Chapter 1
The Industry Context

This work explores the nature and extent of liability for design. Modern construction is a complex process, with many parties contributing to the design of buildings, including consultants, contractors and specialist manufacturers. When problems occur, questions arise as to who made the relevant decisions, whether they are liable for any resulting losses, and if so, to whom?

Many things will determine who is liable. The procurement route selected and the skills of those involved might provide an overall indication of the intended distribution of liability, but are by no means determinative. The next step is to examine the contract documents agreed between the parties. Often these will purport to precisely describe design duties, but sometimes will be unclear or incomplete.

External factors will also play a part. Legislation can affect the contractual provisions, operating to imply terms into an agreement, or to render terms void. It can also create a separate duty to third parties outside the contract. Designers can also become liable in tort to third parties. Consultants may therefore find themselves liable in ways they did not anticipate.

A simple model of design liability might be that the party that makes a design decision will bear liability if the decision is wrong. However, that simple model does not always arise. First, the parties might agree a different system, for example under a partnering or collaborative arrangement they might agree to share the risk of errors. Second, one party may be liable for the decisions of another, even when they thought they had delegated those decisions, for example a consultant will normally be liable for sub-consultants, and may be liable for design delegated to a specialist sub-contractor.

Therefore, even in simple procurement arrangements, the distribution of design liability can become quite difficult to pin down, and in modern complex procurement systems with many participating in the design process, the network of responsibility can become extremely intricate.

1.1 What is design?

In the author's view the answer to this question is very simple: any decision that affects the final form or composition of the building is a design decision. This covers a wide

Cornes and Lupton's Design Liability in the Construction Industry, Fifth Edition. Sarah Lupton.

spectrum, from strategic space planning choices down to the smallest level of detail, such as the choice of fixings, adhesives, size of pipes and type of circuit breaker. As Sir Hugh Casson once put it, 'to design is to decide'.[1] A similar approach can be seen in this definition: 'Design is . . . the coming-into-being of an object which could be other than it is'[2] and in *Hudson's Building and Engineering Contracts*: '. . . the essential element of the function of design is choice'. [3] A more complex definition along the same lines was developed by the Design Council in relation to engineering education:

> Conceptual design involves identifying needs or requirements, weighing up and analysing possible solutions (including those that are already known) and coming to a properly thought out decision as to which design or designs will be most promising. The next, and equally important, phase is to reduce the concept to a practical scheme design that will show whether a useful product is likely to emerge. The detailed design must then be completed. This may mean that a set of detailed drawings, specifications and other documents have to be produced so that manufacturing and quality targets, together with satisfactory service in the field, can be achieved. The designer's task is not finished until it has been shown that the product can be manufactured, tested and maintained to cost targets, and that it performs properly at all points in the specified performance envelope, even when it is made from components at the extremes of the tolerances and degraded by reasonable wear.[4]

In practice an alternative approach is sometimes taken, for example some would say that smaller levels of detail are 'not really design', but something else, perhaps 'workmanship', and the term 'workmanship' is commonly used to refer to finer details of construction.[5] Often such details are worked out not by the consultant who is considered the primary 'designer' of a building, but often by manufacturers or craftsmen, through a process of preparing shop drawings. This approach is described in *Building Contract Disputes: Practice and Precedents*:[6]

> In the normal case of traditional contracts (i.e., where the design is not the responsibility of the contractor but that of the employer's architect) then much importance can be attached to the question of whether a defect is a design defect or a defect of workmanship. It is impossible to lay down hard and fast rules as to whether any particular defect will be one or another, for the choice between a flat roof and a pitched roof will be a matter of design, but the choice between a screw and a nail may well be a matter of workmanship. As a rule of thumb, the

[1] Sir Hugh Casson, Romanes Lecture delivered in Oxford, 12 November 1979, *The Guardian*, Saturday 24 November 1979.

[2] D. Fleming, 'Design Talk: Constructing the Object in Studio Conversations', *Design Issues*, 13(2), (1998), 41–62. The author thanks Dr Rachael Luck of Reading University for supplying this definition.

[3] (12th edn, 2010), para. 3–085.

[4] Design Council Committee on the Current Education of Engineering Designers in Britain, *Engineering Design Education* (London: The Design Council, 1976), para. 1.2.

[5] Atkins Chambers, *Hudson's Building and Engineering Contracts*, 12th edn (London: Sweet & Maxwell, 2010), para. 3–084.

[6] Robert Fenwick Elliot and Jeremy Glover, *Building Contract Disputes: Practice and Precedents* (London: Sweet & Maxwell, subscription series), para. 1–142.

> shape, dimensions, choice of material and other matters apparent from the drawings are generally regarded as design matters and the things left over for the good sense of the contractor are generally regarded as matters of workmanship.

Another means by which smaller decisions are left to the contractor is through the use of performance specifications. As indicated in the Design Council definition, the result of the design process is usually communicated through detailed drawings, specifications and other documents. There are two types of specification, a prescriptive and a performance specification, and the distinction is significant. The former involves the precise and complete description of the materials and arrangement of these, whereas the latter specifies the performance required, together with provisions as to testing, assumed usage and maintenance, and leaves the means of achieving it up to the supplier or contractor. Therefore, when something is specified by performance, an element of design is always left to be completed.[7]

What people mean when they refer to 'design' can therefore vary. In practice this can sometimes cause confusion between parties, especially when agreeing the extent of respective parties' duties. It would only be critical with respect to liability if a court was to use its definition of design to assign liability, for example if a court were to start by deciding who is responsible for design, and then look at the error in question and decide if it constitutes design. If, on the other hand, the court simply analyses the contractual framework to determine who was responsible for that particular decision, then whether or not it is considered 'design' is a moot point.

The borderline between design and 'workmanship', the effect of any delegation of a detailed design decision, and the court's approach to these issues are recurring themes in this book. For clarity, the simple 'to design is to decide' definition is adopted throughout this book, and 'workmanship' is taken to be the *manner* in which the work is carried out, not *what* that work comprises, unless stated otherwise in the context of a particular discussion.

1.2 Procurement routes

Below is a brief outline of alternative procurement routes, included in order to highlight where in the process the design activity will occur. For a full explanation of the various advantages and problems, readers should consult one of the texts listed in the Bibliography.[8]

1.2.1 Traditional

'Traditional' procurement, as the name suggests, is the oldest formalised system for undertaking a building project, and is still the most commonly used system in the UK

[7] See Sarah Lupton, 'Performance Specification: the legal implications', *The International Construction Law Review* 13(1), (1996), 28–55, and Sarah Lupton and Manos Stellakis *Performance Specification: a guide to its preparation and use*, (London: RIBA Publications, 2000).

[8] e.g. Sarah Lupton et al., *Which Contract?*, 5th edn (London: RIBA Publishing, 2012).

(together with 'traditional plus design' as described below, accounting for around 76% of projects in 2010, and 41% of the total value).[9] In fact standard form construction contracts reflecting the traditional route can be traced back to the late nineteenth century. In traditional procurement it is assumed that the main role of the contractor is to carry out and complete the work, and that the design will be prepared by consultants engaged separately by the client. It is normally assumed that, subject to any express provisions to the contrary, the contractor has no obligation as to design, although in some circumstances a limited design obligation may arise. Usually a standard form traditional contract is administered by an independent contract administrator appointed by the client. A single stage tender procedure is normally adopted with full, detailed design information issued to the tendering firms, although an alternative two-stage tender process is sometimes used. Here the first tender is on limited design information, and the successful tenderer is then involved in the design finalisation, advising on its buildability and cost implications.

1.2.2 Traditional plus design

It is increasingly common within the context of traditional procurement, where the contractor is to carry out and complete the work, for the contractor to have limited obligations as to the design of discrete parts or aspects of the project. In fact it is rarely the case, at least in the UK, that the entire project, including the finest levels of detail and specialist systems such as structural glazing and heating, are designed entirely by the employer's directly engaged consultants. The contract can still be considered 'traditional' in the sense that the contractor's 'design' obligation is limited to an identifiable part or aspect of a project that is primarily designed by others. As above, the terms are usually administered by an independent contract administrator appointed by the client.

Frequently responsibility for the part to be designed will be delegated to a specialist company (common examples are cladding, glazing systems, tanking, and mechanical and/or electrical service systems). Less frequently the design of the discrete part will be sub-contracted to a consultant. In either case, the selection of the specialist sub-contractor or consultant can be left entirely to the contractor, and the contractor will retain responsibility for that design. However often the client will seek to retain a degree of control over that choice, either by requiring the contractor to engage a particular firm, or by limiting the choice to specific companies, or by being involved in the contractor's selection process and having the right to approve or reject the contractor's proposed company. For any of these options, the firm undertaking the design will usually be asked to enter into a collateral warranty with the employer. These contractual arrangements often give rise to complex issues regarding liability for any design errors that subsequently become apparent.

[9] RICS and Davis Langdon, *Contracts in Use; a Survey of Building Contracts in Use During 2010* (London: RICS, 2012).

1.2.3 Design-build

Design-build procurement emerged in the 1960s, largely in an attempt to speed up the production of new housing after the Second World War, but also with the aim of including the contractor's expertise in buildability in the design process. It is now the most common method of procurement for larger projects, accounting for around 39% of the value of projects undertaken in 2010.[10] In design-build procurement the contractor is required to carry out and to complete the work and in addition to design or to complete the design for the project. There is usually no independent contract administrator, although there is frequently a named employer's agent.

In many cases, although a design-build procurement route is adopted, the project will have been partly designed by a consultant appointed by the client before the contractor is approached. The design-build contractor may then be required either to take over responsibility for the entire design (as if it had been the designer from the start), or (a more limited obligation) to complete the partially finished design and to be liable for the design of only the completed part. In such cases establishing the cut-off point and the split of design responsibility between client and contractor must be handled carefully. As with traditional procurement, a two stage tender process is sometimes used. In design-build, this allows a period for the consultants to work with the contractor in developing the design proposals, prior to the contract being finalised. During this period the contractor may be appointed separately for advice and design services.

The role of the design consultant is to act throughout the project for one party, ie for the client or the contractor.[11] An alternative is for the consultant to swap from the employer to the contractor at the time the main design-build contract is let to the contractor, a process which is often (and sometimes inaccurately) termed 'novation'.

In a true novation (also called novation *ab initio*), the contract between employer and consultant is replaced by a contract on identical terms between the architect and the contractor. A simpler (although less accurate) way of describing the process is that the contractor will replace the employer as client under the original appointment. The contractor accepts all the obligations and liabilities that had formerly been the employer's under the appointment, and the consultant's prior and future obligations/liabilities are now owed to the contractor. A deed of variation to the appointment is required to reflect this change, which should include any necessary or preferred alterations. All three parties enter into a novation agreement. In reality, a novation of a consultant's services is rarely a true novation in this sense, as the services undertaken for the contractor are usually different to those undertaken for the employer. A novation *ab initio* may occur in other circumstances when, for example, a funder steps in and runs a project on behalf of an insolvent contractor.

An alternative arrangement, also often referred to as novation, but sometimes termed 'consultant switch', is for the original appointment with the employer as client to be

[10] ibid.

[11] Where two separate design firms are engaged, one by the employer and one by the contractor, this is sometimes termed 'bridging', especially in the US, see Justin Sweet and Marc M. Schneier, *Legal Aspects of Architecture, Engineering and the Construction Process* (Stamford: Cengage Learning, 2009).

brought to an end and a new appointment entered into between the consultant and the contractor. An agreement between all three parties is necessary to permit this change.[12] The consultant will normally remain liable to the employer for any breach of duty under the earlier appointment with the employer, but will not be liable to the employer for any default in services performed for the contractor (unless a consultant–employer warranty is entered into, which is often the case).[13]

1.2.4 Management methods

Management procurement is a more recent development, at least within the UK, dating from around the 1980s. In this system the contractor is appointed on a fee basis for managing the carrying out and completion of the work; the actual construction work is divided into 'packages' to be undertaken by specialist 'works' or 'trade' contractors. In the variant termed 'management contracting' the contractor enters into contracts on a rolling programme basis with successive trade contractors. In the other variant, 'construction management', the client enters into contracts with the specialist companies, the management contractor acting purely as an advisor to the client, arranging for the tendering of the packages and coordinating the specialist companies' work.

So far as design responsibility is concerned, this can lie entirely with the client's directly appointed design consultants, in the same way it would with traditional procurement. Each separate trade contractor is supplied with all information it needs to construct its section, and carries no design liability. More usually at least some of the packages are let on a design-build basis, with the trade contractor responsible for design and construction of its part. Usually the interfaces between packages are critical to the success of the project, particularly when packages are designed by different parties.

1.2.5 'Turnkey' contracting

There are several variants of design and build, whereby in addition to the contractor designing and constructing the project, the contractor takes on further responsibilities, for example running and maintaining the installation.

The term 'turnkey' contracting is often used where the contractor designs and builds the project, usually for a fixed price. The project is fully equipped, commissioned and handed over ready to operate. The system can also be termed Engineering, Procurement and Construction (EPC). In some cases the contractor can also provide financing and/or land procurement services.[14] In a turnkey arrangement the owner provides a brief that describes the required outputs, including detailed performance specifications for the completed facility. Turnkey arrangements are typically used in large international engineering, power or process plant construction projects. A further variant is Build

[12] The CIC publish a Novation Agreement (CIC/NovAgr) for use in this situation.

[13] For a more detailed explanation see Construction Industry Council, Liability Briefing: *Novation of Consultants' Appointments on Design and Build* (London: CIC, 2008).

[14] Lawrence Bennett, *The Management of Construction: A Project Life Cycle Approach* (Oxford: Butterworth-Heinemann, 2003).

Operate Transfer (BOT) or Build Own Operate Transfer (BOOT; the terms are used synonymously), where the supplier will finance, design, build, operate, manage and maintain the facility, and then transfer it to the client (normally a government) following a concession period where the costs are recovered through, for example, levying a toll. As with turnkey contracting this is often used for utility projects, and also for transport and infrastructure projects such as major bridges and tunnels.

In the UK the Private Finance Initiative (PFI) is a particularly significant variant of these systems. Introduced by the Conservative Government in 1992, it is a means of transferring the risks associated with public service projects to the private sector in part or in full.[15] PFI is a form of public–private partnership (PPP) whereby a public infrastructure project is initially funded with private capital. In PFI a legal entity, known as a 'special purpose vehicle' (SPV), takes on the obligation for maintenance and, possibly, operation as well as design and construction of the facility. In PFI the costs are recouped from the public body during the operation period. In other types of PPP, the cost will be recouped from the users.

1.2.6 Partnering

Partnering was first used by the US Army Corps of Engineers in the late 1980s and was first applied in the UK in the North Sea oil and gas industries in the early 1990s.[16] Shortly afterwards the UK Government commissioned Sir Michael Latham to review the construction industry's procurement routes and contracts, and to propose solutions to problems the industry was facing. The resulting report[17] criticised the fragmented nature of the industry, finding the normal procurement routes inefficient and fostering an adversarial culture. It called for a more integrated and collaborative approach, and advocated the use of partnering. This influential report was swiftly followed by further initiatives and reports, including '*Partnering in the Team*'[18] *and* '*Trusting the Team: the Best Practice Guide to Partnering in Construction*'.[19] In 1998 the new concept of partnering was given further support by the government-sponsored Egan report.[20]

The partnering approach focuses on cooperative (rather than adversarial) working, to achieve common aims. It has been defined as:

> a management approach used by two or more organisations to achieve specific business objectives by maximising the effectiveness of each participant's resources. It requires that the parties work together in an open and trusting relationship based on mutual objectives, an agreed method of problem resolution and an active search for continuous measurable improvements.[21]

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[15] House of Commons, *The Private Finance Initiative (PFI); Research Paper 01/117* (London: House of Commons, 2001).

[16] Chris Skeggs, 'Project partnering in the international construction industry', *International Construction Law Review*, 20(4) (2003), 456–82.

[17] Sir Michael Latham, *Constructing the Team* (London: HMSO, 1994).

[18] Construction Industry Board, *Partnering in the Team* (London: HMSO, 1996).

[19] John Bennett and Sarah Jayes, *Trusting the Team* (Reading: Centre for Strategic Studies in Construction, The University of Reading, with the partnering task force of the Reading Construction Forum, 1995).

[20] Sir John Egan, *Rethinking Construction: Report of the Construction Task Force* (London: HMSO, 1998).

[21] ibid., *Trusting the Team*, p. 2.

In theory, therefore, partnering can be used along with any of the above forms of procurement. There are two principle ways of doing this: the first is for all parties to agree to a simple 'mission statement', which sets out the parties' intention to work in a cooperative manner, in good faith, to achieve mutual goals. The second is to incorporate mechanisms for shared risks and rewards, linked to defined targets (e.g. that any cost savings below the target cost will be shared between the parties). In design terms, the collaborative working will often involve all parties contributing their expertise to the design process, including the contractor and specialist sub-contractors. The pain/gain mechanism may be linked to a quality objective such as a 'minimal defects' target or the measurement of the building's performance in use.

Although it was initially envisaged that the partnering team would be retained over several projects, the approach is often used on single contracts, termed 'single project partnering'. Since 2000 dedicated standard forms of contract have been published to cover this procurement method (e.g. see PPC2000 and the JCT Constructing Excellence). As partnering has received government approval, it has been used on many public projects, including those under the Private Finance Initiative.

1.2.7 Prime contracting

Prime contracting is a process that was advocated in the UK in the late 1990s as one of the three preferred government methods of procurement (along with design-build and PFI),[22] and is still used for a significant number of projects, particularly by the Ministry of Defence. It is often used with partnering, and the MOD has defined the prime contractor as responsible for 'the management and delivery of a project using a system of incentivisation and collaborative working to integrate the activities of the Supply Chain members to achieve a project that is on time, within budget and is in accordance with the specified outputs and it is fit purpose'.[23] Typically the prime contractor is required to design and construct the facility to meet stated purposes and to maintain it for up to seven years after completion to prove the design as constructed meets the stated performance requirements and operating costs.

1.2.8 Integrated project delivery and BIM

A recent development to emerge in the US is that of Integrated Project Delivery (IPD). This was first defined by the American Institute of Architects (AIA) in 2007 as 'a project delivery approach that integrates people, systems, business structures and practices into a process that collaboratively harnesses the talents and insights of all participants to reduce waste and optimise efficiency through all phases of design, fabrication and

[22] Issaka Ndekugri and Pauline Corbett, *Supply Chain Integration in Construction by Prime Contracting: Some Research Issues*, COBRA 2004 conference proceedings (London: RICS, 2004).
[23] ibid.

construction'.[24] Like partnering, it can be used with a variety of contractual structures, but it advocates the appointment of the whole team at an early stage, and the use of synchronised contracts, incentives and risk sharing. Standard form contracts drafted for use with IPD include the American Institute of Architects (AIA) A295 and C195 families of forms and ConsensusDocs 300, developed by a pan-industry group including contractor and sub-contractor organisations.

IPD is in turn is closely linked with developments in computer technology, such as Building Information Modelling (BIM). BIM has been defined as 'a model-based technology linked with a database of project information'[25] or, more fully as:

> a digital representation of physical and functional characteristics of a facility. As such it serves as a shared knowledge resource for information about a facility forming a reliable basis for decisions during its lifecycle from inception onward. A basic premise of BIM is collaboration by different stakeholders at different phases of the life cycle of a facility to insert, extract, update or modify information in the BIM to support and reflect the roles of that stakeholder. The BIM is a shared digital representation founded on open standards for interoperability.[26]

Although BIM is often referred to as if it were a procurement method in itself, it is essentially a digital tool that might be used in any context.[27] However, as reflected in the above definition, it is generally considered that to be used effectively it requires close collaboration between the parties. Similarly, although IPD is possible using traditional IT systems[28] these are seen not to be conducive to collaborative working, for example the AIA maintains 'Building Information Modelling . . . is essential to efficiently achieve the collaboration required for Integrated Project Delivery'.[29] Collaborative procurement methods and BIM are therefore seen as interdependent. BIM can be used at various levels:

0. *Unmanaged* CAD probably 2D, with paper (or electronic paper) as the most likely data exchange mechanism.
1. *Managed CAD in 2D or 3D format* using BS1192:2007 with a collaboration tool providing a common data environment, possibly some standard data structures and formats. Commercial data managed by standalone finance and cost management packages with no integration.
2. *Managed 3D* environment held in separate discipline 'BIM' tools with attached data. Commercial data managed by an ERP. Integration on the basis of proprietary

[24] American Institute of Architects California Council, *Integrated Project Delivery: A Working Definition*, v2, updated 13 June 2007 (California: McGraw-Hill, 2007), p. 1.
[25] American Institute of Architects California Council, *Integrated Project Delivery: A Guide* (California: McGraw-Hill, 2007), p. 10.
[26] National Building Information Model Standard (NBIMS) committee, cited ibid., p. 53.
[27] BIM Working Group, *BIM: Management for Value, Cost and Carbon Improvement*. A report for the Government Construction Client Group (London: March 2011).
[28] American Institute of Architects California Council, *Integrated Project Delivery: A Working Definition*, v2, updated 13 June 2007 (California: McGraw-Hill, 2007), p. 1.
[29] ibid.

interfaces or bespoke middleware could be regarded as 'pBIM' (proprietary). The approach may utilise 4D program data and 5D cost elements as well as feed operational systems.

3. *Fully open process and data integration* enabled by 'web services' compliant with the emerging IFC/IFD standards, managed by a collaborative model server. Could be regarded as iBIM or integrated BIM potentially employing concurrent engineering processes.[30]

BIM is widely used in the US, where two protocols were published in 2008 to allow its use with standard form contracts: the AIA E202 – 2008 BIM Protocol Exhibit and the ConsensusDOCS 301: BIM Addendum. It has also been adopted in other countries, for example BIM has been compulsory on public projects in Finland and Denmark since 2007.[31]

The UK government has confirmed its commitment to the adoption of BIM in its 2011 Construction Strategy, which stated that the government 'will require fully collaborative 3D BIM (with all project and asset information, documentation and data being electronic) as a minimum by 2016'.[32] BIM has already been used on high-profile projects in the UK (e.g. St Bartholomew's Hospital, Heathrow Express and Heathrow Terminal Five) and has been adopted by many larger practices within the UK, one recent survey indicating that 31% professionals are using BIM.[33] A BIM Protocol has recently been published by the Construction Industry Council (February 2013), and several of the more widely used standard forms of contract now include references to the use of BIM.

The use of IPD and BIM with its closely integrated development of the design on a common digital model, often accessed by all parties through an intranet system, is an interesting development that may raise particular problems when it comes to allocating and identifying design responsibility (see section 10.6).

1.3 The construction professions: who are the designers?

1.3.1 Architect

> An 'architect' is one who possesses, with due regard to aesthetic as well as practical considerations, adequate skill and knowledge to enable him (i) to originate, (ii) design and plan, (iii) to arrange for and supervise the erection of such building or other works calling for skill in design and planning as he might in the course of his business, reasonably be asked to carry out or in respect of which he offers his services as a specialist.[34]

Architects are recognised throughout the world as the profession with the key role in the design of buildings. Depending on jurisdiction, the actual role, function and legal

[30] Building Information Modelling (BIM) Working Group, *BIM: Management for Value, Cost and Carbon Improvement*. A report for the Government Construction Client Group (London: March 2011).
[31] Martin Roberts, *BIM: Legal and Contractual Implications*, slides of presentation (London: RICS, 2012).
[32] The Cabinet Office, *Government Construction Strategy* (London: HMSO, 2011) p. 14.
[33] National Building Specification, *National BIM Report 2012* (London: RIBA Enterprises, 2012).
[34] *R v Architects Registration Tribunal, ex parte Jagger* [1945] 2 ER 131.

status of an architect varies considerably, as does their influence and significance within the construction industry. In the UK, the title 'architect' is protected by statute, in that only those who are registered with the Architects Registration Board (ARB) may use it.[35] In fact in the UK architecture is the only construction profession that has a protected title and is subject to statutory regulation. However there is no protection of function, as there is no requirement under the law to engage an architect (or other design professional) for any stage of the building design or construction process. This is not the case in other countries, where function but not title may be protected, and in some jurisdictions neither, or both, may be protected by that national legal system.

1.3.1.1 ARB and Registration

There are currently around 33,500 registered architects, of which about 21% are women.[36] ARB is established through the Architects Act 1997, which replaced the former larger Architects Registration Council of the UK (ARCUK) and repealed the Architects (Registration) Act 1931. The Board comprises seven members elected by persons on the register and eight persons appointed by the Privy Council in consultation with the Secretary of State. ARB is entirely funded through the subscriptions of the registered architects.

The primary role of ARB is consumer protection, in other words to ensure that those practicing under the title 'architect' are competent to do so. The competence levels are established through setting standards of entry onto the register, and through the requirement to comply with ARB's Code, which in turn refers to standards of conduct and practice.[37]

Persons are eligible for registration if they hold such qualifications and have gained such experience as ARB may prescribe, or if they have an equivalent standard of competence. For UK nationals this normally means that they must pass recognised Parts 1, 2 and 3 qualifications.[38] ARB prescribes these qualifications using published Criteria (agreed jointly with the RIBA) which set out required learning outcomes. In addition, applicants for registration are required to complete a minimum period of two years' professional experience which complies with rules agreed jointly with the RIBA.

In addition to the Board, the Architects Act 1997 makes provision for a statutory Professional Conduct Committee (PCC) which is responsible for disciplinary matters. This also comprises registered and appointed members, and it is notable that the majority on both the Board and the PCC lies with non-registered persons (i.e. outside the architectural profession). If a complaint is referred to the PCC it will consider all the evidence, including any alleged breach of the Code, and may dismiss the complaint, or implement a fine, a reprimand or suspend or remove the person from the register.

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[35] Architects Act 1997, s. 20: 'A person shall not practise or carry on business under any name, style or title containing the word "architect" unless he is a person registered under this Act'.

[36] Figures from the ARB Annual Report 2012.

[37] The Code can be viewed on the ARB website at www.arb.org.uk.

[38] A list of these is available on the ARB website: www.arb.org.uk.

The ARB Code is primarily concerned with the protection of the interests of the public and relations between architects and their clients. It consists of an Introduction, 12 Standards and Guidance which are intended to be read together (although sections B and C of the Guidance do not form part of the Code). A section of the Code that is particularly relevant to design competence would be Standard 2:

Standard 2 Competence:

1. You are expected to be competent to carry out the professional work you undertake to do, and if you engage others to do that work you should ensure that they are competent and adequately supervised.
2. You are expected to make appropriate arrangements for your professional work in the event of incapacity, death, absence from, or inability to, work.
3. You are expected to ensure that the necessary communication skills and local knowledge are available to you to discharge your responsibilities.
4. You are expected to keep your knowledge and skills relevant to your professional work up to date and be aware of the content of any guidelines issued by the Board from time to time.

ARB publishes additional guidance on maintaining competence to practise as required under this Standard. The Code applies to all architects whatever the form of practice or business they choose to adopt. Employer architects and employee architects are equally bound to respect and observe the Code obligations. UK registered architects are still subject to the ARB Code when they practise abroad, and only if it can be shown that compliance would be inconsistent with local law and customs will any relaxation be possible.

1.3.1.2 RIBA

The largest professional body for architects, and the only one with exclusively architect membership, is the Royal Institute of British Architects (RIBA). The RIBA was founded in 1834 and currently has over 28,000 chartered members.[39] The RIBA is established by Royal Charter, and is a registered charity. Membership is voluntary, and the organisation is funded through the subscription of its members, the commercial activities of its various companies, and to a certain extent through bequeath.

The RIBA Council, a body of 60 members elected by ballot to ensure national and regional representation, is presided over by the President. This is an honorary office, and the Charter allows for 'such other Honorary Officers to be elected as the Byelaws prescribe'. At present these include Vice Presidents, an Honorary Secretary, and an Honorary Treasurer. The RIBA has recently set up a governing Board, responsible for directing the overall business of the RIBA. It operates under the overall authority and policy of the elected Council, and co-ordinates the operations of the subsidiary companies.

[39] Figure from RIBA online directory of members.

The RIBA Supplemental Charter 1971, in paragraph 2.1, states that 'the objects of the Royal Institute are the advancement of Architecture and the promotion of the acquirement of the knowledge of the Arts and Sciences connected therewith'. Ever since the original Charter, primacy has been given to the advancement of architecture, not to the advancement of architects. The RIBA therefore plays a key role in setting and upholding design standards, both generally and in the requirements for competence of its members. Currently RIBA efforts to advance the cause of architecture are expressed in many ways, for example through seeking to influence government and public opinion, providing support services for practitioners, and by striving to improve the status and competence of architects through continuing professional education and research.

As with ARB, two key mechanisms for achieving competence are through setting standards for entry, and through disciplining those who fail to display an acceptable level of competence as required by the RIBA Code.[40] Through its Code, its admission standards, appointing documents, and range of other publications, the Institute is able to assure the public of the standards of integrity and competence of its members.

The RIBA sets standards for entry through validating qualification, using the jointly held Criteria referred to above. The RIBA takes a keen interest in the way that architecture is handled in school curricula, and closely monitors the way that architecture is taught in higher education. It reviews courses and examinations in Schools of Architecture on a quinquennial basis, including through a visit to the school.

The most recent version of the RIBA Code of Professional Conduct came into effect in January 2005. The 2005 Code comprises an introduction, a statement of the Royal Institute's values, three principles of professional conduct, and brief notes that explain how the principles can be upheld. A series of nine related Guidance Notes are published separately. The RIBA website explains that these guidance notes are intended 'to provide both advice and information on best practice and to act as a support and aide to members in their professional work. They distinguish between conduct and practice which is obligatory and that which is only advisable or preferable. This distinction will be taken into account when a formal complaint of professional misconduct is made against a member.'

Inevitably the RIBA Code of Professional Conduct and Standard of Professional Performance has much in common with the ARB Code of Conduct although there are some differences. In particular, the RIBA Code's provisions covering the behaviour of members to each other has no equivalent in the ARB Code.

The Values are stated as follows:

> Honesty, integrity and competency, as well as concern for others and for the environment, are the foundations of the Royal Institute's three principles of professional conduct set out below. All members of the Royal Institute are required to comply.

[40] The Code can be viewed at the RIBA website www.architecture.com.

The Code has three principles based on integrity, competence and relationships with others as follows:

Principle 1: Integrity. Members shall act with honesty and integrity at all times.
Principle 2: Competence. In the performance of their work Members shall act competently, conscientiously and responsibly. Members must be able to provide the knowledge, the ability and the financial and technical resources appropriate for their work.
Principle 3: Relationships. Members shall respect the relevant rights and interests of others.

In relation to Principle 2 – Competence, the Code states:

2.1 Members are expected to apply high standards of skill, knowledge and care in all their work. They must also apply their informed and impartial judgment in reaching any decisions, which may require members having to balance differing and sometimes opposing demands (e.g. the stakeholders' interests with the community's and the project's capital costs with its overall performance).
2.2 Members should realistically appraise their ability to undertake and achieve any proposed work. They should also make their clients aware of the likelihood of achieving the client's requirements and aspirations. If members feel they are unable to comply with this, they should not quote for, or accept, the work.
2.3 Members should ensure that their terms of appointment, the scope of their work and the essential project requirements are clear and recorded in writing. They should explain to their clients the implications of any conditions of engagement and how their fees are to be calculated and charged. Members should maintain appropriate records throughout their engagement.
2.4 Members should keep their clients informed of the progress of a project and of the key decisions made on the client's behalf.
2.5 Members are expected to use their best endeavours to meet the client's agreed time, cost and quality requirements for the project.

The RIBA requires all chartered practicing members to undertake CPD (RIBA Byelaw 2.8(a)). Guidance Note 6 explains what is required, and the RIBA's own CPD scheme can be found on the RIBA website.

1.3.1.3 ACA

The Association of Consultant Architects (ACA) is an organisation comprising members who are in private practice. All members are registered architects, and can form any size of or type of practice. It is run by a Council elected from its national membership. Like the RIBA, the organisation organises conferences and seminars, and acts as a political voice and lobbying body. It does not play a formal role in education, nor does it have its own Code of Conduct.

As a result of general dissatisfaction with the 1980 JCT Standard Form of Building Contract, in 1982 the organisation published its own 'ACA Form of Building Agreement', together with a form of sub-contract. This was supplemented in 2000 by a new standard form, the Project Partnering Contract (PPC 2000), which has grown to a suite of three forms. The ACA also publishes its own Standard Form of Appointment. In 1996 it launched an ACA Professional Indemnity Insurance scheme, together with Towergate Professional Indemnity Ltd.

1.3.2 Engineers

The engineers that have the closest involvement with the design and procurement of buildings are structural and mechanical services engineers. Professional engineers in the UK are not held as highly in the public esteem as they are in other EU countries and elsewhere. Neither the title nor the function are protected by law, whereas in other countries either or both may be regulated, and 'engineer' is often used as a title to the surname in the same way that 'doctor' is used in the UK. In Italy, for example the title is limited to people who both hold an engineering degree and have passed a professional qualification examination. In Portugal, professional engineer titles and accredited engineering degrees are regulated and certified.

In the UK the Engineering Council holds a national register of 235,000 Chartered Engineers (CEng), Incorporated Engineers (IEng), Engineering Technicians (EngTech) and Information and Communications Technology Technicians (ICTTech). However this is a voluntary organisation (not statutory). To join, members must already be members of another engineering institution, such as the Institute of Civil Engineers.

There are strict controls over entry to the major UK engineering institutions. The first institutions to be formed were the three institutions of civil, mechanical and electrical engineers (ICE, IMechE and IEE). There are now many more, of which the most likely to be encountered in the context of building construction are the Institute of Structural Engineers (IStructE) and the Chartered Institute of Building Services Engineers (CIBSE). Each of these has its own admission and membership requirements, for example, the Institute of Civil Engineers (the ICE) has various levels of membership. To become a Chartered Engineer requires accredited BEng (Hons) or BSc (Hons) or a MEng, to have completed an ICE approved training scheme (professional experience), and to pass a professional assessment. Becoming a Chartered Structural Engineer similarly involves holding an Institution-accredited MEng degree or the equivalent, successfully complete an IPD training programme, and passing a Professional Review Interview and a seven-hour Chartered Membership Exam. All members of both institutions are bound by rules of professional conduct, and disciplinary regulations are contained in the byelaws. All members are required to undertake CPD.

The Association for Consultancy and Engineering (ACE) exists to promote the advancement of the profession of those engineers who practise as consulting engineers. The ACE does not deal with educational standards or qualifications. It used to require its members to be Fellows of one of the institutes above but in 1993 the membership was changed to firms rather than individuals. The ACE has its own rules for

professional conduct dealing with a great many aspects of a professional engineer's practice, including competence, limiting liability and insurance. The ACE also publishes terms of engagement which are widely used by consultant engineers.

1.3.3 Surveyors

As with engineers, there is a wide range of different types of surveyor. The most commonly encountered in UK construction projects is the quantity surveyor, although this profession is unusual in most other countries, where the role is performed by architects or engineers. There are also building surveyors, who in the UK may design buildings and perform many of the functions of an architect. They are more likely to be employed to prepare reports and give advice regarding property, especially in connection with refurbishment and repair, and to organise and supervise this work. They frequently act as expert witnesses regarding building defects.

The Royal Institute of Chartered Surveyors (RICS) is the leading professional institute for surveyors, with over 100,000 members. It is organised into a series of professional groups which include building surveying, building control, project management, quantity surveying and construction, facilities management, and property valuation. All RICS members must abide by a code of core ethical values. As with the above institutions, membership requires academic qualifications, practical experience and a final assessment. The RICS is very active in the industry and in research, organising conferences and publishing useful papers and reports, many of which are available on its comprehensive website.

1.3.4 General and specialist contractors

It is now common for contractors to take responsibility for design. Frequently the task of designing is delegated to a firm of consultants of one of the above disciplines, although sometimes the firm will engage in-house designers. For many specialist aspects of design, such as mechanical services or cladding panels, either the client or the contractor will engage a specialist company to design, manufacture and install.

There is no requirement for contracting firms to join any particular organisation, but there are many trade associations and representative bodies. Prominent among these are the UK Contractors Group (UKCG) and the Construction Alliance. The UKCG, which was formed in 2009, represents over 30 major contractors that undertake work in the UK. It supports several Codes, namely the UKCG Competition Law code of conduct, the UKCG Health and Safety Charter and the UKCG Anti-Bribery code of conduct. The Construction Alliance was founded in 2010, and comprises trade bodies such as the Civil Engineering Contractors Association (CECA), the Scottish Building Federation (SBF), the National Federation of Builders (NFB) and the Federation of Master Builders (FMB). Specialist contractors are represented primarily by the National Specialist Contractors Council and Specialist Engineering Contractors Group.

The Chartered Institute of Building (CIOB) was established in 1980. Its members must have construction-related qualifications and experience, and are drawn from a wide range of professional disciplines working within building and construction including construction managers and consultants as well as specialists in regulation, research and education. All members are required to abide by a code of conduct. The CIOB offers training and qualifications in a range of skills such as site supervision and site management, but not in any design-related activities.

1.3.5 Construction Industry Council (CIC)

The CIC is a membership body with representatives from many sectors of the industry, mainly professional institutions and business associations (although there are also research institutions and some individual honorary affiliate members). Its wide membership enables it to act as a forum for debate, to collate and disseminate industry views on issues of importance, and to liaise with other pan-industry bodies and with government. It publishes a range of documents including a consultant's appointment, several warranties, a novation agreement, and a series of Risk Management Briefings. It has recently published a BIM Protocol and related PII advice, enabled through funding from the Department for Business, Innovation and Skills.