of the office,

> from young men who are well recommended, and who have been brought up as measurers; they are very difficult people to get.

It is interesting that throughout the report on the enquiry the word "measurer", not "surveyor", is used. This is in contrast to a report from a committee of the House of Commons (Vol XII, 1-XXII, 1797-98) concerning the organisation of the Barrack Office.

The Building staff for the Barrack Office included two "Architects and Surveyors" whose duties included superintending measurement "at proper times, during progress" (of the works), and examining and arranging the accounts of Builders. The actual measurement and checking of the accounts was performed by two "Assistants to the Architects and Surveyors" assisted by three clerks. The "mode adopted for conducting the Building Department and checking expenditure" refers to building work being "paid for by measurement and fair valuation, according to the rates, usually given . . . in the vicinity". Stage payments, less £20 % retention, were certified by the "Clerk of Works or Surveyor", measurements being taken and quantities adjusted "by surveyors on the part of the office and on that of the Tradesman".

The procedure for measuring does not appear to have changed greatly between 1797-8 and 1807. Two surveyors, Mr C Pitt and Mr Thomas Bush who were examined during the enquiry into the conduct of the Barrack Office in 1806-7, made similar comments. Bush's evidence commenced as follows:

What is your business? - A Surveyor

Have you been much employed as a measurer? - Yes; all my life-time

Is it usual for the Proprietor and Builder to employ each a Measurer? -Yes it is. (p 499 - Appendix 39)

In reply to the last question Pitt replied:

Yes most generally; frequently the same person is employed on both sides (p 504 - Appendix 40).

From the context, Pitt's somewhat ambiguous reply appears to mean that the same surveyor might, on different occasions, measure for either the proprietor or the builder. Both the surveyors said the two surveyors made out their quantities together "as is customary". The surveyor acting for the builder, Mr Pitt, stated that he never priced the bills, which were the result of the measurements. "My employer affixes prices to such bills of quantities, and monies them out".

It is interesting that both Bush, who acted for the Barrack Office, and Pitt referred to themselves as "surveyor" but that the questions referred throughout the enquiry to "measurer". Reference is made later in this chapter to John Reid, the author of 'The Young Surveyor's Preceptor' published in 1848, who called himself "surveyor" and to others who were similarly titled. Nevertheless, it appears that during the last fifty years of the period under consideration the terms 'measurer' and 'surveyor' were both in use but that the word 'surveyor' was on the increase.

Reimbursement and Fees

The architects and surveyors who made up the building staff of the

Barrack Office at the beginning of the 19th century were paid 20s per day or 10s per day plus a similar sum per day when on duty. One of the assistants was also paid 10s per day plus 10s per day when on duty and the other £100 per year. This was a different arrangement from the commission paid to Hele, mentioned above; and, indeed, Thomas Bush, one of the Barrack Office measurers, stated that his normal commission for private works was $1\frac{1}{2}$ to $2\frac{1}{2}$ per cent according to the nature of the business[18]. Noble also found $2\frac{1}{2}$ per cent to have been the measurers' commission and he infers that this "being exactly a moiety of an architects' commission" is excessive[19].

ESTABLISHMENT OF THE QUANTITY SURVEYING PROFESSION

The fourth decade of the 19th century saw two events which publicised the measuring cum quantity surveying function, the first of which was Moon v The Guardians of Witney Union (1837).

This case was significant in several aspects which affected contractual procedures in the construction industry. In the quantity surveying context, the case established that for at least ten years it had been common usage for a surveyor to prepare quantities for the builder.

A Parliamentary Enquiry

The second event was the enquiry of the Select Committee on the Houses of Parliament in 1836. During the enquiry Henry Hunt,

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(18) Report from the Committee of House of Commons, Vol XII, I-XXII p 412.

(19) Noble, PPA, p 13

"a surveyor employed very much by architects and builders in making estimates", prepared estimates for the proposed Houses of Parliament[20].

Hunt gave precise evidence from which several points about quantity surveying emerged:-

- that Hunt "was employed by all the builders who tendered (for the building of the Carlton Club House - in this instance) . . . to furnish them with the estimate of the quantities, each of them having the same, they relying on my calculation for their estimate";
- that he guaranteed the accuracy of his work ("if I were to give a wrong estimate I should be liable for the deficiency");
- that he employed a simplified form of elemental cost estimating using sketchy and somewhat nebulous data to arrive at an approximate estimate which he considered accurate to within approximately 5 per cent of a builder's estimate prepared from a detailed specification and working drawings (Hunt was subsequently proved correct);
- that he was established in a substantial business in which he had prepared bills of quantities and made estimates for a number of large projects ("All the large builders in London have taken my quantities");
- that his work included civil engineering projects;
- that quantity surveying was, by that time, as lucrative (if not more so) as architecture;

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(20) Parliamentary Papers, Select Committee on the House of Parliament (1836) XXI. See also Thompson, CS, pp 88-92 for biographical data about Henry Hunt.

- that he was one of a number of surveyors employed as independent 'quantity surveyors' at that time.

Hunt was the son of "a very extensive builder". He had been articled to John Wallen, whose office had proved a popular and successful training ground for future generations of quantity surveyors. Hunt had been taken into partnership by Waller at the age of 19 before going into practice on his own account.

Towards a Standard Method of Measurement

Earlier in this Chapter reference was made to Leybourn's book in the second half of the 17th century which made an attempt to standardize the method of measurement by suggesting the items and units (cubic, superficial, linear or number) which should be used when measuring building works.

During the enquiry into the conduct of the Barrack Office in 1806/7, evidence was given which suggests that two modes of measuring existed at that time.

The description of the "Mode of ascertaining the Cost of Buildings, with the Checks or Controls on the same" makes reference to "The business of the Measurer (which is) to measure the work, from time to time, during its progress; to take no more than the actual quantities in the Building; and to measure according to the London mode of measuring, which, it seems, is less favourable to the Builder than the Country mode" (PP, 1806/7, pp 145-6). It was the intention of the Barrack Office "that the office measurer should measure at the same time, and against, the Builder's Measurer".

It appears that Thomas Bush, "The Barrack Office Measurer" (to use the term given by Pitt in his evidence before the Committee: p 505 - Appendix 40) laid down certain principles of measurement which he instructed other measurers to adopt. In reply to the question: "Was any objection ever made to your mode of measuring?" Pitt admitted that Bush "objected to my mode of measuring the tiling of Barracks, saying, that I did not allow sufficient" (p 505 - Appendix 40). Bush raised other objections to Pitt's "mode of measuring". Pitt said that Mr Bush's mode would be "more advantageous to the Builder" than his own mode. Pitt gave examples of some allowances made when measuring but concluded "Opinions are divided upon this subject".

At the 1828 enquiry the builder, Henry Rowles, was less convinced of the value of modes of measuring. When asked: "Must you not have a specification for the mode of measuring . . .?" he replied, "It is rather difficult, I think (when the ingenuity of all those persons who devote their whole time to measuring and making out builders' accounts is employed against you) to devise arrangements as binding on a contractor as those which are made when he engages for a gross sum" (PP, 1826, pp 398-9).

Just before the end of the period covered by the chapter John Reid, "Surveyor", published his 'Young Surveyor's Preceptor'. This was perhaps the most influential book for the instruction of quantity surveyors at that time. It went a stage further in the formulation of a standard method of measurement.

By the middle of the 19th century quantity surveying was well established as a function in the construction process, the essential difference from the earlier function of the measurers being quantification of building work before construction rather than afterwards.

CHAPTER 15

THE CONTRACTOR AND THE ORGANISATION OF CONSTRUCTION

INTRODUCTION

1550 - 1650

1650 - 1750

1750 - 1850

- the contractors and their organisations

EDUCATION AND TRAINING

CONTRACTUAL PROCEDURE

- contracts by price and measurement
- contracts for a specified sum
- the advantages of each type of contract

INTRODUCTION

One feature of the Chapter 3 definition of contractor is 'size': the contractor being willing to contract for work on a large scale in contrast to the 'builder' who may be 'a mere mason or carpenter".

Such a definition would not hold good at the beginning of the period under consideration any more than it would before 1550. In Chapters 8 and 9 there was much evidence of contracts with 'mere masons or carpenters' and even at the end of that period the word 'contractor' had not come into use.

It is clear from Chapters 13 and 14 that during the first part of the period 1550-1850 the construction function cannot be separated from the design function. The Cambridge Diary in Chapter 14 demonstrates this and should be read in conjunction with this chapter.

The period 1550-1850 has been considered in three 100 year periods so that it can be related to chapter 13 but these three periods do not represent distinct stages in the evolution of the contractor and the organisation of the construction function.

1550-1650

The early projects in Appendix 6 indicate the hotch-potch of methods used to carry out construction works in the first 50 years of the period.

It could be argued that a workman offering his services for hire by the day is a 'contractor' in that he undertakes to give a fair

day's work in return for an agreed rate of pay per day, but in the more common use of the word 'contract' it is unlikely that the workmen used on the building of Loseley House (Project No 1) would be considered to be under contract. The extracts from the building accounts given in Appendix 6 show that craftsmen and labourers were paid for the time they spent on the site and that their "Meate and drynke" was provided or paid for at a constant daily rate.

Much the same state of affairs existed when the steeple of Chichester Cathedral was repaired in 1562 (Project No 2) as far as some crafts were concerned. Carpenters, sawyers and labourers were paid by the day as was one of the masons whilst he was employed on work which was outside the contract undertaken by William Philips the freemason. More than half of the work (£22 of a total labour bill of £41) was carried out "according to indenture", Philips contracting to point and amend the steeple. His contract appears to have been 'labour only' because lime and sand appear elsewhere in the accounts.

There is little doubt from the information available that Philips co-ordinated and supervised the work of all the craftsmen or he would not have come "hither again to instruct the carpenters in the Whitsun holidays".

During much the same period (1564-73) substantial extensions were in progress at Gonville and Caius College, Cambridge (see Project No 3). Labour was employed "part by great part by daye" and over the whole period several different gangs were employed. Contracts were made for roof-slating and plumbing which almost certainly

included both labour and materials. There is no indication of a co-ordinator other than Dr Caius.

William Dickinson's house in Project No 4 was built with much the same organisation as that used by Sir William More of Loseley but Dickinson made rather more 'bargains' for items of work than Sir William. Another type of contract used by Dickinson was piece-work. The sawyers, as was customary in the 16th and 17th centuries, were paid by the 'hundred' feet of sawing. The client, a bailiff, probably managed the building works himself as there is no reference to another organiser or co-ordinator.

The Earls of Northumberland commanded an household staff headed by Sir Edward Francis at Petworth. Most of the materials for building works at Petworth House were won from the estate.

Maintenance and minor works were usually carried out by contract with craftsmen such as Mr Hunt (see Project No 5) who undertook both mason's and carpenter's work for a "new building near the wine cellar". No doubt Hunt's work was the carcass of the building as other contracts were placed for roofing, plumbing, plastering and panelling.

For the building of the 'Grand Chamber' a few years later a number of lump-sum contracts were made as shown in Appendix 6. Much of the other work was paid for on rates agreed in advance. Payments were made "from time to time as the work shall go forward".

The last project in Appendix No 6 to be commenced in the first

50 years of the period is Project No 6. This is an example of the type of organisation which was to become the most used during the last 50 years of the period and thereafter.

The 'undertakers' were the two masons, Wigg and Symons mentioned in earlier chapters. They undertook to provide all the labour, plant and materials to complete the building of the Second Court at St John's College, Cambridge. Chapter 13 recorded that Wigg and Symons also drew the plans and elevations for the building.

The drawings which Wigg and Symons prepared were comprehensive but there are many instances of occasional drawings being made by craftsmen as part of their day-to-day work for which they were often paid separately. William, one of the ubiquitous Grumbolds, entered into a "bargain" with Sir Thomas Tresham of Rushton in 1578 to carry out work at Rothwell Cross which was "according to the plott" drawn by Grumbold and approved by Tresham(1). A similar arrangement occurred between another freemason, named Parris, and Tresham in 1596 for work at Hawkfield Lodge(2). Parris was paid a lump sum of £6 for his work.

At Longleat in the 1570's both daywork and taskwork were used. For more important items of work craftsmen entered into contracts. William Spicer and Robert Smythson both signed several contracts(3). There are numerous examples of both 'contract' and 'daywork' in the

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(1) Hist MSS Com, Various, iii, xxiv quoted by Knoop and Jones, 16 CM, p 195.

(2) ibid 1v

(3) Girouard, RS, p 58.

building accounts and contracts of the Cambridge Colleges in addition to the projects included in Appendix 6[4].

Thus, in the second half of the 16th century it is possible to find almost every method of organising building works being practised. More often than not two or more methods were in progress on a site at the same time. There is evidence that the clients with the most sophisticated facilities for managing the works entered into contracts or bargains with craftsmen whereas the men building their own homes tended to employ men by the day. This appears to run contrary to the procedures adopted before this period[5].

The projects in Appendix No 6 which were built during the first half of the 17th century tend to follow the pattern set by those in the second half of the 16th century.

Piecework (taskwork), 'labour and material' contracts and daywork were all used at Wadham College, Oxford. William Arnold, a mason, acted as 'head workman'. He was paid twice his normal weekly rate during the first 8 weeks of the project's life (Project No 7).

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(4) Willis and Clark, HUC, Vol 1, pp 94-96, 100, 173, 174, 186, 311-2; Vol 2, pp 94, 101, 111 (a particularly explicit contract between the Master of St Katherine's Hall and John Atkinson in 1611 in which Atkinson undertook to provide all the labour and materials in all crafts), 171, 250, 267, 268, 517, 607, 609, 695 (another comprehensive 'labour and materials' contract) and 698.

(5) See Chapter 9. 'Individual' Clients used contracts to a far greater extent than the other, more substantial, clients.

Dr Griffith's house was built primarily by daywork (Project No 9).

The rebuilding of Clare Hall, Cambridge was organised by John Westley, a mason, who was described as "the builder". He was paid £600 for his work and £50 "in equitoe . . . for his care, work, and setting the Bridge". Other bargains were made for carpentry, joinery, leadwork, glazing and painting but 'the builder' constructed the carcass (Project No 10).

In London a similar mixture of procedures was to be found. Knoop and Jones[6] are unable to say with certainty how widespread the contract system was amongst masons in the first part of the century; the "direct labour" system still prevailed to some extent. The Banqueting House at Whitehall was partly erected on that system in 1619-22 and substantial repair works at St Pauls in the 1630's were organised on the old system. On the other hand, the available evidence suggests that the building of Lincoln's Inn Chapel in 1619-24 and the rebuilding of the Goldsmiths' Hall in the 1630's were by contractors. It was probably the Great Fire in 1666 which was to accelerate the change towards contracting as the most used method of carrying out building works in London.

1650-1750

The Great Fire in 1666 may well have accelerated the rate of change from 'direct labour' to 'contract' but the change was already well on the way. Part of Sir Balthazar Gerbier's 'Counsel and Advise' (1663) referred to in earlier chapters was that the person commissioning a building would be well advised to buy his own

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(6) Knoop and Jones, LM 17 C, p 39.

materials and "have his works done by the Rod or Square" (p 61).

Wren endorsed Gerbier's advice. In a letter to Bishop Fell in 1681 his advice was to have work performed by measure because the contractors were unable to estimate for work accurately and often ran into difficulties. In such an event they tended to "shuffle or slight the worke to save themselves"(7). Pratt, writing during the same period, indicated the dilemma which faced a gentleman building his own house(8). A contractor who took a contract at an uneconomic price would ". . . be ready at all turns to obtrude the worst upon you, which are very much cheaper" but a workman ". . . employed by the day . . . will make but small haste to finish the building". As fond as he was of contracts 'by the great' Pratt's recommendation was for the client to buy his own materials and pay craftsmen for working on them.

At the end of the 1650-1750 period, in 1747, an indication of the 'contractor' role is given by Campbell in "The London Tradesman". Extracts from this book, which refer to the role of the architect, were given in Chapter 13 but the references to the architect's role as a contractor must be restated here. In addition to drawing "the Design and Plan" for the client, Campbell's architect subsequently agrees "upon the price (with the client) and . . . either undertakes the whole work, for a certain sum, or is paid for superintending the work only; in either case all the workmen are generally of his own chusing . . ."

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(7) Letter dated 25 June 1681 printed in Caroe, p 27

(8) Gunther, ARP, p 60.

It appears from the above that the architect/contractor (or contractor/architect) was firmly established before 1750. There is abundent evidence of building by contracts between 1650 and 1750. At Clare Hall, Cambridge between 1669 and 1715 there was spasmodic building work and approximately £5,000 was expended over the period. "The Master or his locum tenens and major part of ye senior fellows present in College (were) impowered to agree and contract with ye workmen for their several prices . . ." (Appendix 6, Project No 11). There were, over the whole period, many 'prices' with the workmen; some were 'Labour only' but others specified that the contractor/craftsman should "find" the "stone and workmanship" or provide "materialls and worke . . ." (for joinery items).

Robert, son of the Thomas Grumbold mentioned earlier, acted as both supervisor and contractor for the rebuilding of Clare Hall, Cambridge (Project No 11). He was paid a lump sum for designing a substantial part of the new building and "looking after" the foundations, and subsequently he was paid 20s a week for supervising the workmen. In addition, Grumbold was paid various lump sums for work which he bargained to carry out.

Very similar arrangements existed at Petworth House between 1688 and 1697 (Appendix 6, Project No 12). During this period the present house was constructed at a cost of between £20,000 and £25,000, which sum does not include the cost of materials taken from the Duke's estate.

Gangs of up to 20 men worked on the site, "at least 50 local men

working on the house at the busiest times". Generally they were paid by measure or lump-sum contract. The larger gangs were obviously managed by men of some substance as the labour-masters were paid monthly. Only craftsmen with special skills (plumbers, carvers, etc) were imported from London or other centres. As craft could follow craft without the need for close integration the masters of the gangs, the contractors, were able to act autonomously but they did not generally provide the materials or plant, which was organised by the Duke's stewards.

The building of the Radcliffe Camera, Oxford between 1736-48 followed a very similar pattern as Project No 13 in Appendix 6 shows.

William Townesend was employed as a mason-contractor as he was on so many Oxford projects. An indication of the contractual procedure used on the Radcliffe Camera emerged in Chapter 14. Hiscock(9) traces Townesend's work and records numerous contracts for building and drawing many of which were for sums in excess of £1,000 between 1704 and 1739. Colvin's "Biographical Dictionary" lists Townesend's name in connection with more than 40 buildings and monuments. As a mason, son of another eminent mason (John Townesend), William Townesend was the designer of many of the buildings he built, but the word 'contractor' would no doubt be placed first in his title if one were to make a composite with the word 'architect'. Hiscock lists several instances of

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(9) Article in Architectural Review, October 1945
"William Townesend, mason and architect of Oxford"

Townesend contracting for work designed by other architects. Hawksmoor, Vanburgh and possibly Wren are named in this connection. Willis and Clark record contracts of most types and size which far out-numbered 'dayworks' as the means of constructing buildings for the University and Colleges at Cambridge.

The building of a chapel at Pembroke College in 1663 and the building of the 'Bishop's Hostel' at Trinity College in 1669 provide examples of carefully-drawn articles of agreement.

Two contracts were made for the chapel, one with two bricklayers and the other with three "joyners"(10). The bricklayers were to be paid "fower pounds, fifeteen shillings per pole for every pole of square measure" for the main walls and different rates for other work. They supplied only the labour for the work.

The joyners were to provide both labour and materials for the wainscot, seats, steps, doors, organ loft, panelling and carpentry work in connection with the joinery. Rates were agreed in advance (seats at £5.12.6d each, 12s per yard for the wainscot, etc) and payments were to be made on pre-arranged dates provided the work had advanced satisfactorily.

The building of the Bishop's Hostel was undertaken by Robert Minchin a carpenter from Blechington in Oxfordshire. Minchin's undertaking was for all the crafts and he was to supply both labour and materials. A "draft" of the building attached to the

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(10) Willis and Clark, HVC, Vol 1, pp 155-6

"Articles of Agreement" was "so much in Wren's manner that it may possibly have been revised by him"[11]. The articles were very detailed. The quality of materials was described ("well burned stowbricks, laid in good mortar made with lime and sands . . . of good heart of oake"), as was the architectural style and construction which was to be used (". . . handsome Lutheran windows . . . (the) building to be . . . sufficiently coined with good freestone . . ."). A completion date was given and provision was made for the "Master, Fellowes and Schollars . . . and all and every other person . . . who they shall appoint at all times hereafter at their pleasure to view and oversee the whole proceedings of the said building, and upon any defalt or miscarriage . . . to admonish and give notice thereof to the said Robert Minchin". Interim payments were made and the total sum of £1,200 exceeded the contract sum by £20.

The above mentioned contracts at Pembroke and Trinity Colleges are typical of others at Cambridge and indicate a lack of standardisation in procedure.

After the Great Fire four centres of building activity emerged in London from which it is possible to determine the role of the contractor[12]:

1 Building for which the Municipality was responsible

2 City parochial churches

3 St Paul's Cathedral

4 Royal works

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(11) ibid, Vol 1 pp 555-9; quotation from the authors

(12) Knoop and Jones, LM 17c, pp 40-54.

Knoop and Jones trace the individual masons and the extent of their works; and from their findings it is possible to make an (albeit incomplete) assessment of the sizes and numbers of contracts carried out during the periods indicated in the table set out in Figure 15.1. Knoop and Jones suggest that the Municipality may have given out other and larger contracts than those which they have traced. A comparison of the London contracts in Figure 15.1 with those from other parts of the country, mentioned above, shows that the London contracts were generally larger. Another difference is that the London contracts were usually 'single craft' contracts. The carpenter Robert Minchin's contract with Trinity College valued at £1,200 included all the crafts: brickwork, masonry, carpentry, joinery, plastering, plumbing, glazing, metalwork, etc.
The St Paul's contracts are not fully detailed but Knoop and Jones refer to several contract sums of between £1,000 and £2,000 in value and others considerably larger. There is no doubt that the mason-contractors generally and those in London in particular were men of considerable substance. They often owned quarries and, all too frequently, had sums measured in thousands of pounds owed to them for work they had carried out months if not years previously. Knoop and Jones give many examples including four mason-contractors working on St Paul's Cathedral in 1685-6 who were each owed sums between £1,400 and £3,150 in value. On Royal Works contract sums of £11,000 and £13,500 were not unknown.

The bank accounts of one mason-contractor, Samuel Fulkes, between 1695 and 1711 show payments in and out of his account of approximately £8,000 in 16 years with the account always in credit. At one period Fulkes appears to have been engaged on at least three

Project type / Contracts	Municipal Works 1667-75	Parish Churches 1670-90	Royal Works 1674-1700
Number of Contracts	30	62	40
Total value in £	27,812	150,204	58,809
Average value in £	927(13)	2,423	1,470

Figure 15.1 Contracts performed by Mason/Contractors in London, 1667-1700

No. of Contractors undertaking:-	Contract/s 1	2	3	4	5	-10	-15	-20	20-	Total
No. of contracts undertaken:-	42	15	4	1	3	2	1	1	3	72
Expressed as a percentage:- *	58	21	6	1	4	3	1	1	4	99

Figure 15.2 The number of contracts for the Barrack Office which were undertaken by contractors

* to the nearest whole number

No. of Contractors undertaking:-	Contract/s 1	2	3	4	5	-10	-15	-20	20-	Total
No. of places at which contracts were undertaken:-	51	10	4	1	1	1	1	2	1	72
Expressed as a percentage:- *	71	14	6	1	1	1	1	3	1	99

Figure 15.3 The number of places at which contractors undertook contracts for the Barrack Office

* to the nearest whole number

(13) £927 is a misleading average as the contracts include one valued £11,300. Without this the average would be £540 for each contract.

different contracts as notes for £500, £300 and £200 were paid in on the same day. Edward Strong had a turnover of nearly £2,000 in 10 months between 1695 and 1696. On a later account (1704-6) his turnover (or perhaps his son's) was almost £8,500 in 2½ years. The bank account of Benjamin Jackson between 1703 and 1705 follows a pattern very similar to that of Samual Fulkes, namely, payments in of a few hundreds followed by withdrawals of £10 or £20 at weekly or fortnightly intervals.

At first sight it seems strange that 'general contracting' was not more frequently used on the London Projects but there were probably two reasons:

1 the guilds were still a powerful force in London in the second half of the 17th century; and

2 the size of the projects and the fact that close integration of the crafts was unnecessary at that time.

Before 1750, however, the guilds had been divested of much of their power, even in London, and the way was open for more rapid changes in the organisation of the construction function(14).

1750-1850

The Contractors and their Organisations

The evidence given in Chapter 13 was that the period 1750-1850 saw the peak and decline of the architect-contractor. Examples were given of architects who gave their clients an estimate of the cost of the works and then proceeded to organise them. Indeed Campbell in his book "The London Tradesman" considered this to be a normal procedure.

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(14) Clapham, Sir J "A Concise Economic History of Britain" (CUP 1963) p 259-60; refers to a seven year suspension of rules against 'foreigners' in all building trades.

Chapter 13 should, then, be kept in mind when the role of the contractor-architect is being considered because the difference between architect-contractor and contractor-architect can be so fine as to defy definition.

Once again, the projects in Appendix 6 have been used as examples of how the client went about satisfying his need for a building and how the construction process was organised.

The first of the projects within the period is the House of Correction at Lewes in Sussex between 1788 and 1791 (Project No 14). James Fentiman of Newington was "the Builder" and he undertook to "erect and build the whole of the building" ("the carcass") except for the cast-iron, wrought iron, glazing, lead and slating for £4,116. The contractors for the other crafts contracted by measure and gave unit rates (£1.5.0d per hundredweight for leadwork to the flat roofs, gutters etc, 9d per square foot for green glass and 1s 6d for best Crown glass).

The articles of agreement between the client and Fentiman made provision for variations which might occur during the course of the works, for stage payments, for the contractor to pay a penalty for non-completion by a stated date and for the contractor to furnish protection against damage from frost. He had to provide a bond for satisfactory completion. Although there was in this instance an architect for the project, William Blackburn, Fentiman the contractor provides an example of a contractor-architect working to the design of another as Fentiman was probably the architect of houses of correction in Dorchester and Exeter which were both

ascribed to "Mr Fentiman, architect"[15].

The building of the Prinxton China Factory (Project No 15) is, perhaps, typical of many industrial buildings in that the client had a detailed knowledge of his building needs and had sufficient organising ability to undertake any co-ordination of the works which might be necessary. The buildings were purely functional and the client needed only workmen who could put the materials together as shown on simple plans and sketches. Function, not style, determined where a door should be positioned or a window was needed to provide light. The client was a businessman and building a factory was almost part of his business. It would be bad business to pay someone to do something which he was capable of doing for himself; no designer or contractor was necessary.

The client for the building of the Sessions House or Shire Hall at Lewes (Project No 16) between 1808 and 1810, seventeen years after the House of Correction was completed, was also "The Court". Indeed, the minutes of the building committees are at each end of the same book. The second building is similar in scope but the

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(15) A report of a Committee of Aldermen appointed to visit several County Goals ascribed the two goals at Dorchester and Exeter to Fentiman, but Colvin, BDEA, p 204, suggests Fentiman merely completed them after Blackburn's sudden death in 1790. Reference was made in Project No 14 to the incorrect attribution by Pevsner which supports Colvin's suggestion as does the 'Return of all the Builders employed by the Barrack Office' which appears as Appendices No 82(a) and 83 of the 1806/7 report of the Commissioners of Military Enquiry. In these returns "John Fentiman and Son", and later, "John Fentiman, Loat and Son" appear under the heading "Names of Builders" against barracks and prisons built in Dorchester, Exeter, Bridport, Plymouth and Porchester.

type of contract is different. The various craftsmen were employed by measure (labour only) and the Clerk of the Peace, who was secretary to the building committee, advertised for tenders for materials which he subsequently purchased on behalf of the Building Committee. He, the Clerk of the Peace, supervised the works and appears to have acted as co-ordinator. The "Architect and Surveyor" for the project was "appointed Surveyor for managing and carrying the said intended work into execution" but he did not attend meetings of the Building Committee nor does he appear to have exercised much supervision. There is no mention of a Clerk of Works and the Clerk of the Peace appears to have given "directions to such Workmen, Artificers and Tradesmen as he . . . (chose) . . . to make and furnish" as he was empowered by the committee to do. Responsibility for providing plant, etc, is mentioned in the appendix.

Henry Rowles was the contractor for Project No 17, the rebuilding of the Drury Lane Theatre between 1811 and 1812. Rowles was a builder of considerable substance who gave evidence before the Select Committee in 1828.

The contract was in gross and involved client, architect and contractor. The architect, Benjamin Wyatt, entered into a contract for the design and construction of the theatre in what would, in the present day, be described as a 'package-deal'. To have completed the works in 11 months as Rowles states before the Select Committee, was a remarkable achievement of organisation.

The construction of the Observatory at Cambridge (Project No 18)

between 1818 and 1824 was a much larger project than many of those described above. Messrs Munday, the contractor, contracted 'in gross' for the building works, which grew in value as they proceeded by some 75 per cent.

Project No 19 for the development at Neathouse Gardens, London was different in many respects from the other projects in that it was a speculative venture. It is typical of organisation in many such developments in the country during the period 1750-1850 but it was larger than many. Thomas Cubitt was both client and contractor. Early in his career he had experienced delays and other difficulties when he had undertaken work using independent crafts-master-contractors and he established his own organisation which employed, direct, all the craftsmen and labourers for his contract works and own developments. His organisation included all the technical staff necessary to estimate for and control the works, as the information in Project No 19 shows.

Messrs Grissel and Peto were one of the few, if they were not the only, contractors in London during the first half of the 19th century whose organisation was comparable in scale with that of Cubitt. They undertook the construction of the superstructure of the Houses of Parliament for which an abstract is given in Project No 20. The contracts for this project which they undertook (the total project was let in several contracts) were in gross and Grissel and Peto proved that they possessed remarkable powers of organisation on "the greatest building of the century". Some indication of the scale of the works appears in the abstract of the project, and it is a measure of the capacity of Grissel and Peto that they

were involved in several other projects which were running at the same time as the Houses of Parliament.

The building works for the colleges and University at Cambridge between 1750 and 1850 follow a pattern similar to the projects mentioned above.

There were building works at Trinity College between 1755 and 1775 which were "measured by Mr Essex and the prices according to the Articles of Agreement", in one instance and to a "price set by Mr Burrow" in another(16).

In the first half of the 19th century, contracts in gross were the order of the day at several of the colleges. Competitive tenders were the method used to select a contractor for work at St John's College(17), at Corpus Christi in 1822 when "Messrs Phipps and Ward, Builders in London" entered a contract in the sum of £31,138 for building the lodge, library and west front(18), and at the Fitzwilliam Museum in 1837(19). The lowest tender for "building the carcase" at Fitzwilliam Museum, which was submitted by Messrs Hicks of London, was withdrawn and another London builder, George Baker undertook the work in the sum of £35,838. Other contracts were entered into for the "decorative portion of the building".

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(16) Willis and Clarke, HUC, Vol 2, pp 527-30

(17) ibid, Vol 2, p 278

(18) ibid, Vol 1, pp 302-3

(19) ibid, Vol 3, p 210

The indefinable boundary-line between the design and construction functions has been discussed in Chapter 13 and earlier in this Chapter. John Nash, best known as an architect but, in his earlier life, self-styled 'carpenter' and speculative builder and Henry Harrison both gave evidence at the enquiry into the Office of Works in 1828[20]. Henry Harrison described himself as 'architect' at the enquiry but admitted that he "was brought up as a builder, and was originally a partner with my brother . . . (he) had the architectural department and (his brother) the building department". Harrison said he had only confined himself to architecture "solely" in the last five years[21].

Harrison considered 'contracts in gross' to be the most common practice "in the present day" (1828) and referred to his brother who ". . . in many instances contracted to do the whole, and has executed the whole himself; in other instances he has executed part (and other parts were) sent to other builders". William Cubitt, brother of Thomas, mentioned in Project No 19, when asked if he contracted in gross replied, "Yes almost invariably"[22].

Yet another builder, Henry Rowles, demonstrated the status of the builder and the way in which he contracted for work in the third decade of the 19th century. Rowles was a man of influence and had been (he was retired at the time of the 1828 enquiry) in a

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(20) PP, 1828, pp 400-4

(21) PP, 1836, p 400

(22) ibid, p 405

substantial way of business. The 1820s had been a period of Clubhouse building in London and when he was asked if an estimate in gross could be used "by an individual" he replied: "Yes, it is very generally used now; I believe almost every new clubhouse in London is building on the same principle". He recommended a table of prices as part of the tender so that adjustments of price could be made should variations to the works occur(23).

It is, however, the enquiry into the "Conduct of Public Business in the Military Departments . . ." published in 1807 which offers an opportunity to make a numerical assessment of contractors at the beginning of the 19th century. Figures 15.2 and 15.3 have been prepared from lists of contractors contained in the report.

Only those contractors who appeared to be 'general' contractors in the sense that they undertook to find the labour and materials to carry out all crafts have been included in Figures 15.2 and 15.3. It will be seen later in this chapter that these were the majority in England. There is little doubt that some of the contractors were not building craftsmen. At the enquiry the officers from the Barrack Office mentioned on more than one occasion that contractors were selected from respectable and reputable tradesmen, but that in their haste to provide accommodation the officers occasionally had found themselves committing their office to contracts with entrepreneurs who were 'on the spot' and, perhaps, had one of the ingredients of building at their disposal(24).

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(23) ibid, pp 395-6

(24) John Warburton, a timber merchant, built barracks at Chelmsford in 1794-5 (PP, 1806/7, pp 484-6). He was examined at the enquiry.

This would account for some of the 52 per cent of the contractors who undertook only one contract and perhaps some who undertook two. At the other end of Figure 15.2 are those contractors who would, in the present day, be described as 'national contractors'. 5.5 per cent of all the contractors in the table undertook 42 per cent of all the contracts used in the tables and they were prepared to enter into contracts within a substantial area of the country. The most remarkable of these men was Thomas Neill. Neill undertook contracts in Sunderland, Northumberland, Durham, Ipswich, Colchester, Malden and Sussex.

Alexander Copland and John Scobell operated on a larger scale than Neill but their activities did not extend very far north. Instead, they both built in the Channel Isles and from one end to the other of the South Coast. Copland gave evidence at the enquiry. He was the son of a builder and "educated as a Builder under Mr Richard Holland"(25). His statement of charge to the Barrack Office amounted to £1,464,628.16s.1¾d of which £1,323,481.4s.6½d had been paid in 1806.

Some indication of the sense of urgency which existed on the barrack projects comes through in the enquiry when Copland recalled that in 1798 he took possession of a site at Weymouth on the 8th August, began building on the 9th, had it ready for occupation by troops on the 24th and occupied by them on the 28th. In September of the same year he built a barracks at Parkhurst, in the Isle of

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(25) PP 1806/7, pp 515-25. Richard Holland was probably the architect of that name. See Colvin, BDEA, p 293.

Wight for 2000 infantry, and "several out-post Barracks and Guard houses at Sandown Bay, Colwell Bay, Grange, Compton, and several other parts of the island, the whole of which were required to be executed in three months". These contracts were almost, if not all, by prices and measurement; and the substantial sums involved, and often outstanding for several years, show that these contractors were men of substance.

Figure 15.3 shows that the majority of the smaller contractors restricted their activities to their own locality; some, however, were less restricted. William Allinder, for instance, undertook six contracts in five different towns from Essex to Sussex; William Baldock's activities covered towns across Kent; Fentiman and Son and their partnership with Loat undertook to build in Dorchester, Exeter, Bridport, Plymouth and Porchester; and Thomas Loat and Son built in nine places spread over several counties. Shean and Tomlins demonstrate similar tendencies.

It is clear from an examination of figures 15.2 and 15.3 that by the beginning of the 19th century building contractors were well established. A question and answer in Henry Rowles' examination during the 1828 enquiry reads:- "The one man, to whom you refer in your answer, is a builder, is he not, by profession? - "a builder by profession"(26). The 19th century was the century during which many of the professions were founded; that of the builder was no exception(27).

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(26) PP, 1828, p 397

(27) Carr-Saunders A M and Wilson, PA "The Professions", quoted by Kaye, DAP, pp 12-13. Barristers, Physicians, Apothecaries formed professional associations before the 18th century; solicitors, surgeons and veterinary surgeons in the 18th century and ten, including civil engineers, architects, surveyors in the 19th century.

In 1834 'The Builders' Society' was formed by a small group of the leading master builders "to uphold and promote reputable standards of building through friendly intercourse, the useful exchange of information and greater uniformity and respectability in business". Fifty years later the society was incorporated as 'The Institute of Builders', its principal object being, "to promote excellence in the construction of buildings and just and honourable practice in the conduct of business"(28).

EDUCATION AND TRAINING

The Builders' Society made no attempt to train or educate its members or examine them for competence. It was an exclusive and self-protecting society in many ways similar to those formed by the architects and surveyors which were discussed in Chapter 13.

The education of the men who made up the contractors' organisations was similar to that undertaken by the architects. Indeed, it is clear from Chapter 13 that for much of the period the design and construction functions were carried out by the same person.

In project 19 of Appendix 6 there is mention of Thomas Cubitt's arrangements for providing articled clerks with a seven years' training, the premium for which was 300 guineas.

Cubitt's arrangements were by no means unique. There are frequent references in Colvin's "Biographical Dictionary" to men who

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(28) Institute of Building, Yearbook and Directory of Members, 1972-3.

sometimes practised later in their lives as architects or to architect/builders who were apprenticed to builders[29].

Noble (PPA, pp 26-7) confirms that "few London builders are workmen, but merely superintendents, and many of them derived their information in builders' offices, extended by observation in various works, in the same way as a young Architect obtains practical knowledge".

CONTRACTUAL PROCEDURE

The synopsis of projects and information about the contractors given above show that there were two principal methods by which contractors undertook work: by 'prices and measurement' and 'in gross'; there were numerous variations on these two basic themes as the sources mentioned above show.

Some of the Parliamentary Papers and Noble's book 'The Professional Practice of Architects', published in 1836, provide contemporary evidence of contractual procedures during the period 1750-1850. The Parliamentary Papers were concerned primarily with the procedure used for government building works; but as comparisons were frequently made with practice on works, other than for the government, of which the person being examined had experience the papers are a useful source of information.

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(29) George Maddox (1760-1843) apprenticed to his father "a builder of Monmouth" (Colvin, BDEA, p 373); the Paty family, during the 18th century, who practised as "masons and architects" and Thomas Paty (1713-89) as "carver and statuary mason" (ibid, pp 447-8), and others.

Contracts by Prices and Measurement

This type of procedure was by far the most used at the beginning of the period. An example of what was almost certainly the typical procedure for contracts made 'by prices' occurs in the report of the Commissioners of Military Enquiry into ". . . the conduct of Public Business in the Military Departments . . ." published in 1807. The enquiry was concerned with barrack buildings and the "mode of proceeding of the office" (of the Barrack Master General).

The procedure which had "originated and grown up" during the 18th century was stated at the enquiry to be as follows:

> When a Barrack is ordered to be erected, Plans are made out in the Building Office for the consideration of the Barrack Master General, who, on approving them, directs an Estimate to be made of the probable expense, which is accordingly done; and when directions are given to carry the work into effect, an agreement is made with one or more respectable Tradesmen to execute the same by measurement and fair valuation, and according to the customary rates and prices of building at the place where the Barrack is erected, and which shall be found so on examination . . . Detailed Plans and Directions are then made out in the Building Office for the guidance of the Tradesmen, and a Clerk of the Works is appointed to attend constantly on the spot, and see the same carried into effect; and the Architects frequently visit the Buildings to see that the work is going on properly, and to give such

further directions as may be requisite to forward the business. Advances of money to Tradesmen are made from time to time, as the work proceeds, upon certificates given by the Assistant Barrack Master General, the Architect, and the Clerk of the Checque . . . which Certificates are given upon Statements made up by the Tradesmen, and certified by the Clerk of the Works on the spot, and afterwards examined by the Architects; and in the advances given, a reservation is always made upon the amount of the Statement, of 12½ per cent to prevent any error or chance of the Tradesmen being overpaid. As the work advances, measurements are taken from time to time by the Barrack Office Measurers, and when the business is finished, the whole of the measurements are completed; the tradesmen then make up their accounts of the cost of the building, and deliver it to the Barrack Office. (the officers and architects) . . . investigate the accounts delivered by the builder . . . examining the measurements . . . the prices of the materials, labour, the custom of the county, the manner in which the work has been executed . . . make their observations . . . state their objections to such articles as appear to them to be inadmissible; often hearing what the Tradesmen have to say . . . make such deductions and disallowances as appear to them to be fair, just and equitable . . . Lastly, they make out a Certificate . . . paying the tradesmen the balance due to them . . .

The statement allows that the "mode of examination has been extremely laborious, and in many cases, considerable altercation has arisen with the tradesmen . . ."(30).

The Commissioners found the above procedure to correspond in most points with the answer given to the Select Committee of Finance in 1797 (p 321).

The 1807 enquiry was concerned with works which had been undertaken several years before the enquiry and Capt G Hayter's evidence was that contracts were entered into "sometimes with a single individual as the Builder; at other times with two or more Tradesmen, described by their respective denominations of Carpenter, Bricklayer etc"(31).

From Appendices 82 and 83 of the 1806/7 Report of the Commissioners of Military Enquiry it is possible to determine the extent to which the Branch Office used 'single individuals' or 'two or more Tradesmen'. Excluding the works in Scotland (which were almost all undertaken by a host of 'Tradesmen') 215 projects were undertaken by individual or simple partnerships and 16 by 'two or more Tradesmen'(32). Clearly, the 'general' contractor was an established corporate entity by the beginning of the 19th century. The bulk of the projects carried out by these contractors was

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(30) PP, 1806/7, pp 320-1, examination of the Barrack Master General

(31) ibid, p 341. The word 'Builder' occurs frequently in this context in the report.

(32) Appendix No 82 contains the data from which these figures have been obtained.

undertaken on Contracts by Prices and Measurements as the "remarks upon the State of the Accounts" in Appendices 82 and 83, mentioned above, testify. Only 122 accounts had been settled by the time of the 1806/7 enquiry, the remainder being "nearly settled", "under examination", "not delivered" or "under consideration of the Treasury".

In 1813 the Commissioners of Enquiry described a process for payment for building works for the Office of Works similar to that described by the Barrack Master General at the 1806/7 enquiry. The process concerned Clerks of Works; "two Measurers employed, . . . one on behalf of the Office of Works, and the other by the Tradesman"; blank bills (of quantities) etc. The process described appears to have been the standard procedure at that time(33).

The prices and measurement contracts provoked considerable criticism as expenditure on the building of the Royal Mint mounted to a total of £285,336.14s.0¾d in 1814, work having been virtually stopped in 1812(34).

There are examples, above, of some projects for clients other than the government being carried out by Contracts by Prices and Measurement during the period 1780-1850, but in general individual and collective clients appear to have adopted contracts in gross more readily than the Office of Works and other 'ministry' offices.

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(33) "Enquiry into . . . the Office of Works", Parliamentary Papers, 1812-13, V, p 333, referred to by Colvin, HKW, Vol 6, p 33.

(34) Colvin, HKW, Vol 6, pp 454-5.

Contracts for a specified sum ('in gross' or 'lump sum' contracts) A form of agreement for this mode of Contract was settled by the Law Clerk for use by the Barrack Office in 1805. It was "a contract for doing the work proposed for a specified sum, and according to Plans and Specifications signed by the parties at the time". Provision was made

- for payment "to the Contractor by instalments" upon a Certificate being made by the Surveyors
- that the Balance should be paid within three months after completion of the works
- that extra works to or omissions from the works contracted to be executed should be "ascertained by fair valuation", and the contract sum adjusted accordingly
- that the Contractor should enter into a bond to the Crown "for the faithful performance of the Contract"(35).

The draft proposed by the Law Clerk to the Barrack Office in 1805 made provision for most headings found in modern articles of agreement. Proposals of a similar sort were made in the Enquiry into . . . the Office of Works in 1812-13 when the Commissioners recommended that "open contracts should henceforth take the form either of contracts in gross or of contracts for prices"(36). James Wyatt, the Surveyor to the Office of Works, was "in a minority in favouring gross contracts with general contractors who in turn subcontracted with master tradesmen"(37) but between 1813 and 1828 (when another enquiry was held) at least as many buildings were

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(35) PP 1806/7, p 320

(36) PP 1812/3, pp 371, 377-384

(37) Colvin, HKW, Vol 6, pp 96-7.

constructed by contracts for prices and measurement as in gross.

The advantages of each type of contract

The arguments in favour of the two forms of contract were similar at both enquiries and can be summarised as follows:

In favour of contracts for prices and measurement:

- there was less reason for skimping materials and workmanship
- less supervision was necessary
- they were more economical than contracts in gross (J Sanders, Architect, cited estimates in gross for barracks at Hastings which were 50 per cent more than the cost of works as executed by prices and measurement - 1806/7 enquiry)
- the works could be put in hand more quickly as less documentation was required in advance of a physical start (Sanders said it would "require more time to make the necessary drawings and specification than was allowed to execute the Building" - 1806/7 enquiry).

In favour of contracts in gross:

- the cost of employing measurers one for each party to the contract was dispensed with. (William Cubitt estimated this cost at 10 per cent of the cost of works - 1828 enquiry)
- contractors were able to plan their work in advance to "carry it on in the cheapest and best way" (William Cubitt at the 1828 enquiry)
- it ensured "greater certainty of keeping within a definite expenditure" (Decimus Burton, Architect, at the 1828 enquiry)
- it was more economical "because one man having a larger quantity

of work to do in one place and having it all under his own control, he will do it with more facility than if it was sub-divided with others; consequently he will do it for less profit" (Henry Rowles, Builder, at the 1828 enquiry)

- the contract was not subject to "so many customs in the mode of measurement as an estimate formed upon a contract for prices" (John Nash at the 1828 enquiry)
- that a contract in gross was a way of safeguarding against an architect's estimate being exceeded (John Nash at the 1828 enquiry).

But perhaps the greatest advantage of contracts in gross was stated by Nash when he said about the architect: "before he can make a contract in gross (he) must make a specification in which he must set down everything that can possibly occur, if he omits anything, it will come in the shape of a bill afterwards, to avoid which he must digest the whole of his plan . . ." (PP 1828, p 363).

The 1828 Committee's conclusion was that, in spite of the preponderance of opinion on the part of those examined in favour of Contracts for Prices, "with precise specification and careful superintendence, and where all deviations from the original plan are avoided, the system of Contracts in gross might be found to be the least expensive". (PP 1828, p 319)

In the private sector similar procedures were being adopted. Writing in 1836 Noble describes "the cautious and excellent system recently adopted by Architects, in first selecting known respectable, as well as responsible builders, to compete for the performance of

the work, and furnishing the quantities in blank bill for estimation and tender, leaving the considerations of price only to their judgement, (which) cannot be too much advocated or practised . . ." He added that "a schedule of prices annexed to leading items in the tender, is both prudent and desirable . . . to guard against future disputation as to the value of increased or reduced works, consequent upon variations in original design by the employer or architect"(38).

The extent to which conditions had become formalised by 1836 is apparent from the twelve pages (pp 154-162) which Noble devotes to model clauses for conditions of contract covering both general and craft items. His model clauses are similar to those used in the present day.

What Noble means by "recently" when he refers to the system which has been adopted is uncertain. It may be that the enquiry in 1828 had precipitated the move towards contracts in gross, but the rate of change in the construction industry has always been slow and it seems more likely that the changes were proceeding in parallel in the private and public sectors.

At the beginning of the period, in 1750, more projects were carried out by Contracts for Prices and Measurement than by Contracts in Gross. It would be difficult to quantify the ratio but perhaps 70:30 would be a reasonable assessment.

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(38) Noble, PPA, pp 26-7.

By 1850 the balance had changed completely. Government departments may have been more conservative to change than other clients but the results of tenders in 'The Builder' between 1840 and 1860 provide a guide to the trend. The provision of bills of quantities increased with Contract in Gross: in 1840 it was the exception when bills of quantities were provided for tenderers but it was the rule in 1860.

Modern definitions of the word 'contractor' were given at the beginning of this chapter which make comparisons with the word 'builder'.

Definitions of the word 'builder' appear in dictionaries published in 1797 and 1819. The first appears in Thomas Sheridan's dictionary, published in London. It is "he that builds, an architect", which is significantly different from the second in Peter Nicholson's Architectural Dictionary: "a person who contracts to build".

It would be wrong to place too much significance on two definitions but the examples presented in the chapter support the impression given by the definitions that the words builder and architect were synonymous in the 18th century but that in the first quarter of the 19th century 'builder' meant someone who, to revert to Salzman's definition of architect in chapter 3, translated the designer's vision into actual reality.

CHAPTER 16

THE PATTERN OF THE ORGANISATION FOR THE PERIOD

INTRODUCTION

THE CLIENT AND FINANCE

CONTEMPORARY OPINIONS

THE RELATIONSHIP OF THE PROFESSIONAL ROLES

INTRODUCTION

Chapters 12 to 15 demonstrate that insofar as the Construction Industry was concerned, the period 1550 to 1850 saw greater changes in the relationship of the client, designer, financial controller and constructor than any other before or since.

THE CLIENT AND FINANCE

Chapter 12 shows how great was the interest of most clients in the design of their buildings. It is true that William Ashburnham, writing to his bailiff about his new rooms, was concerned about their size, ending ". . . and remember I tell you I care not a pyn howe it looks from the top of the hill whether botcht or uniforme"(1) but this was not a typical expression from a gentleman in the 17th and 18th century.

The gentleman's interest in design is apparent from the concern of the masters and fellows of the colleges of Oxford and Cambridge as much as from that of the individual builders of the stately homes and manor houses. But the end of the 18th century saw the end of the majority of the amateurs in architecture, and the line between client and architect which had been indeterminate since the 17th century became clearly defined.

CONTEMPORARY OPINIONS ON THE CONSTRUCTION INDUSTRY'S 'PROFESSIONALS'

At the beginning of the period, John Rogers was frequently at odds with his superiors. He was arrogant and provocative. William

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(1) Letter from William Ashburnham to Plummer, his Godson and Bailiff, 1670 (Ashburnham Papers, MS159, ESRO).

Lord Grey wrote to the King about Rogers and "his overthwart taunts and querulous language . . . which I cannot in any wise bear nor suffer"(2). Rogers was more military engineer than architect but the client/consultant relationship would be much the same for both.

Rogers enjoyed the support of the King for many years but Shelby suggests that towards the end of his career Rogers' disregard of his immediate superiors' feelings lost him preference and, perhaps, a knighthood. Perhaps Rogers' main fault was that he was usually right.

The same conflict appears when Blenheim Palace was built early in the 18th century. Sarah, Duchess of Marlborough, wrote of architects ". . . I know of none that are not mad or ridiculous, and I really believe that anybody that has sense with the best workmen of all sorts could make a better house without an architect, than any has been built these many years"(3). It seems likely that the main differences between the Duchess and Vanburgh concerned money. The Duchess admitted: "I made Mr Vanburgh my enemy by the constant disputes that I had with him to prevent his extravagences"(4).

The Duchess was by no means an easy client to deal with and she built her "hospital for distressed people" (almshouses for 36 people), after Blenheim Palace was complete, without help from an architect(5).

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(2) SP 1/221, f53 (L & P xxi, il172) quoted by Shelby, JR, p 88
(3) Thomson, G S "Letters of a Grandmother", 173 2-25, (Johnathan Cape 1943) p 52
(4) Quoted by Colvin, BDEA, p 636
(5) Jenkins, AP pp 43-4.

Roger North held similar views about architects. In 'Of Building'[6] North wrote:

> For a profest architect is proud, opiniative and troublesome, seldome at hand, and a head workman pretending to the designing part is full of paultry vulgar contrivences; therefore be your owne architect or sitt still.

North, son of Dudley, 4th Lord North, born in 1653, took his own advice and acted as his own architect. He did not go unheeded by others.

At much the same time Wren commented to a Committee of Christ's Hospital (24 November 1692):

> It was observed by somebody that our English artists are dull enough at invention, but when once a foreign pattern is set they immitate it so well, that commonly they exceed the original - I confess this observation is generally true[7].

It would be wrong to place too much importance on the opinion of a few disgruntled clients, but architects during the period displayed a tendency towards litigation and controversy. Colvin, quoting contemporary sources, notes that Charles Tatham's architectural practice at the beginning of the 19th century was never very extensive, largely because he was "apt to be masterful and litigious in professional matters, and engaged in lawsuits most unwisely with more than one of his employers"[8].

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(6) BM Add MS 32540, f 23 quoted by Colvin, BDEA, p 13

(7) Quoted by Lloyd, HEH

(8) Colvin, BDEA, p 596.

Examples of dishonest and incompetent architects, contractors and architects/contractors can be found during the period in question but there is little evidence to suggest that the men employed in the Construction Industry were more dishonest or incompetent than those in any of the other professions or businesses. The legal profession, for instance, was frequently criticised in the 18th and 19th centuries.

The main cause of the low public estimation of the Construction Industry probably dates, as Noble suggests(9), from the time of Vitrivius; namely, the failure of the man responsible for the project to give the client an accurate estimate of the cost of the works.

Certainly, incompetent or even dishonest estimating by architects must have been known in the 17th century, or John Evelyn, in his work dedicated to Wren, would not have written: "I have known some excellent persons abused, who, trusting to the computations of either dishonest or unskilled artists, have been forced to desist, sit down by the loss, and submit to the reproach 'This man began to build and was not able to finish'"(10).

This state of affairs had not improved by the 19th century. A contentious article in the first issue of "Architectural Magazine" entitled 'On the Present State of the Professions of Architect and Surveyor and the Building Trade in England' may well have been

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(9) Noble, PPA, p 20

(10) ibid, p 20.

sales promotion material for the new magazine, but it set down some of the complaints and fears of the public during the fourth decade(11).

These were:-

- that architects deliberately underestimated the cost of a proposed building in order to secure a commission ("another disgraceful practice, which either owing to ignorance or knavery, is, that some architects deceive their employers, by making very pretty and attractive drawings and reporting that the expense of carrying these into execution will be about half or two thirds of what it actually turns out to be . . .")
- that architects took commissions from builders ". . . for all works done under their direction . . ."
- that by not allowing the builder to employ a surveyor to measure his work but insisting "upon the builder leaving it entirely to the architect's clerk or to a surveyor named by him" the architect placed the builder in an invidious position which led to the builder's bankruptcy or a court action.

'Scrutator', the writer, suggested that the above "abuses" had resulted in the architect and surveyor not enjoying "the confidence of society". His solution was for the client to contract with the architect "for his commission . . . (and) . . . with the Builder for his work".

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(11) Loudon, the proprietor of 'Architectural Magazine', was a prolific writer and principal contributor to the magazine. His close liaison with many of the London architects would have qualified him to write the article but his dependence on their good will for the success of his magazine would have prompted him to use the nom de plume 'Scrutator'. The literary style is not dissimilar from his other writings. See Architectural Magazine 1834, 1, pp 15-16 for the article.

Similar criticisms appeared in subsequent issues of the Architectural Magazine when it was suggested that the causes of abuse in building were due to "ignorence of the Architect arising from his not having had a practical education . . . (that) . . . not one in five properly understood his profession . . . (and that they) . . . can only be called artists"(12). This may, to some extent, have been due to the "superabundence of young Architects being produced in consequence of the army, navy and government offices . . ."(13). Noble records similar correspondence in a "Periodical" between "Civis" and "one of the 'craft'" at about the same time under the heading "Impositions of Surveyors"(14). Civis' complaints were almost identical with those of Scrutator but took the underestimation complaint a stage further by suggesting that the architect or one of his friends took advantage of his client's "want of means" to "get a dead bargain of the premises".

Kaye suggests that "public estimation of the architect had never been lower than during the third and fourth decades of the nineteenth century" and that this was, in part, the result of the architect's "uncertain status and in part due to the fraudulent "general standard of practice"(15). Certainly there is evidence to support Kaye's suggestions but it is likely too, that it was the status of the client which had changed, not the incidence of fraud or incompetence on the part of the architect. The first

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(12) Architectural Magazine 1836, 1, p 47

(13) ibid, p 539

(14) Noble, PPA, pp 17-18. The inference is that Noble, was, himself, "one of the 'craft'".

(15) Kaye, APB, p 72.

half of the 19th century saw an increase in the number of clients with lesser means who were businessmen rather than 'gentlemen' in the 18th century meaning of the word. It also saw a great increase in the number of magazines with correspondence columns which could be used to express public opinion. In the 19th century the complaints which had, largely, gone unheard for 2000 years were recorded for the benefit of thousands of actual and potential clients of the construction industry.

THE RELATIONSHIP OF THE PROFESSIONAL ROLES

An approximate graphical statement about the relationship of the professional roles has been compiled from the tables included in Appendix 7.

Feature 3 in the 'Fifty Year Tables' and the table compiled from the 'Sample of designers' in that appendix give information about other occupations of the designers of buildings between 1550 and 1850. Figure 16.1 shows the occupations followed by architects (within Colvin's definition of architect as: "any one . . . who habitually made . . . architectural designs") in addition to practising as architects within the Chapter 3 definition.

The line representing the total number of architects practising during each of the 50 year periods, the 'T' line, has been compiled from the Sample of Designers. The first 100 years of the period has been extrapolated so that this line can be related to the other lines in the figure which have been compiled from the 50 year period tables. To what extent the dip in the craft/contractor line between 1650 and 1775 accurately reflects a trend it is difficult

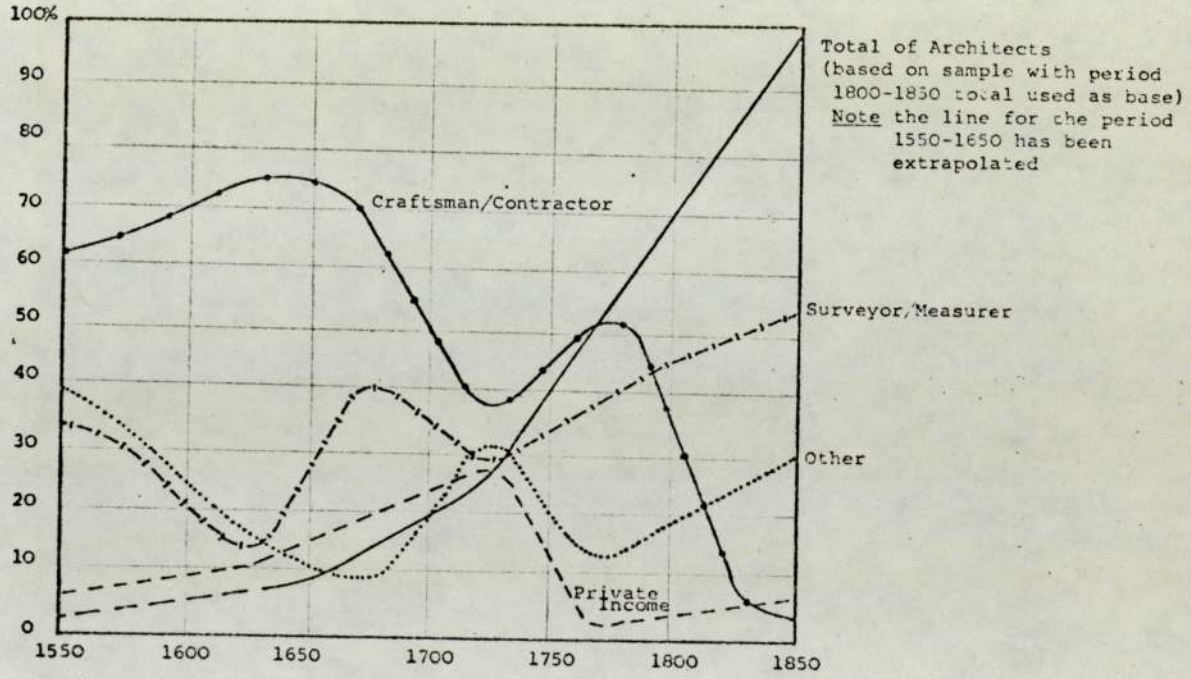

Figure 16.1 The other occupations of Architects

to determine. There appears to be no reason for such a profile and it would be expected that this line would describe an even decline between 1650 and 1775.

The very sharp decline in the craftsman/contractor line after 1775 marks the separation of the architect from the contractor. There is nothing to suggest that the number of contractors declined; only the architect/contractors declined in number. Between 1775 and 1850 the percentage of architects who also practised as contractors dropped from approximately 60 per cent to less than 10 per cent.

The line indicating the architects who also practised as surveyor/measurers shows a decline in the first half of the 17th century followed by a sharp incline until about 1675.

There is probably no significance in the ± 10 per cent variance which occurs after that date; between 30 per cent and 50 per cent of the architect's practising between 1650 and 1850 combined surveying in their practise.

The 'other occupation' and 'private income' lines do not occupy such prominence. The percentage of architects with another occupation was usually between 10 per cent and 30 per cent throughout most of the period. The number of "architects" with a private income dropped sharply after about 1725 suggesting the effective end of the 'gentleman' and 'amateur' architects as professionalism took over in the second half of the 18th century.

The numerical increase is self-evident. If the Sample of Designers is accepted as a guide to the number of designers of buildings the figures are:-

during the period 1650-1699, 87 architects practised
1700-1749, 212
1750-1799, 484
1800-1850, 870

The 1800-1850 figure does not agree with the census figures of 1,675 in 1841 and 2,971 in 1851 but a note is made in the 1851 Census that "many of the 2,971 architects are undoubtedly builders: and here the want of a better nomenclature is felt"(16). It seems likely therefore, that the actual figure for the last period given above, 1800-1850, was somewhere between 1,000 and 2,000.

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(16) United Kingdom, Register General: Census of England and Wales - quoted by Kaye, DAP, p 173.

PART IV

CONCLUSIONS AND SUMMARY OF ANALYSES

CONCLUSIONS AND SUMMARY OF ANALYSES

The nature of the subject of this dissertation led to the decision to summarise the findings at the ends of the two periods which make up Parts II and III. These summaries were made in Chapters 10 and 16 under the titles 'The Pattern of the Organisation for the Period'; these provide the bases for the conclusions below.

To facilitate identification of factors which have marked changes a table containing abstracts of the salient events is given as Appendix 9.

From the Chapters in Parts II and III and the table the following conclusions have been drawn:-

1 ON THE CLIENT, HIS NEEDS AND FINANCE FOR THE PROJECT

That until the beginning of the 14th century the Crown and Church were the predominant clients of the building industry. It would be wrong to take the absence of documentary evidence as proof of the complete absence of building works commissioned by Collective and Individual Clients during the 12th and 13th century but the earliest contracts between Collective and Individual Clients and building-craftsmen date from the first decade of the 14th century. From that time down, the demand for building from public authorities, colleges, universities, commercial and industrial undertakings grew as did the demand for homes by individuals at all social levels. Nevertheless, throughout the whole period the Crown (or State) continued to be a major client of the building industry.

Except for the first part of the period and for some home-building projects, the personal and direct involvement of clients in the design and construction process decreased throughout. The size and nature of many clients made it necessary for them to delegate their building decisions to individuals or, more frequently, committees.

This does not mean that at any time during the whole period the client allowed the designer absolute freedom. When discussing the part of the client in the design of his building down to 1540, Salzman wrote: "When we read that a house was built by the third Duke of Omnium we do not picture His Grace handling bricks and converting his coronet into a mortar board, but if we figure him as complacently entrusting the whole business to some professional architect and contenting himself with footing the bills, we very likely do him an injustice" (p 1).

Human nature can have changed little since the Conquest and any present-day architect will confirm that most clients take great interest in the design of the buildings for which they are paying. Indeed, at the first meeting the architect is often told by his client that he, the client, is quite capable of designing the building himself, but that other commitments prevented him from doing so. The client has, throughout, influenced the form that the building took wherever he has had an opportunity to do so.

The majority of house-owner clients, particularly those who moved into the growing towns and cities in the last hundred years of the period, enjoyed only an indirect say in the design of their homes

because they purchased completed houses or the shells from speculative house-builders. The only influence that they could exert was on the design of future speculative houses by refusing or showing reluctance to buy the houses on offer. The speculative builder was forced to build houses for which there was a demand and he was sensitive to the preferences of the market. His designs reflected the prevailing preferences and tastes, to some extent at least, but in practice the purchaser frequently had little freedom of choice of design within the geographical area he had selected.

Funds for building came from many sources. The Crown and Church had, during the first three or four centuries of the period, a high level of autonomy with regard to the manner in which they expended their resources. As the Collective Clients emerged and the King's works became, in effect, 'public' works the autonomy of the client was whittled away. Funds had to be accounted for and building committees were appointed which were responsible to treasurers, electorates, academic boards, share-holders or similar masters. Methods for controlling building expenditure became more important.

2 ON THE DESIGN AND THE DESIGNER

That until the first half of the 17th century, buildings were designed almost without exception by master-craftsmen. This despite the truth in Coulton's pronouncement on medieval church building that ". . . neither churchman alone nor mason alone, could have done what churchman and mason did in harmonious partnership". Client and master craftsmen between them undoubtedly produced some

of the most integrated buildings which this country has ever seen.

Inigo Jones, the first professional architect "whose technique is based upon study and whose function is supervisory rather than executive" practised in the first half of the 17th century, but it was not until the third quarter of that century that the country saw the beginning of designs by men who had not served an apprenticeship in a building craft.

The infiltration by designers with other backgrounds was brought about by a demand for buildings designed to conform with the classical Greek and Roman styles with which the British craftsman was unfamiliar. Men such as Wren and Hooke (both geometricians) and Hawkesmore were able to meet the demand. The infiltration was slow at first but it gained momentum in the 18th century. It came primarily from:

a) craftsmen - designer/architects
b) gentlemen of independent means and with artistic inclinations
c) men trained in the Office of Works as 'professional' architects
d) men from other professions or the universities
e) the sons of men with family connections in the building industry.

During the period 1650-1800 craftsmen continued to design and build, and 'architects', almost within the chapter 3 definition, undertook to co-ordinate the craftsmen or contracted to build. This was a transitional period and by the beginning of the 19th century the architect within the chapter 3 definition, was established if not perhaps, fully recognised by others. Barrister Sir James Scarlett's opening question to architect Daniel Alexander

in 1817 was: "You are a builder, I believe?" This question, on its own, could be taken as a counsel's device but he pursued the matter until Alexander stated the difference between an architect and builder:

> An architect, Sir, conceives the design, prepares the plan, draws out the specification - in short supplies the mind. The builder is merely the machine . . .

By the middle of the 19th century, however, it is most unlikely that a counsel would demand such an explanation. The Institute of British Architects had been formed, the profession was established, the separation of the design function from the others in the construction process had been brought about and the transition from medieval craftsman-designer to architect accomplished.

3 ON FINANCIAL CONTROL AND ADMINISTRATION

That at the beginning of the period financial control and overall supervision was the province of the sheriffs, constables, clerks and stewards. These arrangements obtained until the 13th century when master-craftsmen began to supersede those officers.

The increasing accountability of building committees, referred to above, led to the need for means of cost-prediction and control which neither the clerk nor the craftsman proved able to provide.

Attempts to estimate the cost of projected buildings were frequently unsuccessful. Little documentation in connection with these estimates exists. The estimate for the building of Petworth House in 1615 is an exceptional example of quantification and cost estimation: a priced bill of quantities. There must have been

other such estimates, but whilst numerous records of building committees' transactions, contracts and accounts have survived, early estimates are rare. Clearly the contract sums given in the agreements contained in the Appendices and foregoing chapters were based on estimates prepared by the craftsman or builder but most of these agreements are for relatively small projects. For larger projects the client can have had little or no knowledge of his eventual financial commitment to building works until all the costs were taken into account upon completion.

The Office of Works set the pattern for control in the 16th century by employing Clerks of Works who exercised some measure of technical supervision, counted the cost of labour and materials and measured and agreed the accounts of craftsmen who undertook contracts for works within their craft. As the incidence of craft contracts increased in the 17th century, so did the need for 'measurers'. The decade after the Fire of London in 1666 saw the emergence of independent measurers in London and much of England. When in the 18th century 'general' contractors undertook contracts embracing all the crafts under 'contracts by prices and measurement' the need for measurers was even greater.

There was criticism, mainly by architects, of the measurers. One such architect, Noble, writing in 1836 refers to a period at the beginning of the 19th century when ". . . the whole (measuring) profession . . . (fell into) . . . bad repute . . ." but he went on to say how the profession redeemed itself. The Select Committee on the Office of Works in 1928 found that measurers were ". . . selected from the professional part of the office, (of Works) from

young men who are well recommended (and) are very difficult people to get".

The weakness of the system of contracts by prices and measurement was that the cost of the works could not be ascertained until the account had ". . . been made up from the measurement and settled according to the prices". As a mode of contracting, contracts by prices and measurement probably persisted longer on works for government departments than on those for other clients.

Contracts 'in gross' were the next logical development in a period when, more and more, clients required foreknowledge of their financial commitment to future building works. "The cautious and excellent system . . . (of inviting a few) . . . respectable as well as responsible builders, to compete for the performance of the work and furnishing the quantities in blank bill for estimation and tender" (Noble) was established early in the 19th century and with the system, the profession of quantity surveying.

The quantity surveyor's 'raison d'etre' was the preparation of the 'bill of quantities' which provided the basis of competitive tenders. The essential difference between the measurer and the quantity surveyor was that the former measured and valued work after it had been built so that it could be taken into account and the latter measured from drawings and prepared bills of quantities in advance of the works so that the competing contractors had a common basis on which to prepare their tenders. He provided a communication link between the architect and the contractor at a time when the design and construction functions were separating.

The essence of the contracts 'in gross' was that the client should obtain, in advance, an estimate of the costs which he would incur by building. In practice the estimate was, for various reasons, often exceeded but nevertheless the bill of quantities provided a basis for financial planning and control, albeit imperfect, which had not previously existed.

The profession was formalised by the formation of the Institution of Surveyors in 1868.

4 ON THE CONTRACTOR AND THE ORGANISATION OF THE CONSTRUCTION PROCESS

Inevitably, the organisation of the construction process evolved to meet the needs of the client as described above. At the beginning of the period the organisation of building works on site was the province of the master-craftsman. Each master-craftsman was largely autonomous and he designed and constructed the work which formed part of his own craft. Co-ordination and control of the works, particularly on major projects, was the responsibility of a master of works who was almost always a master-craftsman and frequently a master-mason.

The period from the 12th to the first quarter of the 16th century was the heyday of the craftsman. It was a period of relatively high prosperity for him whatever his level in his craft and a period when he could progress to positions of prestige and power if he had the will and the ability. For the entrepreneur, building works offered an opportunity to enter into contracts on piece-work or, as he progressed, for the provision of labour and materials within his craft. Early in the 14th century craftsmen

undertook small building works by contracts which embraced all the crafts. The incidence of general contractors for smaller building works for Collective and Individual Clients increased slowly but steadily from the 14th century. Larger projects, more usually with the Office of Works as client, were built by direct labour or contracts with craftsmen whose work was measured and valued upon completion.

During the last century of the period, the incidence of general contractor was greater than before and by the end of the 18th century the sons of successful craftsmen and 'men of substance' were apprenticed in contractors' offices ". . . in the same way as a young Architect". During the first half of the 19th century enterprising men had set up formidable organisations capable of undertaking major projects such as the Houses of Parliament. Their catchment areas often extended over several counties. The 19th century contractor was, in Henry Rowles' words, "a builder by profession".

The relationship between the client, the architect, the contractor and the financial controller has adapted to meet changes which have occurred during the eight-hundred year period.

The beginning of the period saw, for larger building works, the client and his financial controller (the clerk or surveyor) on one hand and the master-craftsmen/designer on the other. The master-craftsman integrated the design and production functions.

The Dissolution, The Fire of London and the Industrial Revolution caused changes in the type of client needing buildings, in the type of building for which there was a need, and in the social pattern of the parties to the building process.

Designing stately homes became a fashionable hobby for a gentleman and the hobby developed into a profession. As the profession grew the status of the craftsman decreased until, in the eyes of Daniel Alexander, the architect questioned by Sir James Scarlett, the builder was "merely the machine" which the architect, the power, put together and set going (Chapter 13).

Designing and exercising control of cost proved to be beyond the competence of one man as building works became more complex. A separate profession emerged to meet the need. The end of the period saw the client, the architect, the contractor and the quantity surveyor performing separate functions in separate 'professions'. Relationships were established which had not changed one hundred years later, and which led to Sir Harold Emmerson being asked to survey "the problems before the industry". In his report

he said:

> There is a good deal of criticism of lack of cohesion between the architect and his professional colleagues and the builder. . The problem does not seem to arise in the civil engineering industry where there is close personal contact between the civil engineer and the contractor. In building there is all too often a lack of confidence between the architect and builder amounting at its worst to distrust and mutual recrimination. Even at its best, relations are affected by an aloofness which cannot make for efficiency, and the building owner suffers. In no other important industry is the responsibility for design so far removed from the responsibility for production.

("A survey of problems before the Construction Industries", HMSO, 1962)

The problems identified by Sir Harold Emmerson were the subject of an enquiry by a committee appointed by the Minister of Public Building and Works in 1962 under the chairmanship of Sir Harold Banwell.

The committee reported in 1964 and endorsed the comment made by Sir Harold Emmerson which is quoted above. Its conclusions concerning the relationship between the parties concerned in the building process were that:

- (building clients) seldom give enough attention at the start to defining their own requirements and preparing a programme of events for meeting them

- as the complexity of construction work increases, the need to form a design team at the outset, with all those participating in the design as full members, becomes vital. Design and construction are no longer two separate fields, and there are occasions on which the main contractor should join the team at an early stage.
- restrictions on the activities of members of the professional institutions need re-examination

and that

- the relationship between those responsible for design and those who actually build must be improved through common education. Much more attention should be given to the training of site agents (pp 34-35).

Since publication of the "Banwell Report" there has been a conscious effort by members of the design team to work together. Short courses and seminars have been arranged to this end at various centres and a considerable measure of success has been achieved. The incidence of "negotiated contracts" and other "unorthodox methods" of appointing contractors, as recommended by the Committee, has increased. The various professional institutions have formed more points of contact and practise greater liaison than before.

As a result of an examination of the restrictions on the activities of members, the Royal Institution of Chartered Surveyors has relaxed its 'contractor rule' and members of the RICS may now take employment in and be directors of contracting organisations. The Institute of Building has moved some distance towards re-establishing the 'professional builder' with the status he enjoyed at the

beginning of the 19th century.

During the last year or so much more attention has been given to the training of site agents but little has been done to develop "common education" although considerable lip-service has been paid to the need for common education. The increase in the number of degree courses in building subjects, both at first and higher degree level, since the "Banwell Report" may in time bring about some improvement in the relationship between those responsible for design and those who actually build.

The "Banwell Report" may, then, have been the turning point for the Building Industry. The last quarter of the 20th century could see the development of a greater understanding between those involved in the construction process and the emergence of an industry better organised to meet modern demands than that which was founded in the first half of the 19th century and has survived more or less unchanged to the present time.