KCCLA SWEET & MAXWELL 20th ANNUAL LECTURE

Is the Construction Industry waving or drowning?

Prof. John Uff CBE QC

1. Why should the Centre of Construction Law have any concern for the construction industry? And what is wrong with the construction industry anyway?

2. To answer the second question the construction industry has suffered from perennial difficulties for many decades which have been regularly exposed through a series of commissions and enquiries. The reports have become increasingly alarming as the UK construction industry has faced ever fiercer competition, first in overseas markets but now increasingly in our own backyard, where foreign-based contractors are attracted by our domestic infrastructure market. The EU Procurement Rules of course give them a perfect right to bid, often successfully, against home grown companies.

3. In one of the latest reviews which I have had the honour to lead on behalf of the three largest UK professional engineering institutions[1] one of the contributors, the CEO of a large UK contractor[2], also well known in the construction law world, commented on a long list of overdue reforms that the industry required and added:

> *In addition to this, in the UK construction industry we have to find a way of embracing genuine innovation and new solutions. The current establishment celebrates tiny incremental changes instead of challenging us to do considerably more. We take an intensely conservative view and a very risk averse approach. The consequence*

[1] Institutions of Civil Engineers (ICE), Mechanical Engineers (I Mech E) and of Engineering and Technology (IET)
[2] BAM Nuttall

of this is that our construction industry is probably the most backward in the developed world and certainly the most unproductive.

4. In case it is thought that this remark is an outlier which conceals the true state of affairs, consider also the following quote from another well known commentator[3] who considers:

> *It is first and foremost the industry's structural dysfunctionality that hampers innovation, wastes resources (especially our skills resources) and reduces our productivity. As a result, UK construction costs stubbornly remain the highest in Europe.*

We need to ask ourselves how such a situation can have arisen when the expertise and technology available to the construction industry, to say nothing of the dispute resolution industry, is world-renowned.

5. Any number of new approaches have been proposed and tried. Peter Hansford, former President ICE, was appointed in 2015/16 as UK Government's Chief Construction Adviser and produced a construction Strategy programme with key targets of 33% reduction in initial construction costs and whole life costs, 50% reduction in delivery times, 50% lowering of greenhouse gas emissions as well as 50% reduction in trade gap for construction materials. At the end of 2016 Hansford was sacked and the role of CCA abolished. No progress on any of these targets has been reported.

6. Let us look at some of the earlier attempts to find a solution to high costs and low productivity in the construction industry. For some time the supposed solution has been based on a theory that the ills of the UK construction industry could be blamed on its "adversarial" nature and that the solution was to become less adversarial and to avoid formal disputes. It was in this mind set that "*partnering*" became the vogue and a series of new forms of contract emerged with names such as "*partnering charter*". These were generally drafted as non-binding declarations of intent with stated objective of working

[3] Rudi Klein, CEO Specialist Sub-contractors Association, in Building Magazine 25 11 2016

together in "*good faith"* and in an "*open and trusting manner*" with promises to act "*fairly towards each other*"[4]. The lack of any contractual force is demonstrated by the lack of reported legal cases. Sadly but unsurprisingly partnering now seems to have gone out of vogue and is now to be down-graded to what the late and great Ian Duncan Wallace QC referred to as "*another failed fad*".

7. The search for a solution in terms of dispute avoidance appears still to be alive and still regarded as a worthy objective. But if its success is to be judged by the buoyant state of the adjudication enforcement industry, it does not appear to be succeeding. While it might be claimed that there are now many fewer TCC actions, this must be, in large part, due to increased court fees and the pre-action protocol, in addition to the impact of adjudication. It is worth noting that the TCC still employs six full-time judges, in contrast to the position when I entered practice at the Bar when there were two,[5] which number has progressively grown over the years and indeed peaked at a considerably higher number during the pre-Murphy days of universal negligence actions[6].

8. So dispute avoidance has never been a viable answer for the problems of the construction industry, any more than have the variously worded invocations to act fairly and behave properly. So what can be the answer and why should anyone suppose that the Centre of Construction Law should have any part to play in finding the answer?

9. In a lecture delivered to students at the Centre of Construction Law shortly after the Centre opened for business, Donald Keating QC asked the question: "*What is the difference between one contractor and another contractor where the first completes the contract successfully and the second does not*?" He observed that, given there was common labour pool as well as a common team of professionals who would work for all or any of the established

[4] See JCT Partnering Charter
[5] HH Judge Sir Walker Carter QC and HH Judge Sir Norman Richards QC
[6] See Murphy v Brentwood [1991] 1 AC 398

contractors, the difference could not lie in the personnel who carried out the work. He concluded that the difference must lie in management.

10. At the first annual conference organised by the Centre of Construction Law in September 1988, the year after its formation, Donald Keating enlarged on this theme in a paper on *The Control of Quality*, subsequently published in the collated proceedings of that conference under the title "*Construction Contract Policy: Improved Procedures and Practice*"[7]. In his paper Keating quoted from the CIRIA Special Publication 50[8] which stated paragraph 2.2:

> "*Contractual arrangements as such have little effect on the quality achieved, but management structures have considerable influence*".

Keating then commented as follows:

> *"The writer has much sympathy with this quotation. It illustrates the wisdom of those who founded this department that it should include management with law. However the two cannot be separated. A legal framework is essential for good management. Ultimately it provides sanctions for bad building and, as human beings are fallible and are not wholly motivated by unselfish desire for the good, sanction for the bad has been found to be necessary in most aspects of life, including construction.*"

11. The reference to the inclusion of management with law is a reference to the original title adopted, which was the "*Centre of Construction Law and Management*". There were a number of reasons for this choice including the fact that dispute resolution, in 1987 was barely a subject in its own right and that "*management*" conveniently expressed what this Centre was intended to be directed towards, in addition to the subject of pure law.

[7] Editors John Uff and Phillip Capper
[8] Proceedings of the National Quality Assurance Forum for Construction

12. It was no coincidence that, at the same time, Dr Martin Barnes, leading a drafting team at the Institution of Civil Engineers, was working towards the publication of what was then referred to as a "*New style contract*". Martin Barnes also contributed a paper to the First Annual Conference of the Centre[9] in which the topic was introduced in the following terms:

> "*Managers of projects often adopt the attitude exemplified by the policy of keeping the contract in the drawer, only to be taken out if cooperative relationships break down and the prospect of major disputes has to be confronted. The opposite view, now increasingly widely held, is that a modern construction contract could itself be a force stimulating good relationships, effective management and a reduction in the incidence of disputes. Instead of being kept in the drawer, it could be the core of the management procedures used on the project, implemented every time a significant decision influencing the management of the work has to be taken which involves more than one of the parties*".

13. The paper goes on to outline the intended content and objective of the "*New style contract*" which was shortly to become the New Engineering Contract. NEC has now gone through four editions and is one of the major contenders for the new contract form market, including the market for overseas projects. The original version of NEC received a considerable boost from the Latham Enquiry and its reports and was then seen as the epitome of good practice and indeed the way forward for the UK Construction Industry. Such was the confidence of the ICE, as the generator of the new style contract, that in 2011 the ICE decided to sever its links with the more traditional ICE Form of Contract in which it was a co-sponsor with the CECA[10] and the ACE[11].

14. The remaining sponsors were not content to let the ICE form die, as many of their clients considered it to represent the appropriate form of procedure and

[9] The Role of Contracts in Management
[10] Civil Engineering Contractors Association
[11] Now the Association for Consultancy and Engineering

balance of risk for major infrastructure projects. The form has continued to be in demand and has recently been republished in a fully revised form, now known as the infrastructure Conditions of Contract.[12] An accompanying form of Sub-Contract was published in April 2017 and work on a target cost version is at an advanced stage. Interestingly, one of the major clients for this form of contract is Network Rail who represents one of the major users of construction and infrastructure services within the UK.

15. As regards the building sector, the Joint Contracts Tribunal has continued throughout the period under review to produce regular new editions and revisions of its standard form, containing ever more refined drafting and improved operating procedures. The objective of the new versions, as with all Standard Forms of Contract, is to promote greater efficiency in the construction process. There has indeed been no let up in the production of new published forms of contract, with increasing numbers of institutions and drafting bodies now producing not simply one form but a whole "*suite*" of documents covering every likely form of procurement and range of construction work. How can it be, then, that the construction industry in the UK has remained "*probably the most backward in the developed work and certainly the most unproductive*"? This question surely demands an answer.

16. Among the plethora of advice which emerged from the Latham Enquiry, and which found its way into standard forms, was the notion that construction projects would run more smoothly and disputes could be avoided by the adoption of an "*early warning*" procedure. This would motivate the parties to resolve issues and head off disputes before they became formalised. Such was the conviction that this was the way forward that the drafters of the new ICC Form of Contract were advised that there was no chance of government support being offered to a contract which did not provide for early warning and collaboration in avoiding potential disputes. The clause which was included in the November 2014 edition of the ICC form is worth quoting as it is intended to encapsulate the new spirit of problem avoidance:

[12] With Quantities version November 2014

"6.1 *The Contractor, the Employer and the Engineer on his behalf shall each in the performance of the contract, collaborate in a spirit of trust and mutual support in the interests of the timely, economic and successful completion of the works. In particular the Contractor and the Engineer shall each give notice to the other as soon as they become aware of any matter which is likely to affect the design of the works or to cause delay or additional cost, irrespective of whether the matter is contended to give rise to any relief under the contract. Upon the giving of such notice….*"

17. The above preamble is followed by a procedure by which the Engineer is to call a meeting of appropriately authorised persons to consider measures to avoid or mitigate delay or additional costs, including the settlement of any potential disputes and, in the event that no agreement can be reached, for the Engineer to issue instructions required to progress the works. It must be commented, however, that whilst such provisions looks well on the page and the procedures, if followed, should be capable of avoiding a formal dispute and the attendant inefficiencies that a dispute can generate, there is no hard evidence that such clauses result in more efficient working or reduced costs or delay. And these clauses have now been in circulation for a period approaching the life-span of the Centre of Construction Law.

18. Interestingly, in the past 25 years, since NEC took its place in the pantheon of major construction forms, there has grown up a culture of commercial promotion of forms of contract, including training conferences in which delegates are charged not in substantial sums to be "*taught*" how to operate the Standard Forms of Contract. This promotion has been accompanied, particularly in the case of the NEC, by claims as to their propensity to achieve a successful outcome for the project in question. NEC, as is well known, is now advertised widely through email. In one such promotion the following was quoted under the heading "*What our customers say*":

"*It is right to say that the NEC3 suite of contracts has been one of the central key enablers whereby such performance has resulted in over*

£600 million of public money being saved without missing one key schedule completion and handover date. NEC3 is not just a contract it is a way of project managing a complete project like this"[13].

19. This is surely not the approach to be expected from any so-called professional body. Sir Michael Latham at least attempted to provide a reasoned support for the NEC but this can best be described as mindless hype. No doubt some contracts have had favourable outcome using NEC but others have not; and much the same is true of any standard form. The serious issue is whether NEC does indeed, as claimed, promote or generate better management and thus a better outcome in projects in which the form has been used. But that would only be revealed through systematic research into contract outcomes, which is singularly lacking. Much credit has been claimed for the use of NEC for the Olympic building project in 2010 to 2012, which is claimed to have been finished and on time and budget and without disputes. Anecdotal evidence suggests that none of these claims is factually correct but no systematic analysis of the project has been carried out, or at least none published, so that these claims remain in the same sphere as the advertised quote above.

20. There are obvious difficulties in carrying out a systematic analysis of the outcomes of contract, which include the extreme variability of circumstances in which Contracts are drawn up and performed, as well as issues of confidentiality and the simple practicability of gaining access to all the necessary data. Nevertheless analyses have been carried out including a MSc dissertation in construction law carried out in August 2014 by a student at Leeds Metropolitan University which saw the light of day only because it secured the Society of Construction Law prize. The thesis was entitled "NEC: Fitness for Purpose" and included in the summary of conclusion the following:

"The main findings of this dissertation are that there is a lack of consensus as to the meaning of the "spirit of mutual trust and co-

[13] Ken Owen, Commercial Director CLM

operation" and the obligations this entails; there is disagreement over the design liability that NEC3 holds; and finally that the practical implementation of NEC3 is both onerous and highly time-consuming. The conclusions of this dissertation are that NEC3 is not fit for purpose as a primary standard form of contract in the UK construction industry today, however when properly utilised it is a highly effective contract for larger projects"

21. Research into contract performance and outcomes has been carried out in a number of academic centres in the UK including the Bartlett School of Architecture at University College London and the School of Construction Management and Engineering at the University of Reading. Within the Centre of Construction Law at King's College a research project carried out between 1996 and 2001 covered the economic analysis of standard construction contracts including performance data on the outcome of the number of selected projects[14]. The data review included the numerous proposals put forward up to that time for increasing the efficiency and reducing the cost of construction, all of which were found wanting in terms of serious analysis and hard data. The author's concluding remarks included the following:

This thesis used the objective principles of economics to analyse the efficiency of construction contracts. Two hypotheses were presented and gave a result that the transaction cost of ascertaining the final price was high and this was the result of the distribution of liability contained in the contract terms. On this analysis it was possible to predict the substance of more efficient contract terms. It would also appear that more efficient terms would reduce the cost of ascertaining the price of the construction product.

22. The thesis examined data from 23 projects in order to ascertain the range of transaction costs in terms of a percentage of the tender price which was found

[14], Edmund Ryan Ph D thesis: An economic analysis of standard construction contracts; and see also The economic realities of construction, J Uff and E C Ryan published in proceedings of CCLM Annual conference 1998: New Horizons in Construction.

for both civil engineering and building projects to be generally in the range 8% to 13.5%. Further, there appeared to be no relationship between the size of the project and the percentage of the tender price representing the transaction costs generated in establishing the final price for the works .

23. This particular research concluded in 2001 and was not the subject of any further research or follow up within the Centre of Construction Law which from that point turned its attention to what might be regarded as the easier and certainly more financially rewarding topic of dispute resolution.

24. Over the 30 year lifespan of the Centre of Construction Law, while the Standard Forms have gradually and incrementally evolved, the form in which the construction industry in UK operates has changed dramatically and seemingly with little or no direction or planning. In the 1980s the UK construction industry included a number of substantial main contracting companies in the civil infrastructure and building sectors, each employing large numbers of engineers and construction professionals and a very sizeable site workforce. Progressively, but almost unnoticed, more and more of the physical work has become subject of sub-contracting and there has been a general movement towards what is known in accountancy circles as "outsourcing". In the construction industry the phenomenon is now referred to as the "supply chain" representing an enormous number of sub-contractors, sub-sub-contractors etc. for both work and materials, to which may be added, increasingly, design services. The supply chain is now said to encompass some 80% of the physical activity within the construction industry, with the result that it is claimed by an authoritative source that the greatest potential for innovation in the construction industry currently lies in the supply chain "*which is responsible for delivering the bulk of the industry's added value*". Thus it is claimed, innovation must be harnessed through early supply chain engagement[15].

25. The phenomenon of "outsourcing", which is the same thing by another name, was pursued with relentless zeal by the newly installed board of Railtrack

[15] Rudi Klein, Building Magazine 25.11.2016

following privatisation of the rail industry in the early 1990s. On 17 October 2000 the consequences of outsourcing came dramatically into focus when a North-bound East Coast mainline train was derailed near Hatfield, killing 4 people and injuring more than 70 as a result of disintegration of the rail head due to a phenomenon known as "*gauge corner cracking*". With only 4 fatalities and the Paddington Rail Enquiry still running, the government was able to avoid a public enquiry. However, the limited but thorough investigation mounted by the Rail Safety Branch of HSE revealed serious shortcomings in the safety procedures adopted by Railtrack and its contractors who had taken on responsibility for safety. In the course of outsourcing all the principal activities of Railtrack, much of the essential engineering knowledge built up in the rail industry over decades had become dispersed and lost.

26. A particular aspect of the disaster was that line inspections, which had traditionally been carried out by inspectors walking the line on a regular basis, had been changed, for the convenience of sub-contractors, to inspections carried out from the edge of the line. From this point, signs of fatigue and cracking of the rail head had not been noticed, even if the sub-contracted inspectors understood what they were looking for. Furthermore, because of the way data was logged, Railtrack possessed no "asset register" which could tell them which other sites were potentially vulnerable within the network of 22,000 miles of rails. Consequently, a 50 mph speed limit was imposed over the whole network with resulting chaos and confusion, and no doubt many more deaths through surgeons being unable to reach their hospitals and similar misadventures.

27. There was no public enquiry and therefore no opportunity to investigate the root cause of the accident. However, public anger was assuaged by the resignation of the Chairman and the winding up of Railtrack, in the face of political controversy. Railtrack was smartly replaced by the not for profit Network Rail. More important, John Armitt took over as Chief Executive and proceeded immediately to re-employ the staff, to preserve the expertise and build up the safety culture which had been lost. In the light of this experience, it is an issue at least worthy of serious debate whether the construction

industry's "supply chain" does not generate the same level of risk in terms of the loss of expertise and corporate knowledge as was the case with Railtrack.

28. The recent spate of seemingly unexplained building defects, such as the "loss" of panels of brickwork from 17 schools in Edinburgh built under the PFI system in 2016, is suggestive of a similar loss of elementary expertise in the building industry[16]. The supply chain was also responsible for the letting of a crucial M&E design package for the National Physical Laboratory PFI project to consultants who either lacked the necessary expertise or simply chose to ignore the high performance specification. The collapse of the project in 2004 led to losses of £100m in the private sector and the collapse of one of the UK's major contractors[17]. The supply chain is indeed a serious case for independent analysis and review.

29. Fortunately the Centre of Construction Law at King's College is currently devoting a proportion of its energy to issues which can be seen as contributing to the proper management and organisation of construction work. The first area is in the development and implementation of Building Information Modelling for which the Centre organised a major international conference in 2016. The subject is not without controversy and, like all innovation, promises both significant reward and problems in its implementation. The rewards are said to offer greater efficiency in terms of supply chain operation. The problems include increasing complexity of intellectual property issues as information is exchanged between increasing numbers of participants. Like the internet, BIM has the potential to transform relationships and thus, potentially, contractual arrangements with the objective of increasing the efficiency and reducing the cost of the construction process. Without doubt this is a worthwhile branch of management which the King's Centre is entirely suited to lead on.

30. The second area concerns the organisation and management of construction projects using the Framework Alliance Contract (FAC) which is similarly said

[16] See report of the Independent Enquiry into the construction of Edinburgh schools, February 2017
[17] National Audit Office report May 2006.

to promote supply chain collaboration. The concept of "framework alliancing" embraces first a "framework" structure between all relevant parties to a building project encompassing a large number of potential bi-party contracts intended to be awarded and which permits co-ordination of pre-contract phase processes and the establishment of co-operative relationships prior to the formalisation of contracts. The "alliancing" element refers to the continuing long term aspect of the arrangement which may extend to more than one project and thus allow the parties to benefit from knowledge gained and expertise developed in the course of the project. Framework alliancing contracts have so far been successfully established for a number of notable public projects in which significant costs savings have been reported. The encouraging outcomes so far achieved certainly justify the continued expenditure of time and energy and the promotion of both teaching and research in this aspect of management[18]. Framework Alliance Contracts have been developed between the Centre of Construction Law at King's College and the Association of Consultant Architects and were the subject of a public conference at King's College in 2017.

Conclusions

31. The notorious high costs and low efficiency which has been endemic in UK construction for many decades have proved seemingly immune from the best endeavours of numerous inquiries and reports. These include most notably the all-embracing Latham inquiry and reports of the 1990s and the huge changes introduced in UK construction practices in the wake of the final report[19]. These changes included the setting up of a new tier of privately funded administration through the Construction Industry Board (CIB), initially charged with implementation of the Latham Report through many new subsidiary bodies. These include the Construction Industry Council, the Construction Industry Employers' Council, the Construction Liaison Group, the Construction Clients' Forum and the Alliance of Construction Product Suppliers. The Latham Report led, via a further DOE consultation exercise, to

[18] See www.allianceforms.co.uk and papers by Prof. David Mosey to be published
[19] Constructing the Team: Joint review of procurement and contractual arrangements in the UK construction industry.

the Housing Grants, etc. Act 1996 and its more recent amending legislation, which introduced, in addition to adjudication on tap, new statutory rights and obligations in relation to payments under construction contracts which now form the staple fare of most construction law courses including that of the Kings Centre. After 20 years it is reasonable to conclude that none of these changes have had any material affect on the industry's endemic high costs and low efficiency.

32. Further reports have been produced post-Latham under the direction of the CIB on a wide range of topics, including codes of practice for selection of sub--contractors and consultants and for education and training. Other reports have continued to appear including the report of Sir John Egan: "*Re--thinking Construction*"[20] and the *Government Construction Strategy*, launched in 2011 with the aim of securing a 15–20 per cent reduction in the cost of government construction projects. A further *Construction Strategy Implementation Report* was issued in July 2012.[21] The subsequent efforts of the Government's own Chief Construction Adviser have already been mentioned. While all this activity may have brought in benefits such as improvements in diversity, they have so far failed to tackle the central problem of high cost and inefficiency in comparison to our nearest rivals within Europe, where wages and other base costs should be at levels directly comparable to our own.

33. The various causes of the malaise of UK construction which have been diagnosed by the experts have been reviewed in the discussion above. They include the adversarial nature of construction, for which the proposed cure has been the establishment of trust and goodwill as exemplified in the principles of Partnering. It might be recalled that one of Sir Michael Latham's proposals was for the development of a "fair" construction contract, which proceeded to the stage of a consultation paper. The responses received from the legal profession in particular soon led to abandonment of the notion in favour of adoption of the NEC form. Among the lauded features of the NEC

[20] Report of the Construction Task Force, 1998.

[21] *http://procurement.cabinetoffice.gov.uk/*.

was the introduction of early warning procedures and other devices said to be conducive to preventing disputes growing into actual formal claims. This approach has been extended to encompass the general avoidance of disputes under construction contracts.

34. Despite all these attempts, involving huge amounts of unpaid time by members of innumerable committees, the problem of high cost and low efficiency remains much as it was at the time the Centre of Construction Law opened its doors. There has, in particular, been no reduction in the incidence of disputes, which is hardly surprising as adjudication has removed the barriers to formalising a dispute which existed 30 years ago in virtually every construction contract. For the past 20 years there has been no barrier to the bringing of a claim of any sort at any time.

35. So we must continue the search for a solution to the construction industry's problems before the UK industry is entirely taken over and replaced by overseas contractors. And it should be clear that the search must encompass solutions other than those which have been tried and have not succeeded. What are the other solutions which should now be explored? It is suggested first that careful attention needs to be paid to the words of informed commentators quoted above which include the charges that the industry is "*conservative"* and *"risk averse*" as well as *" dysfunctional" and "hampering innovation",* and *"wasteful of resources".* While each of the charges needs to be examined, they fall collectively into at least two distinct categories it is suggested.

36. The first category is of organisational matters concerning the structure of the industry. This category includes the so-called supply chain through which the great majority of work is performed. Is this an efficient way to organise a major industry or are we witnessing a reversal of the industrial revolution through re-invention of cottage industries? Another aspect of the organisation of construction projects in UK is the wasteful practice of appointing sub-contractors at the latest possible stage, ignoring earlier sub-contract bids, so as to gain additional margin on tendered prices. Many countries have

developed legal principles to prevent such practices by giving binding effect to sub-contractor's bids[22], a solution which could readily be introduced by appropriate documentation. There are doubtless many other organisational issues which should be examined.

37. The second category into which the charges against the industry fall is that of good management, as proposed in the quotations at the outset of this paper. Good management represents the difference between a contractor who succeeds and one who does not. In more concrete terms, the proposal of Martin Barnes, himself a highly experienced project manager, was to encapsulate the principles of good management in a form of contract which would motivate parties to manage the construction process properly. However, apart from the early warning procedures in NEC, it is difficult to identify the provisions which may constitute good management or which can be said to motivate the parties towards improving the management of the project. This is not to suggest that Barnes' intention of writing good management into contract terms is illusory. It is suggested only that to establish whether the NEC is capable of achieving such a result requires serious research and the establishment of real data, neither of which is so far on the record. Certainly the hype with which NEC is promoted does nothing to establish its capability.

38. So let me finally return to the first question posed at the start: why should the Centre of Construction Law have any concern for the construction industry? The answer is that, if serious research is to be conducted into appropriate means of overcoming the problems of the UK construction industry, there could be no institution better suited than the Centre of Construction Law at Kings College, with its inbuilt access to high level expertise in every relevant area likely to yield useful results. As outlined above, the Centre is currently embarked on at least two areas of research likely to yield beneficial data and improved procedures for construction projects. The Centre now possesses the reputation and the resources necessary to attract the best research minds. It should now seriously consider an extension of its coverage to

[22] Including in particular Canada.

encompass the wider problems of the UK construction industry with the intention of proposing solutions based on real data and rigorous analysis. And in moving forward into its next decade the Centre should seriously consider reverting to its proper and original name of the Centre of Construction Law and Management.

39. Management includes dispute resolution and avoidance; it also includes partnering, alliancing and framework arrangements; it includes economic analysis of construction projects; it includes procurement and tendering; it includes the study and analysis of risk and risk avoidance. In an era which has succeeded in breaking down so many barriers, so that the former Association of Consulting Engineers now admits what were formerly called contractors, management must embrace the study and analysis of what the UK construction industry has now become. But most vitally, management includes the search for the philosopher's stone which will transform the UK construction industry, not into the world's most efficient industry, but into an industry which is no longer the most unproductive in the developed world.

11 May 2017