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WILLIS'S PRACTICE AND PROCEDURE FOR THE QUANTITY SURVEYOR

Allan Ashworth
Keith Hogg
Catherine Higgs

 WILEY-BLACKWELL

**Willis's
Practice and Procedure
for the Quantity Surveyor**

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Thirteenth Edition

Allan Ashworth, DUniv (Hon), MSc
University of Salford

Keith Hogg, BSc

Catherine Higgs, MSc, MRICS
University of the West of England,
Bristol

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Preface

These are changing times for the quantity surveyor; but that is nothing new! The profession is very different to what it was even twenty years ago. This is true for all professions where a commercial revolution has been taking place steered by the advent of new technology. If readers care to re-read the prefaces of earlier editions of this book, which was first published in 1951, they will observe that change has been a common theme. The ninth edition (1987), for example, stated, "...changes have evolved as the profession of quantity surveying has evolved. In the main these changes have been gradual but in recent years they have become more far reaching." This all sounds like it could have been written in 2012. The comments in earlier editions of this book reflected on a number of RICS reports on the changing role and nature of the quantity surveyor.

We have in previous editions of this book considered changing the name of the quantity surveyor to reflect a more *modern* or upbeat name. We never quite go there! Construction economist sounded good in the 1990s although, as recruiters know full well, this title seems even less attractive than that of quantity surveyor. It certainly does not help to recruit new members to the profession. Some of the larger diversified practices are now content to use the term Management Consultant or, perhaps a better definition, Cost Management Consultant. Such titles offer a limited link to the construction industry in which the majority of quantity surveyors continue to work. Perhaps the most popular title today is that of Construction Cost Consultant. So why did we not change the title of the book? There are many reasons. Tradition that links us back to the first edition of this important work, many practitioners still describe themselves as quantity surveyors, the RICS still adopts this title, and the majority of university courses continue to use this description, are just some of our responses.

Changes in quantity surveying practice that are to be welcomed include the suite of New Rules of Measurement, the RICS Black Book and Building Information Modelling (BIM). These are truly exciting days for the quantity surveyor. This edition of *Practice and Procedure for the Quantity Surveyor* has taken into account the developing trends and changes occurring in the profession. The role of the quantity surveyor will continue to evolve by building on the sound foundations laid down by the profession and by exploiting to the full the new technologies available to us.

The future for quantity surveying remains excellent. The skills are highly valued amongst a diverse range of clients and cover an extensive range of activities that our forefathers could never have imagined.

Allan Ashworth, Keith Hogg
and Cathy Higgs
August 2012

1 The Work of the Quantity Surveyor

Introduction

In 1971, the Royal Institution of Chartered Surveyors (RICS) published a report titled *The Future Role of the Quantity Surveyor*, which defined the work of the quantity surveyor as:

‘...ensuring that the resources of the construction industry are utilised to the best advantage of society by providing, *inter alia*, the financial management for projects and a cost consultancy service to the client and designer during the whole construction process.’

The report sought to identify the distinctive competencies or skills of the quantity surveyor associated with measurement and valuation in the wider aspects of the construction industry. This provides the basis for the proper cost management of the construction project in the context of forecasting, analysing, planning, controlling and accounting. Many reading this will reflect that this is no longer an adequate description of the work of the quantity surveyor.

From the 1970s onwards, the profession began to evolve rapidly, and in 1983 the RICS prepared another report that would explore further the work of the quantity surveyor and at the same time attempt to assess its future potential and directions. This report, *The Future Role of the Chartered Quantity Surveyor*, identified a range of skills, knowledge and expertise provided by the quantity surveyor and indicated a greater expansion of possible services that could be provided both inside and outside of the construction industry. This report began to examine the changing and shifting scene, the requirements of clients, their dissatisfaction with the services provided by construction professionals generally, and their frequent disappointment with the products that they received.

Almost ten years later, in 1991, the Davis, Langdon and Everest consultancy group produced *QS2000* on behalf of the RICS. This report began to describe the threats and opportunities that were facing the profession at the end of the twentieth century. Again,

its key message related to change and in ensuring the services provided recognised that the status quo no longer applied. Clients were demanding more for their fees. Fee scales for their services had been abandoned many years earlier and were continuing to fall. This in itself was sufficient for quantity surveyors to examine their role and work in the construction industry. The changes identified in this report included:

- *Changes in markets.* It outlined the previous performance and trends in workloads across the different sectors and the importance of the changing international scene, particularly the challenges arising from the deepening European Union.
- *Changes in the construction industry.* The changing nature of contracting has placed an emphasis upon management of construction, the comparison with other countries abroad and the competition being offered from non-construction professionals.
- *Changes in client needs.* An emphasis in terms of the value added to the client's business; they want purchaseable design, procurement and management of construction. Many now want the long-term view beyond the initial design and construction phase.
- *Changes in the profession.* It noted employment patterns, the growth in graduate members, the impact of fee competition, the ways in which the quantity surveyor is now appointed, and changes in their role and practice with changing attitudes and horizons.

Towards the end of that decade, the former Quantity Surveyor's Division of the RICS produced a report titled *The Challenge of Change* (Powell 1998). This report provided stark warnings to the profession, almost as a final warning that if the profession did not adapt to change in the light of the changing attitudes of clients, pressures from the business world, the execution of projects, requirements of the skill base and the impact of information and technology, then it would not exist in the future. This would also be the last report from the Quantity Surveyor's Division, since this marked the end of the divisional structure within the RICS.

In the decade following the publication of these reports, quantity surveying has continued to respond to the changes identified in *QS2000*. Advances in ICT have had a profound impact on how quantity surveyors operate, their function and the scope and breath of the services they provide. Large practices have responded to the needs of a global market and, over the last decade, there has been an increase in both multidisciplinary and multinational surveying organisations. An increase in niche market provision has also been seen.

Quantity surveying practices have diversified in response to government strategies; the most influential being those that address reducing greenhouse gases and improving efficiency within the industry.

A changing industry

The prospects of the construction industry are intrinsically linked to those of a country's economy. In times of recession, the industry's major employers are reluctant to invest and this has an immediate knock-on effect on the fortunes

or otherwise of the construction industry. As a proportion of GDP, the output of the construction industry in the United Kingdom has been comparatively stable at about 8%. Currently (2011) it represents 7% of GDP. Construction output is considerably more if whole life contributions through planning, design, construction, maintenance, decommissioning and re-use are also taken into account. The construction industry, for example, has not suffered the considerable and terminal decline of engineering, especially ship building and coal mining.

However, the industry is changing shape. As a result of privatisations over the past 20 years the share of the public sector's construction portfolio has been considerably reduced. At its peak in the 1970s, this represented almost 50%; it is now 40%. Coupled with this have been strategic changes in the procurement of public sector building and civil engineering projects, for example through the Private Finance Initiative (PFI). This has assisted the industry to refocus on longer-term measures, such as the consideration of whole life costing. There is also the continued dominance of design and build, a trend that is likely to continue.

In 1994, the Latham Report, *Constructing the Team*, was published with far reaching consequences for the construction industry and those employed in it, including quantity surveyors. Its chief aim was to attempt to change the culture of the industry and thus increase the performance of construction activities and the final product. For example, it drew comparisons with motor car manufacturing and how this had changed to improve the product for the customer. By comparison, the construction industry had not changed significantly or fast enough and was being regarded by some as little more than a handicraft industry (Harvey & Ashworth 1997). Other reports followed with similar and uncomfortable themes. These included a report by the Royal Academy of Engineering (Barlow 1996) and *Rethinking Construction* (Egan 1998). In order to achieve the objectives set out in the above reports, the whole design and construction process, including the work of the quantity surveyor, needed to be re-engineered. Large British contracting firms would also copy the car industry: fewer of them and foreign owned. More mergers and acquisitions are on the horizon.

The National Audit Office provided yet a further review of the construction industry in a report titled *Modernising Construction* (2001). This report focuses on procurement and the delivery of construction projects in the United Kingdom and how the process can be modernised. This has yet further implications for the way in which quantity surveyors carry out their work in advising and assisting clients of the industry. This report also highlights the need for major savings and repeats the 30% reduction in the costs of construction from the Latham Report. Some of the main recommendations from the Report are:

- Collaboration
- Competition
- Appropriate risk sharing
- Value for money
- Clear understanding of the project's requirements
- Transparency in respect of costs and profits
- Clearly understood rights and obligations

- Appropriate incentives
- Early involvement of the whole construction team
- Operational efficiency of completed buildings.

The report places an important emphasis on making greater use of innovation, disseminating good practices more widely, and actively measuring improvements in construction performance.

The construction industry is continuing to go through major change that is being driven by government, regular-procuring clients and initiatives outlined in the reports noted above.

Accelerating Change (Egan 2002) reaffirmed the principles set out in *Rethinking Construction* and sought to address barriers to progress and identify ways to accelerate the rate of change. It promoted procurement decisions based on value for money against world-class benchmarks delivered by competent integrated teams. Notably, it identified sustainability as a driver for change and recognised the strategic contribution of sustainability as integral to addressing the issues within the industry. The report also addressed the need for greater integration and collaboration.

Subsequent government initiatives, such as the *Strategy for Sustainable Construction* (2008) and the *Government Construction Strategy* (2011) reinforced the importance to the construction industry of meeting the targets for reducing greenhouse gas emissions and the implementation of Building Information Modelling. The latter will have a profound impact on the culture of the industry; though primarily considered a technology matter it will become a key driver in implementing collaborate working.

Characteristics of the construction industry

The total value of the construction output in the UK is 7% of GDP or £110bn per annum of expenditure of which 40% is public sector work. The industry offers direct employment to around two million people and to others in supporting occupations. In addition, many UK firms and practices, including quantity surveyors, have an international perspective through offices overseas or through associations with firms abroad. There has, for example, been an increasing and expanding role of activities on mainland Europe. Approximately 80% of the UK workload is on building projects as distinct from engineering and infrastructure works. New construction projects account for about 64% of the workload of the industry (2012). The repair and maintenance sector will remain an important component for the foreseeable future as clients place greater emphasis upon the improved long-term management of such major capital assets.

The industry is characterised by the following:

- The physical nature of the product
- The product is normally manufactured on the client's premises, i.e. the construction site
- Many of its projects are one-off designs in the absence of a prototype model
- The traditional arrangement separates design from manufacture
- It produces investment rather than consumer goods

- It is subject to wider swings of activity than most other industries
- Its activities are affected by the vagaries of the weather
- Its processes include a complex mixture of different materials, skills and trades
- Typically, throughout the world, it includes a small number of relatively large construction firms and a very large number of small firms
- The smaller firms tend to concentrate on repair and maintenance.

There have been recent developments in procurement management, supply chain management and the management of projects. In the case of PFI (private finance initiative) projects, the management of the asset becomes the financial responsibility of the consortium involved in the initial design and construction. PFI has allowed public clients to build many projects, including health, education and road and rail infrastructure projects that otherwise might never have been envisaged. Some commentators suggest that, prior to the economic downturn, one of the reasons for the sustained growth in the construction industry is due at least in part to the PFI concepts. PFI allows for continuity and integrity of delivery and maintenance. This at least should provide for a greater consideration of long-term needs and benefits to clients. PFI, together with the sustainability agenda, is one of the reasons for current interest, development and application of whole life costing. PFI is also driving a longer-term view of capital investment, with a greater appreciation of value for money, a greater understanding of risk, finance and taxation.

PFI specifies a method, developed initially by the UK government, to provide financial support for public-private partnerships (PPPs) between the public and private sectors. This process has now been adopted in several countries overseas, for example Canada, France, the Netherlands, Norway, Australia, Japan and Singapore, as part of a wider reform programme for the delivery of public services which is driven by the World Trade Organisation (WTO), International Monetary Fund (IMF) and the World Bank as a part of their deregulation and privatisation drive.

These types of project aim to deliver all kinds of works for the public sector, together with the provision of associated operational services. In return, the private sector receives payment, linked to its performance in meeting agreed standards of initial provision and longer-term operation and maintenance. However, it is likely that there will be changes to future government procurement as the *Government Construction Strategy* (2011) action plan identifies the need to consider alternatives to current procurement processes.

Construction sectors

Within the construction industry quantity surveyors are involved in the following four main areas of work.

Building work

The employment of the quantity surveyor on building projects today is well established. The introduction of new forms of contract and changes in

procedures continue to alter the way in which quantity surveyors carry out their duties and responsibilities. They also occupy a much more influential position than in the past, particularly when they are involved at the outset of a project.

Quantity surveyors are the cost and value experts of the construction industry. Their responsibilities include advising clients on the cost and value implication of design decisions and the controlling of construction costs. Great importance is now attached to the management of costs on the majority of projects, especially in relation to whole life costing.

Building engineering services

Whilst this work is very much a part of the building project, it has tended to become a specialist function for the quantity surveyor, especially on large complex projects. An ever-increasing amount is expended on the elements that constitute this work. Traditionally, much of this work was included in bills of quantities as prime cost sums. It was largely presented in this way for three main reasons: building services engineers often failed to provide the appropriate details in time for quantification purposes; traditionally it was not the custom to measure this type of work; and contractors often preferred to offer lump sum quotations on the basis of drawing and specifications only. More enlightened clients realised that this approach was not very satisfactory in determining where the actual costs for this work were being expended. Whilst there is sometimes resistance to detailed quantification from some building services consultants, there is now a clear preference for a systematic breakdown of costs that can be properly compared and evaluated.

It is also accepted that to provide a rigorous cost control function for only part of a building project is unsatisfactory. The building services engineering work is frequently more extensive and expensive and due to such costs, value and cost control must be as rigorous as the methods applied on the remainder of the construction project. The need to consider the energy efficiency of systems and alternative sustainable technologies means that professional advice from quantity surveyors in this sector will become increasingly influential in design decisions. Quantity surveyors employed in this discipline have had to become more conversant with the science, technology and terminology of engineering services in order to interpret engineering drawings correctly.

Civil engineering

It is difficult to define the line of demarcation between building and civil engineering works. The nature of civil engineering works often requires a design solution to take into account physical and geological problems that can be very complex. The scope, size and extent of civil engineering works are also frequently considerable. The problems encountered can have a major impact on the cost of the solution, and the engineer must be able to provide an acceptable one within the limits of an agreed budget, in a similar way that buildings are cost planned within cost limits. However,

because of their nature, civil engineering works can involve a large amount of uncertainty and temporary works can be considerable, representing a significant part of the budget.

Civil engineering projects use different methods of measurement. In the UK, this might be either the Civil Engineering Standard Method of Measurement or Method of Measurement for Roads and Bridgeworks, although other methods are also available. Different forms and conditions of contract are also used. These to some extent represent the different perception of civil engineering works. The work is more method-related than building works, with a much more intensive use of mechanical plant and temporary works. Bills of quantities, for example, comprise large quantities of comparatively few items. Because much of the work involved is at or below ground level, the quantities are normally approximate, with a full remeasurement of the work that is actually carried out. Also, as there is not the same direct relationship between quantity and costs, contractual claims are potentially a more likely event.

Quantity surveyors working in the civil engineering industry provide similar services to those of their counterparts working on building projects. In addition to the methods of measurement and conditions of contract, quantity surveyors must also be conversant with the different working rule agreements, daywork rates and other documents such as *Civil Engineering Procedure*, published by the Institution of Civil Engineers (1996).

Quantity surveyors have been employed by civil engineering contractors and design consultants since the turn of the twentieth century. Engineers also value the advice that quantity surveyors are able to provide on costs, value, contractual and other relevant matters. Engineers recognise the benefits of the quantity surveyor's specialised skills and knowledge in respect of the cost and financial aspects of construction. Many promoters, the civil engineering client, rely on pre-contract and post-contract services provided by quantity surveyors.

Heavy and industrial engineering

This work includes such areas as onshore and offshore oil and gas, petrochemicals, nuclear reprocessing and production facilities, process engineering, power stations, steel plants, and other similar industrial engineering complexes. Quantity surveyors have been involved in this type of work for a great number of years, and as a result of changing circumstances within these industries a greater emphasis is also being placed on value for money. In an industry that employs a large number of specialists, quantity surveyors, with their practical background, commercial sense, cost knowledge and legal understanding, have much to offer.

The role of the quantity surveyor is similar to that of their 'building' counterpart. Standard forms of contract have been developed in this field, for example the *Standard Contract for the UK Offshore Oil and Gas Industry*.

Basic methods employed to support cost management are similar to those used in other quantity surveying work. They could be more numerically based and offer different forms of analysis which lend themselves to computerised measurement

and cost administration systems. Bills of approximate quantities are often produced from sketches and drawings provided. Otherwise, performance specifications or schedules of rates or one of the variety of cost-reimbursable contracts could be employed. Alternatively, take-off schedules could be prepared for the purchase of materials only.

Essentially, quantity surveyors who are employed on this type of work must be able to adapt to new methods of measurement, cost analysis, contract procedures and cost engineering practices. There is also a likelihood of being involved in a wider range of activities than those encountered on building projects.

Quantity surveyors in this field are widely employed in the USA and many countries of Europe, and this continues to be a growth profession.

The role of the quantity surveyor

Traditional role

The traditional role of the quantity surveyor has been described elsewhere and in previous editions of *Practice and Procedure for the Quantity Surveyor*. The history of the quantity surveyor from the middle of the seventeenth century is briefly described in Seeley and Winfield (1999) and in Ashworth and Hogg (2000). This traditional role, still practised by some and especially on small- to medium-sized projects, can be briefly described as a measure and value system. For a more nostalgic view of the quantity surveyor, readers should refer to Nisbet (1989). Approximate estimates of the initial costs of building are prepared using a single price method of estimating (see Chapter 6), and where this cost was acceptable to the client then the design was developed by the architect. Subsequently, the quantity surveyor would produce bills of quantities for tendering purposes, the work would be measured for progress payments and a final account prepared on the basis of the tender documentation (see Fig. 1.1). The process was largely reactive, but necessary and important. During the 1960s, to avoid tenders being received that were over budget, cost planning services were added to the repertoire of the duties performed by the quantity surveyor employed in private practice (PQS). The contractor's surveyor was responsible for looking after the financial interests of the contractor and worked in conjunction with the PQS on the preparation of interim payments and final accounts. On occasions, contractors felt that they were not being adequately reimbursed under the terms of the contract and submitted claims for extra payments. This procedure was more prevalent on civil engineering projects than on building projects, although the adversarial nature of construction was increasing all the time.

Pragmatism and realism are some of the qualities most highly valued by clients in quantity surveyors (Davis, Langdon and Everest 1991). Some will argue that the distinctive competence found in quantity surveyors relies heavily on their analytical approach to buildings and that this stems directly from their ability to measure construction works. Furthermore, the detailed analysis of drawings leads to a deep

- Single rate approximate estimates
- Cost planning
- Procurement advice
- Measurement and quantification
- Document preparation, especially bills of quantities
- Cost control during construction
- Interim valuations and payments
- Financial statements
- Final account preparation and agreement
- Settlement of contractual claims

Fig. 1.1 Traditional quantity surveying activities (circa 1960).

understanding of the design and construction which enables them to contribute fully to the process. This intimate knowledge of projects is at the root of the contribution made by the quantity surveyor to the value of the client's business through the provision of the services shown in Fig. 1.1.

Evolved role

In response to the potential demise of bills of quantities, quantity surveyors began exploring new potential roles for their services. Procurement, a term not used until the 1980s, became an important area of activity, largely because of the increasing array of options that were available. Increased importance and emphasis were also being placed upon design cost planning as a tool that was effective in meeting the client's objectives. Whole life costing (Chapter 7), value management (Chapter 8) and risk analysis and management (Chapter 9) were other tools being used to add value for the client. As buildings became more engineering services orientated, increased emphasis was being placed on the measurement, costs and value of such services. Quantity surveyors had historically dealt with this work through prime cost and provisional sums, but in today's modern buildings to describe the work in this context is inadequate. Other evolved roles have included project and construction management and facilities management (see Fig. 1.2). Because of the inherent adversarial nature of the construction industry they are also involved in contractual disputes and litigation.

Some QS practices became very nervous about the apparent demise of bills of quantities. It remains an *apparent* demise because at the commencement of the twenty-first century they still represent a significant proportion of work and associated fees for some quantity surveying firms. The wheel may have turned in some respects since instead of preparing bills for clients, quantity surveyors are preparing bills for contractors. This was the practice used during the nineteenth century! Also, countries that hitherto had not yet embraced quantity surveying, and the number of these countries is continuing to decline, were beginning to see the benefits of schedules of quantities for tendering and contractual administration purposes.

- Investment appraisal
- Advice on cost limits and budgets
- Whole life costing
- Value management
- Risk analysis
- Insolvency services
- Cost engineering services
- Subcontract administration
- Environmental services measurement and costing
- Technical auditing
- Planning and supervision
- Valuation for insurance purposes
- Project management
- Facilities management
- Administering maintenance programmes
- Advice on contractual disputes
- Planning supervisor
- Employers' agent
- Programme management
- Cost modelling
- Sustainability Advisor

Fig. 1.2 Evolved role (circa 2012).

The techniques of whole life costing and value management were being actively pursued by practices and actively supported by academic research.

Developing role

The future development of quantity surveying services is likely to be influenced by the following important factors:

- Client focus
- Development and application of information and communication technologies
- Research and its dissemination
- Sustainability agenda.

Client focus

The construction costs of capital works projects will always be an important component for clients in their decision to build. These costs will include whole life costs. There can be only a few clients with the motto of Cheops, the builder of the Great Pyramid, who said, 'I don't care how much it costs or how long it takes!' Consultants are sometimes seen as adding excessive costs to projects and contractors, offering services that are late, of poor quality and of indeterminate high costs. Clients will always be prepared to pay for services that are able to demonstrate a financial benefit. The basic requirements of clients are shown in Fig. 1.3. Though dated it is still relevant.

The client needs of the early part of this century are broadly identified in Fig. 1.4. Experience suggests that, whilst improvement amongst the leaders in the

- Reduced time scales
- Practical completion must mean total completion, not 'nearly ready'
- Simplified process
- Complete understanding of the procurement process
- Comprehensive service including mechanical and electrical installations
- Excluding the exclusions
- Effective change management
- Solutions not projects

Fig. 1.3 Basic requirements of clients (Source: Powell 1998).

- Choice
- Co-investment and risk taking
- Commitment
- Credibility
- Competence
- Clarity and accountability
- Consistency

Fig. 1.4 Client needs – the seven C's (Source: Powell 1998).

construction industry can be expected to match the best in the world, the improvement generally will take time and will involve radical changes in culture and probably its structure. Barlow (1996) has suggested some of the examples of best practices that can be learned from the manufacturing industry sector and, indeed, the key drivers for changes identified by *Rethinking Construction* (Egan 1998) were informed by experiences in other industries, notably manufacturing. It advocates that client's needs should be at the very heart of the process (Fig. 1.5).

An increasing number of the large quantity surveying practices, that have grown to include a wide range of different types of professional staff, are members of the Management Consultancies Association (MCA). This organisation represents members who employ over 30,000 consultants and work with over 90 of the top FTSE 100 companies. MCA defines management consultancy as the creation of value for organisations through improved performance, achieved by providing objective advice and implementing business solutions.

Development and application of information and communication technologies

Information technology has long been shown to be an effective tool to support a wide range of applications in the construction industry. Today, the majority of quantity surveyors are ICT literate and regularly use the office suite software or equivalents, e.g. Excel, Word, PowerPoint, Outlook and Explorer, to support their activities. Dedicated quantity surveying applications are also widely used and include CATO, Master bill, QSPRO, Conquest, Valesco and RIPAC suites to support cost management and tendering services. If proprietary systems are not employed, quantity surveyors generally use bespoke packages based on Excel developed in house. Other proprietary systems have been developed to support all aspects of quantity surveying services, such as value and risk management.

- **Focus on customer satisfaction.** Recognise that clients want buildings and support after completion, at the right price, to the appropriate quality and standards, on time and meeting their needs.
- **Attention to the process as well as the product.** Product design has now become a byword in manufacturing industry, where the process used has contributed towards increasing the appropriateness of the product. Research is necessary in the construction industry in process analysis.
- **Concept of total quality approach and attitudes.** The total quality approach should not be confused with total quality management or quality assurance, which are now widely accepted in the industry. Total quality programmes are often expensive to implement relying on extensive training to bring about a shift in culture. It represents a continuous improvement programme.
- **Benchmarking.** The practice of benchmarking all of a company's activities against the best competition or against organisations who are known to be industry leaders is now commonplace in some quarters (see Chapter 18). A characteristic of many of these companies is their willingness to share knowledge with others.
- **Team-working and Partnering, including supply chains.** This aims to make every individual feel worthwhile and as such it leads to greater pride within a company. It aims to harness the intelligence and experience of the whole workforce. It also extends beyond the individual company to include consultants, contractors, subcontractors and suppliers. For large clients they are also often part of the team (see Chapter 10).
- **Information technology.** The construction industry must welcome the more widespread use of information technologies and embrace the current Technology Foresight Initiative.

Fig. 1.5 Learning from manufacturing industry (Barlow 1996).

As identified by Cartlidge (2012), in response to clients' demands for added value quantity surveyors are engaging in all levels of e-business, from the use of email at level 1 to fully electronic procurement and tendering at level 3.

Mobile technologies supported by cloud computing also influence the manner in which quantity surveyors are now working. It is now commonplace to see a surveyor with laptop, notebook, tablet, ipad and/or Blackberry.

An efficient use of ICT can enhance the quantity surveying service as it provides access to relevant information in a timely manner. Mobile characteristics enable a more efficient use of knowledge and experience on a real-time basis. The ability to streamline the communication process and integrate data management systems supports an audit trail of information whilst maintaining a secure correspondence trail (Ballan and El-Diraby 2011).

The most influential change to the use of ICT within the profession will be the requirement that all project asset information, documentation and data used on public procurement projects be electronic by 2016. This is discussed in more detail in Chapter 19.

Summarising, ICT is an integral part of quantity surveying and therefore will be described in more detail throughout this book within the appropriate professional context.

Research and its dissemination

The importance of research and its dissemination is fundamental to any profession, especially one that is facing a change in direction and in its practices. These are considered in Chapter 5.

Sustainability agenda

Strategies such as *Strategy for Sustainable Construction* (2008) and *The Low Carbon Construction Action Plan* (2011) are key drivers informing the client's sustainability objectives. As a result, clients are becoming increasingly aware of the benefits and need to consider whole life costs, environmental impact assessments and evaluation of carbon emissions. The impact on the quantity surveying profession is discussed in Chapter 19.

Skills, knowledge and understanding

In 1992, the Royal Institution of Chartered Surveyors published a report titled *The Core Skills and Knowledge Base of the Quantity Surveyor*. It examined the needs of quantity surveyors in respect of their education, training and continuing professional development. This reflected the requirements in the context of increasing changes and uncertainties in the construction industry and, more importantly, within the profession. Since the publication of this report, there have been a number of government and educational initiatives with regard to the implementation of lifelong learning. All subject disciplines have in recent years placed an increasing emphasis on the development of generic and specialist skills within their respective curricula. A course audit of such skills was first initiated by the Business and Technology Education Council (now EDEXCEL) and has since been accepted as an important component on all undergraduate and postgraduate courses in every university. The RICS report identified a range of skills that the profession would need to continue to develop if it wished to maintain its role within the construction industry. The report identified a knowledge base that includes:

- Construction technology
- Measurement rules and conventions
- Construction economics
- Financial management
- Business administration
- Construction law

and a skill base that includes:

- Management
- Documentation
- Analysis

- Appraisal
- Quantification
- Synthesis
- Communication.

All of these remain valid requirements twenty years later, although their relative importance has changed to suit changing needs and aspirations. The report also sought to set out and to identify the present market requirements and to anticipate expectations in the future. It also examined constraints that might in some way inhibit quantity surveyors from achieving their full and expected potential.

The report developed earlier themes from reports published by the RICS and others. These included *The Future Role of the Quantity Surveyor* (RICS 1971), *The Future Role of the Chartered Quantity Surveyor* (RICS 1983), *Quantity Surveying 2000* (Davis, Langdon and Everest 1991) and *Quantity Surveying Techniques: New Directions* (Brandon 1992). The report examined key trends in the demand for construction activity and the needs of professional services. The report also made reference to the wider opportunities that may lie beyond the horizon of construction, where the skills and knowledge base could be applied.

In analysing the knowledge base and accepting that this would be incremental and on a need-to-know basis, the report identified four key areas:

- *Technology*: This relates to process used and the product achieved.
- *Information*: The requirement for sources and information management.
- *Cultural*: The organisational and legal framework context
- *Economic*: The increasing importance of business and finance.

The report discusses the differences between skills and techniques. Quantity surveying has developed its own repertoire of techniques. Skills occur in respect of the levels of ability required to apply these techniques in an expert way. The different array of skills is assimilated with the knowledge base through education, training and practice. Whilst there is a general agreement about the skills and knowledge base required, different surveyors will place different emphases upon the relative importance in practice. The report concludes with a forecast of the future importance of the different core skills and knowledge requirements in a changing environment.

Powell (1998) further emphasised the importance of the skills required of the chartered quantity surveyor of tomorrow. Tomorrow has now already arrived! This report emphasised the need to:

- Develop a greater understanding of business and business culture
- Develop strong communications and ICT skills
- Challenge authoritatively the contributions of other team members
- Understand that value can be added only by managing and improving the client's customers and employer's performance
- Develop skills to promote themselves effectively
- See qualifications only as the starting point

- Recognise the need to take action now
- Become champions of finance and good propriety.

The skills of the quantity surveyor that were very important fifty years ago still remain important but their relative importance has declined to be replaced by new skills. This is evident across a whole range of industries and professions. The skills of today will also need to be enhanced as demands continue to evolve and change in the future.

For many undergraduates leaving university at the start of the twenty-first century the notion of skills has been extended beyond those developed in the RICS report of twenty years earlier. It has long been recognised that the development of skills has a much longer life span than knowledge since the latter is changing and frequently being updated. The Skills Plus Project (William 2003) identified a comprehensive listing of 39 skills organised under three headings of personal qualities, core skills and process skills. The personal qualities included, for example:

- Independence
- Adaptability
- Initiative taking
- A willingness to learn
- An ability to reflect on what has and what has not been achieved.

Core skills included the obvious three 'Rs' but also:

- The ability to present clear information when in a group
- Self-management
- Critical analysis
- The ability to listen to others.

The last of these, whilst obvious, is a skill that is frequently much under-developed in people generally. Common listening styles include the juggler (distracted listening), the pretender (pretend listening), the hurry-up-er (impatient listening), the rehearser (switched-off listening) and the fixer (fix-it listening). Listening, by allowing others to speak, is a very powerful tool.

The process skills include:

- Computer literacy
- Commercial awareness
- Prioritising
- Acting morally and ethically
- Coping with ambiguity and complexity
- Negotiating.

Some of these are very difficult to develop in an academic setting. There is thus a growing recognition that links between universities and quantity surveying practice need to be strengthened for the benefit of all parties involved. Commercial awareness is often not fully understood and applied even by many working in practice.

Ranking	Core	Mandatory	Optional
1	Project financial control and reporting (T067)	Communication and Negotiation (MOO4)	Contract administration (T016)
2	Quantification and costing of construction works (T074)	Client Care (M003)	Risk management (T077)
3	Procurement and tendering (T062)		
4	Contract Practice (T067)		

Fig. 1.6 Ranking of quantity surveying competencies (Source: Perera S and Pearson J. 2011).

In Perera and Pearson's (2011) study of the changing development needs of quantity surveyors within a post-recession industry environment that satisfied the aspirations of industry, professional and academic stakeholders, the industry participant ranked the quantity surveying competencies as defined in the Quantity Surveying Pathway document (detailed in Fig. 1.6). It is notable that quantification and costing is still highly in demand.

What's in a name?

When we started to write the eleventh edition of *Practice and Procedure for the Quantity Surveyor* in 2002 much consideration given to a possible change in the title of the book since the name 'quantity surveyor' was thought to be a little old fashioned. It was, and is, but so also are the names of many of the professions in that they do not now adequately describe what they do. We decided to retain the book's title and have hardly discussed the name in this edition.

Since that time, of course, the RICS, after a lapse period of six years, have renamed their Construction Faculty 'Quantity Surveying and Construction'. The RICS' about-turn stemmed from a sense that quantity surveyors should be judged on the value of their services, not their job title. The name change represents a positive and forward-looking step for the profession, for the Faculty and for the wider RICS. The quantity surveyor has a varied and unique skill set to offer clients, whether providing feasibility advice, a procurement programme strategy or a whole life cost analysis. Many RICS members feel that they have been given back their identity.

The origins of quantity surveying as a distinct activity are hard to trace back in time much further than the Great Fire of London. However, in the New Testament there is a story there about counting the cost before you build (Luke's Gospel, Chapter 14). Perhaps quantity surveyors can trace their routes back to more than 2000 years ago! The building boom that followed the Great Fire of London encouraged the emergence of the architect and the growth of the single trades, contracting for their own part of the building work.

The measurers had to be invented, if they did not already exist. There was a real need for someone to ensure impartiality between the proprietor and the workmen. The rest is history. In 1834, the fire that destroyed the Palace of Westminster was partially responsible for the use of the quantity surveyor on a major scale. Charles