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The cult of customer responsiveness: is design innovation the price of a client-focused construction industry?

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Much has been written about the positive contribution made by the customer to innovation in bespoke and low-volume products like those of construction. Far less attention has been given to the potentially corrosive effects the client might have on innovation. Drawing on three construction case studies, this paper argues that strong client leadership may have negative consequences for innovation, including the suppression of innovation and an overly narrow focus on particular types of innovation. Given that innovation has a key role in the future competitiveness of any industry, it is argued that the role of the client in construction innovation requires more careful examination than it has thus far been afforded.

Keywords: The client, innovation, competitiveness

Introduction

The view that the customer should play a key role in the innovation process is deeply embedded in management thinking (Reich *et al.*, 1996; Dahlsten, 2003; Martin, 2005). In an industrial culture steeped in the assumptions of neo-liberalism and the ‘discourse of enterprise’ (see, for example, du Gay and Salaman, 1992; Sturdy, 1998), it is assumed that a client-facing industry will be shaped and streamlined by this focus and will, as a consequence, be almost guaranteed success in the long term. Policy makers (particularly in construction) have seized upon this as a panacea for the industry; what Green (2004), drawing on du Gay and Salaman (1992), has referred to as ‘the cult of customer responsiveness’ among construction industry policy-makers. Thus, capital goods firms are encouraged to become client-facing and projects client-focused (Winch, 2000) while in general terms, the ‘sovereignty’ of the client has become enshrined in best practice and management folklore (Reich *et al.*, 1996). While there is some growing dissent amongst writers, in particular those writing on the consumer goods industries, the capital goods industries, particularly with respect to

project management approaches, remain firmly focused on pleasing the customer. Although it is recognized that the client can be highly adversarial (i.e. difficult to please), it remains, nevertheless, that there is a lack of detailed research exploring the potentially negative implications of the client focus (for example, on levels of innovation). The research reported in this paper has sought to do just that.

The paper is structured in the following way. A brief outline of the key features of innovation in construction is provided. Then, prevailing thinking on the role of the client in innovation – in both manufacturing and capital goods contexts – is discussed. This is followed by a methodology section. The case studies (a co-operative housing and workspace development, a business school and a transport and retail development) are then discussed, followed by a discussion of the key issues stemming from each of them and a conclusion.

The innovation process in construction

Freeman (1989) has argued that the innovation process can be thought of as hinging on the effects of ‘technology push’ (technologies are developed through science and R&D and then tested on the market) and

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'market pull' (markets signal their requirements to technologists, who respond with new or improved products). Ultimately, technology emerges from the linking of the two, what Freeman refers to as the 'coupling' of markets to technologies 'in the minds of imaginative people' (p. 111).

In the context of capital goods projects, the situation is more complex than the push-pull model suggests. At the level of the supplier it is possible to envisage the supplier 'coupling' its perceptions and experiences of previous clients (primarily contractors, architects and construction clients) in order to think through potential improvements to existing technology that might increase market advantage. However, as one moves down the supply chain to contractors, architects and engineers we find a more one-to-one 'service' relationship with the client. At this level, architects and engineers act as gatekeepers or 'honest brokers' of technologies for clients (Winch, 2000). Thus, as well as the coupling of markets and technologies there is also in construction a brokering of technologies from consultants to clients. To complicate matters further, consultants are also in the business of 'selling' the idea of interesting and innovative design concepts to clients (Ivory, 2004). If consultants want to develop their competencies and their market reputations they must find (or construct) clients that are willing to allow them to develop and 'try-out' new design innovations within their projects. Thus, as well as coupling, the actions of 'selling' and 'brokering' must also be accounted for in any model of the innovation process in construction.

A second point to make about technology innovation is that it involves not just products but also processes. While products are passed down supply chains to customers and markets, process innovations improve the quality and reduce the cost of existing products by improving production processes. In construction, process innovation can take place at a supplier's premises and during projects at the client's premises. Contractors, being most involved in this aspect of the construction process, are the key drivers of innovation within it. However, they must act, not in isolation, but under the scrutiny of their customers. Improving project processes may mean changing the way in which projects are managed – for example, the introduction of partnering or prefabrication – and therefore the client will play a key role in the decision to innovate.

A final important point to make about the innovation process in construction is that, particularly at the project level, it is a complex multi-actor activity that requires active 'consensus building' in the context of often diverging interests (c.f. Molina, 1989, 1993). In short, the introduction of innovation in construction projects by one party requires the collaboration of others if it is to be successful (Slaughter, 2000).

Innovations, therefore, do not have objective benefits in relation to fixed benchmarks (e.g. lower cost, lighter materials, shorter erection times, better heat insulation) that alone will guarantee their success; these benefits help smooth their passage but are not in themselves sufficient. Innovations must also, for example, not unduly increase the risks or workloads for parties who do not necessarily benefit from them. In such cases, parties will have to be compensated, brought on-board, cajoled and so forth. Innovation in construction is also therefore a highly 'political' activity requiring careful and sometimes subtle management.

The positive interpretation of customers and users in the innovation process

Studies of innovation in manufacturing have long since stressed the positive influence of the user (von-Hippel, 1988; Lundvall, 1982) and the customer (Rothwell *et al.*, 1974; Cooper and Klienschmidt, 1987). In studies of the capital goods sector, a steady stream of literature has similarly placed the client centre-stage in the innovation process (Gardiner and Rothwell, 1985; Miller *et al.*, 1995; Guy, 1997; Nam and Tatum, 1997; Gann, 2000; Pinto and Rouhianen, 2001). There is some limited evidence of architects and developers themselves seeing a limited role for clients and users in design (Ivory, 2004) and some research that suggests that the involvement of the client may be limited by its own competence to understand the technical issues related to innovation (Nam and Tatum, 1997). However, the predominant tendency over the last twenty years of research, in line one might argue with enthusiastic neo-liberal conceptions of markets and customers (c.f. Sturdy, 1998), has been to focus on the positive contribution of the client in the design and the innovation process.

Typically, research into innovation in the capital goods industries has framed the client as both a source of ideas for innovation and as a supporter of innovation. For example, Miller *et al.* (1995) have shown that the customers for complex bespoke products tend to be key sources of knowledge for innovation and key drivers of it. They point to the involvement of big customers like AT&T in tele-exchange technology as being critical to the direction of innovation in that sector. In a survey of complex products, moreover, they found that product integrators rated customers as the most important collaborators for innovation. Similarly, Gann (2000) points to the growth in the use of digital technology in buildings during the 1980s, arguing that this was underpinned by demands from building clients for new approaches to building design. Gardiner and

Rothwell (1985) go as far as to claim that customers should be a full 'partners' in the design process and that 'tough customers' stimulate superior designs. In support of this, they show how customers like Pan-Am for large commercial aircraft had driven innovation in the aircraft industry.

Smaller-scale examples also abound. Nam and Tatum (1997) note that in seven out of ten of the construction projects they researched, clients had played a key role in design innovation. Clients, they found, made important technical decisions and often shared a high proportion of the risk associated with innovation. In one case, the owner of a high-rise building development was particularly committed to innovation and not only provided the necessary investment but also surveyed existing tenants in order to improve future designs. Guy (1997) has similarly shown how IBM, driven by the need to cut production costs, heavily involved itself in the design of its new facilities. IBM had re-engineered its business and in so doing had brought about changes to the way in which it used space. So that its new buildings could keep up with these changes IBM assembled its own team of experts (in architecture, psychology and surveying) in order to translate knowledge of its own production practices into suitable construction products.

Nam and Tatum (1997) have found that while design firms and contractors tended to be 'innovation drivers' (although in one case it was also a client), clients tended to play the role of 'innovation supporter' (defined by their preparedness to protect and sponsor innovation within the project). In a similar vein, Mackay *et al.* (2000) have found that groups within clients for large IT systems can become 'ambassadors' on behalf of designers for the implementation of their systems. In so doing, they act as champions of innovation by helping to smooth the path of adoption within their own organizations.

The act of supporting and even championing innovation in capital goods projects is critical to its success. Projects are highly complex, uncertain and risk-filled contexts. Complexity in construction is manifest in the large number of different systems that require integrating (and the large number of interfaces which follow from this), the problems associated with managing multiple work teams on a single confined site, the difficulty of specifying exactly how goals will be attained, the need to make (and manage) revisions as the project progresses, scientific and technological advances, variability in materials, the availability (and variability) of appropriately trained labour and environmental factors such as local ground conditions, weather and so forth (Gidado, 1996). As noted earlier, complexity and uncertainty are also created by the unique politics of each project's make up; with respect

to the broad range of (potentially) conflicting interests which need to be satisfied by the project (Slaughter, 2000).

This complexity renders innovation a highly 'vulnerable' activity (c.f. McLoughlin, 1997), one always at risk of 'downward revision' as a result of attempts to manage-out risk. Clearly, in a context where there are already high levels of complexity and uncertainty, innovation can easily find itself viewed as an unwelcome disturbance to the fine balance between complexity and manageability (c.f. Gidado's 1996 model of 'management effort' vs. complexity). In an environment so potentially hostile to innovation, unless it is embedded in the original core concepts of the building, it will require further effort to 'push it through' the barriers that stand in its way. It follows, therefore, that the client's role, as a 'supporter' and even 'champion' of innovation, *should* prove critical to the innovation process in construction and other capital goods contexts. As Ive (1996, p. 41) notes, 'the client is uniquely well placed to lead and to knock heads together when necessary'.

Scepticism concerning the contribution of the client to innovation

There also exists, however, in studies of manufacturing at least, an emerging scepticism about the value of customer input into the innovation process (Hamel and Prahalad, 1994; Martin, 1995; Christensen, 1997; Callahan and Lasry, 2004). For example, Hamel and Prahalad point out that customers often lack the foresight to provide the basis for new products. Similarly, Woolgar (1992) has noted a tendency amongst design engineers (in his ethnography of a computer manufacturer) to play down the contribution that desktop computer users might make to design. How, engineers ask, can customers possibly know where either the technology or markets for the technology are going to go in the future? Moreover, as Christensen (1997) (following Henderson and Clark, 1990) has noted, producers tied into existing clients may not notice growing competition from new entrants bearing radical new technologies, (possibly) until it is too late to alter their position and respond to shifting technology inputs. Martin (1995) goes as far as to suggest that firms that want to be innovative should 'ignore' what their customers say. Customers, he argues, are habitually conservative (often clinging to old and familiar designs).¹ Consequently, a designer's 'inspiration' (in the face of negative customer reactions) and a good understanding of what customers do (rather than what they say they

do or want) has proved the way forward for many innovative manufacturers, including Chrysler, Compaq and Motorola.

Where there are doubts over the client's role in innovation in the capital goods sector, the problems are couched largely in terms of the client's competence to take part in the process (e.g. Ive, 1996; Nam and Tatum, 1997; Gann, 2000). The client's ability to promote innovation is, Nam and Tatum argue, restricted primarily by its technical competence. Technical competence, they suggest, is required for clients to be able to judge the risks of an innovation confidently because that confidence prevents them from rejecting innovation out of hand. Ive (1996) supports this view, stating that a client is more likely to play a leading role in the project if there is a degree of similarity between building projects in a given building programme (i.e. they are able to build up technical expertise), the building is not overly complex and the requisite levels of in-house expertise and strength of commissioning function are present within the client's overall management structure.

However, another (and largely over-looked) aspect of customer involvement in the innovation process is the degree to which the customer perceives there to be benefits to them in innovating (c.f. von-Hippel, 1988). It follows that if the client sees no role for innovation then, given the centrality of their role in supporting innovation, this is deeply problematic for innovation. In any organizational context where innovation makes 'no sense' to key decision makers, innovation, while still possible, has little chance of succeeding; attempts to promote innovation are either ignored or subsequently starved of resources (Dougherty and Hardy, 1996). In capital goods project contexts, particularly highly 'client-facing' ones, if the client sees little benefit in innovating (or sees the risks as too high, or contrary to other priorities) it is not difficult to envisage the client using its considerable leverage within the project to keep innovation off the agenda. Indeed, if the construction client is uniquely well placed to 'knock heads together' then it is also equally well placed to knock innovation off the design agenda if it so chooses. While in capital goods projects 'honest brokers' such as design engineers or architects may play a key role in selling the idea of innovation to clients (Winch, 2000), it remains that there are many reasons why clients may also be resistant to innovation. Chermans and Bryant (1984), while not specifically concerned with innovation, highlight some of the anxieties and pressures facing individuals within clients dealing with building projects. As they put it: 'Each participant can be seen as bringing to the table his own sense of what is at risk personally, as well as what is at stake professionally or departmentally, in the forthcoming project experience'

(p. 180). Different groups will vary also in the degree to which they are concerned by timing, budget constraints or the execution of 'cherished design concepts'. Thus, a key individual or group that holds a 'cherished design concept' may champion and support innovation (as in the examples discussed in the first section), while in the face of individuals and groups concerned primarily with budgets and completion times, support for innovation is likely to shrink away. Thus far, this latter group appears to be missing from discussions of the client's role in the innovation process in construction.

Research methodology and design

The research data for this paper was collected between February and December 1997. This research included three case studies: a workplace and housing co-operative building; a new business school for a large northern university and construction framework agreements run by a large retail and transport facilities provider.

Because the issues being explored in this paper are highly complex, they rendered broad 'sampling techniques', such as the use of questionnaires, inappropriate: Hence the use of case studies. As a rule, case study approaches are used when the questions are of the 'how and why?' rather than the 'how much?' variety, the latter category being better served by surveys and existing statistical data sources (Yin, 1993).

In order to examine the role of the client in the design, innovation and project process, the selection of the case studies was based primarily on projects in which the client appeared to be playing a strong role. The case study of a client/tenant-led development was interesting, therefore, because the tenant co-operative driving the building would also become the tenants, and potentially the owners, of the building. The Business School case study was selected on the basis that the client was knowledgeable and experienced. The retail and transport developer was interesting not only because it took a direct hand in project managing its on-going building programme, but also because it is a highly respected 'repeat client' within the industry. One, moreover, that has been instrumental in driving change in the industry's contracting and contracts management practices.

Research for the case studies was interview-based using semi-structured interviews with key actors in the design and innovation process of the projects selected. The interview process in each of the case studies followed what might be termed a 'snowball' methodology. In each case, a key 'project client' or 'project integrator' was identified and an interview arranged.

For the housing and workplace collective building it was jointly a key member of the collective and the local manager of the housing association supporting the project; for the Business School this was the University's Estates and Services and for the retail and transport organization it was the manager of the organization's in-house project management team. During the interviews, this key actor was asked to identify other actors whom they considered to be key to the project. Generally speaking, consultants and project managers, rather than contractors, were identified by respondents (hence there are few interviews with contractors in the case studies). This may reflect a generally upstream focus of innovation in construction (i.e. on design rather than contractor 'process' innovation) and the upstream focus of clients on design rather than construction.²

A thematic interview outline was prepared for each interview, although in every case, interviewees were invited to broaden the depth and scope of the discussion. Each outline comprised a set of brainstormed 'themes' to be discussed and some specific questions aimed at establishing points of fact or the validity of information gained from previous interviews. Themes and questions were developed as the research progressed but each interview outline was essentially written 'from scratch' for each research interview. The objectives of each interview were to flesh out the details of the particular building project (or programme) in question and to explore the relationships between clients and other construction industry actors. Discussion was thus focused on the details of the interactions between agents and upon the innovation resulting from each project. Knowledge from previous interviews was also deployed to buy 'credibility' and to invite, thereby, further disclosure.

Interviews for the Work and Homes Collective (WHC) case study included the architect, the structural engineer, the local manager of the housing association supporting and financing the development and two collective members who were central to the project. The Business School case study comprised interviews conducted with the director of Estates and Services at the university, the project quantity surveyor, the project architect and two members of Northern University's staff associated with the staff 'user group'. Interviews for the Retail and Transport Co. (RTC) case study consisted of interviews with two project managers and the procurements director from within RTC, two management consultants associated with RTC, an architectural practice also involved with various RTC projects and two project managers from contracting civil engineering firms associated with 'integrated teams' put together by the company.

Interview data were recorded using hand-written notes. The key themes emerging from the interviews were analysed over a period of time. Interview data has been reported in such a manner as to ensure interviewee confidentiality. It was felt important for the interview process to be able to give guarantees about confidentiality in order to encourage candid accounts by the participants of their experiences.

Given the restrictions of the case study method (a small number of detailed investigations) the conclusions from these case studies should be viewed, in the case study tradition, as tentative and suggestive.

The cases studies

Work and Homes Collective

Work and Homes Collective (WHC) building is a £3.9 million tenant-led housing/work-place development in a large northern city, which formed part of the area's general regeneration through City Challenge in the mid-1990s. Central to the case study is the fact that the tenant collective (the effective 'user' of the building), while supported financially by a major housing association, worked closely with the architect to design the building with a host of innovative building and environmental design features. It has a passive ventilation system and favours, as far as possible, low embodied-energy materials. In collaboration with 21st Century Homes, the collective elected to attempt to reduce CO₂ emissions to 50% of the norm for residential buildings. To achieve this, the group set a target of reducing space heating to a cost of no more than £1 per week-per residence. The project also included targets for CFCs, healthy building and infrastructure. Of the 23 environmental targets adopted by the group, only two were missed: embodied-energy (because of an aluminium roof and the use of reinforced concrete) and water saving (because of the local authority's insistence upon six-litre flush toilets). The design also incorporated pre-cast concrete system-build technology as a key part of its structure. Concrete units are used in walls as well as in ceilings, the first time this had been done in the UK. The WHC building is visually striking. Most notably, for a residence, it is highly commercial in appearance.

The driving force behind this innovativeness, however, stemmed from the environmental discourses adopted by the WHC and not from the housing association – the immediate owner, financier and client of the project. The collective worked closely with an architect, an environmental consultant and an engineer and contributed strongly to the design work (in fact, completing the initial drawings for the building

themselves and directing the design to its completion). The housing association, by contrast, was distanced from the design process and contributed only concern that it would be left footing the bills for innovations that did not work. Ultimately, this helped widen a pre-existing fissure between them. As one respondent from the association remarked: 'We'll see what happens when they have to collect the rent...the metal roof leaks already!'

The key to understanding the differing attitudes of the collective and the housing association towards innovation rests on their differing relationship to the risks and benefits associated with it. The WHC, for example, would clearly benefit from design and innovation in the building, in as much as the innovations pursued suited their visions as an organization (they were environmentalists and wanted a building that mirrored the building they had previously been in that had been demolished). However, at the same time they had a limited stake in the risk associated with innovation. Although they were going to have to manage the building and collect the rent when it was built, they were still isolated from the financial fallout if the building failed. None of the finance for the building came from the group's own resources, all of it coming instead from organizations such as 21st Century Homes, the European Regional Development Fund and the group's housing association. As a result the WHC were more than prepared to indulge themselves in the pursuit of technologies, materials and designs which would reflect their own interests. By contrast, the housing association responsible for the project had a great deal to lose. Those working in the association would be responsible for the outcome of the project (in terms of cost-overrun or material failure) but they would not benefit directly from any innovation, as they would not occupy the building.

The Business School

The Business School building, completed in 1998, was conceived in the early 1980s to meet the need for a flagship building to house the university's Business School. The building cost a total of £5 million, 20% less, it has been argued, than an equivalent standard building would normally be expected to cost. Finance also came from the ERDF and from a private individual financier. The building, now complete, is about a 15-minute walk from the main campus.

The Estates and Services department within the university managed the procurement of the university's new Business School. Estates and Services were notable, moreover, for their narrow focus on the costs and risks associated with any innovation. Their intervention led, for example, to the elimination of the

building's original innovative dual-skin design. This second skin would have sloped up and away from the inner skin, leaving a gap at the top to create an air intake for the building's passive ventilation system. The design, although both elegant and striking, was viewed as too costly and was eliminated from the design by Estates and Services.

Indeed, had Estates and Services had more control over the design (the previous head of Estates and Services had concurred more with the architect's innovative visions), the building would have been more conservative still. As a respondent for them insisted:

The architect said that the building was energy efficient – it uses a fancy glazing system which insulates it and keeps solar radiation out. The architects talked them [the building committee] into it. My predecessor [at Estates and Services] ensured that the director of the coalition [the building committee] was talked into it.

The concrete floors to dissipate heat, they're supposed to be responsive environmentally but I think its probably just fashionable. We [the present Estates and Services] would have looked a little more carefully at what was on offer.

Here Estates and Services pour scorn on the original team behind the concept of the building for failing to look carefully enough at 'what was on offer'. The clear implication here is that Estates and Services saw its role as policing the innovative impulses of its architect, not as supporting them. However, this is not without good reason; it is not the architect who will shoulder the responsibility for cost overruns, but the director of Estates and Services. But this of course is central to the 'problem' of the client's role in innovation. The client is almost always the agent who shoulders the lion's share of the risk and so it is the client who is likely to be conservative in the face of innovation. This position, as this case study also suggests, is exaggerated when the client has a distanced relationship to the building's use and will not enjoy the benefits of that innovation.

This case study also hints at the circumstances in which innovation may be supported by customers. The previous head of Estates and Services had clearly been 'lined up' with a more innovative vision for the building. The rhetoric here was to create a flagship Business School in the North and it was this rhetoric that constructed a customer to whom innovation 'made sense'. However, some years later, with that rhetoric competing with concerns over limited building budgets and with a new head of Estates and Services, a more conservative and less 'innovation friendly' client has emerged.

Retail and Transport Co.

RTC is a highly respected and knowledgeable construction client that maintains a strong in-house project team to manage closely the delivery of its on-going building programme. It is also a good example of a 'best practice' client that has adopted partnering contracts with suppliers, consultants and contractors.³

RTC's strategy in the context of partnering has been to develop 'integrated teams' of suppliers (who may specialize in different types of building or civil engineering) and who work together over a five-year period on different parts of the RTC building programme. In that period, they learn to work together closely, to share information and to support one another's work. Their reward at the end of this is to continue working with RTC on further projects (this is referred to as 'strategic partnering' (see, for example, Cox and Townsend, 1998)).

For RTC the process allows firstly a rationalization of their supply base (three suppliers per item), which lowers their procurement costs and facilitates better quality-control. Secondly, it allows a closer working relationship with suppliers. Once within a team, a contractor, supplier or consultant may expect a five-year contract. Consequently the same people move together from one project to the next without competitive tendering. In interviews, one company respondent also suggested that such teams might work together for other clients.

The company also works hard to ensure individual loyalty towards itself and its projects. Members from each organization (including architects and contractors), along with members from the company, attend the board of a 'virtual design-and-build company' to discuss progress and emerging problems on projects. The virtual team helps blur the distinction between RTC and partnered company employees. As a company project team member put it: 'We want them [the supply side] to join together as a single team'. Staff are encouraged to have the feeling that they are working for RTC as much as they are for their own organization. Some team members also have offices in or near the client, a practice that RTC actively promotes.

Open-book agreements, in which RTC also expects full disclosure of each firm's costs, are also used to ensure that each firm is working to an agreed margin, i.e. as a *de facto* employee rather than as a 'free-market' agent. The company also uses this as a means of auditing what commitment they are actually getting from their contracted organization's employees. For example, it wants to know if the managers and consultants who work with them also spend time on other clients' work.

Influence also extends to the minutiae of the design process. As part of the management process, architects increasingly find themselves *de facto* employees of the client rather than the client's 'consultant'. This relationship, while an irritation for some architects, is important for RTC, which works hard to ensure that its 'house style' is adhered to and is deployed in all its facilities. As one project manager reported: '[RTC] shops provide a neutral background ... [RTC] wants everybody to know it is an [RTC] development'.

The general effect of partnering contracts is to pull project parties together into a tighter knit team – one that includes the client – so one might expect improvements in innovation. Better information sharing about problems (the no-blame culture), for example, ought to lead to innovative solutions through sharing knowledge. Similarly, the 'round table' equality created among suppliers, contractors and consultants ought also to increase the likelihood of 'good ideas' finding their way down the supply chain and into the project (elsewhere we have noted the difficulties experienced by suppliers in being 'heard' by busy clients in projects).⁴ The high levels of competence possessed by this client might also be expected to open the gates to innovation. However, this case study also suggests that the negative aspects of client influence in projects may reduce the benefits to innovation of these project attributes. In particular, the ability to micro-manage projects, which partnering certainly helps facilitate, also allows customers to control the nature, degree and direction of innovation tightly, so that it reflects *only* their own (limited) objectives. Innovation in the project context requires, as Slaughter (2000) notes, the ability of different agents to push through their ideas and objectives. Tight customer control of a project may negate the possibilities for this to occur. Thus, 'good project management' may be achieved at the expense of innovation.

RTC maintains a strong in-house project management team and so are able to control their projects. The promise of further work in return for good performance, implicit in strategic partnering contracts, provides further leverage over the behaviour of suppliers and so merely amplifies this. In such a position, RTC would be able to 'push through' innovation despite the complex mess of interests and objectives which make up large projects. However, this is not how RTC chooses to use its leverage within the project – instead it uses it to reduce the occurrence of innovation. As one key contractor put it: 'RTC is a fairly conservative client, they have systems to avoid risk... a system of meetings to analyse the project. They track risks and manage them...but this weeds out innovation...In the vast majority of structures they do not want to push innovation'.

While there was evidence of innovation in RTC projects, what was notable about it was the way in which it reflected RTC's particular strategic objectives. For example, because RTC's income depends upon customers leasing facilities it cannot afford to have those facilities out of operation for extended periods. Further, because RTC has a limited budget and an extensive expansion strategy it must, in the words of one respondent, 'build more for less'. This strategic focus has subsequently pushed design innovation into the background in favour of standardization, system-build and prefabrication. This approach to building reduces build-time and risk because it uses a factory style assembly approach. While these can be regarded themselves as process innovations, they are also in effect tried and tested innovations which pose little risk. Moreover, as pointed out by one architect, standardization can also rightly be viewed as a barrier to other forms of innovation. This architect had tried to encourage RTC to set aside buildings which would be designed (through innovation) to make an 'impact', but with little success.

This case study can be interpreted in positive terms, as one in which a client is able to successfully lever exactly what it wants from its suppliers. Indeed, RTC has been extensively held up as a best-practice client for just this reason. However, the issue here is innovation, not good project management from the client's perspective, and what emerges from this case study is a picture of a client that actively 'weeds out innovation' through tight project management processes. It can be argued that clients such as this should not be expected to want to push innovation and that their concern should precisely be with costs and risks. Problematically, while this may serve the interests of the customer in the short term (i.e. the context of a given project) it serves neither the industry (in terms of the progression of innovation) nor future clients who wish, like RTC, to take advantage of the *existing* state of the art. The strategy of this client is to take advantage of innovation that has occurred elsewhere, while avoiding the risks of innovating themselves.⁵ As such this client avoids contributing to the advance of this technological frontier, while benefiting from it.

The implications of the case studies

The case studies outlined above all have a single common theme: the desire of clients to avoid the risk associated with innovation. In each case, it is clear that the client for the buildings procured actively sought to police innovation and to ensure that it did not threaten the project or the resulting building. These cases

contrast with those pointed to in the literature because the intention has been to show that clients *can* and *do* act as a significant barrier to innovation in large capital projects. The aim of this has been to balance the very optimistic accounts offered elsewhere.

While showing that clients can and do suppress innovation in projects, the case studies also provide some insight as to why they might do so. The dangers to clients of innovation stem both from short-term consequences, such as late or over-budget projects (the WHC exceeded its budget by almost 100%) and from longer-term issues, hidden amongst the 'unknowns', such as higher than expected running costs or maintenance bills (which was the concern of the housing association associated with WHC development). Clients may also simply not see the benefits of innovation to themselves, even if it is successful, and may therefore simply see no reason to support it. In both the WHC and the Business School examples, the users of the building would have benefited from innovation but the paying client would not. In the case of the Business School case study, it was clear that Estates and Services did not share in the original innovative vision of the building and would gain little directly in terms of innovation. It would, on the other hand, have to bear the brunt of criticism if things went wrong.

What is clear from this is that clients have a disproportionate share in the risk of innovation in buildings. While they may be able to protect themselves against the 'risks' of buildings not being fit for purpose or being late, through contractual agreements as to who should bear those risks, the downstream risks of buildings that are undermined by such things as high running costs or the inconvenience of having to undertake repairs, are not so easily managed. Indeed, given the dangers of innovating it is surprising that clients venture to undertake innovation at all! Consequently, it may be wise to look upon client-led innovative construction projects as exceptions rather than the norm.

Conclusion

The contention of this paper has been that construction clients, in the present economic, regulatory and cultural climate at least, are not always supporters or sponsors of innovation. This is not to say that clients *never* support innovation (there are many examples of construction projects in which they do) but rather to say that clients should not be routinely expected to take on the risks (in terms of cost and time overruns or poor building performance) and costs associated with

innovation. While some clients may background cost and timeliness in order to promote innovation, these clients are likely to be in the minority. 'Tough customers' in the capital goods industry tend to foreground timeliness, low-cost and low levels of risk and this inevitably focuses attention away from innovation. 'Well-run' projects (well-run from the client's perspective), in other words, sideline and police innovation.

It is recognized that clients can play an adversarial role within projects, however, this paper also suggests that construction clients, and a client-focused industry, can also have long-term corrosive effects on innovation within the industry. Projects should be seen as having at least two clear sets of outputs – one to clients in the form of a building and associated services and another to the industry in the form of innovation and learning opportunities that will help to push forward the innovation frontiers of the industry. Even if policy can create a client-focused industry, it is not clear that this policy will return benefits to the industry's long-term competitiveness, as innovation clearly does not necessarily stem from strong client-leadership. If the industry's projects are shaped by the needs of individual clients, then the level and character of innovation flowing from these projects will be shaped by these clients. As the public sector retreats from taking responsibility for large construction projects, and in particular from large building programmes which can more easily support innovation (such as those described by Bowley, 1966) the industry is increasingly becoming dominated by clients whose visions for building projects do not extend beyond reducing project time, risks and costs. Unfortunately, innovation does not occur 'elsewhere', to be drawn upon endlessly by risk-shy clients. In the capital goods industry, innovation must occur *within* projects and must therefore be part of the every day business of all projects if the industry is to remain healthy.

The next step for research into questions surrounding the construction client's role in innovation should be a wide survey of construction projects and clients to determine a clear picture of the level of client involvement in, and attitudes to, innovation. It would be useful, for example, to be able to identify what type of clients, in what sort of circumstances, tend to support or suppress innovation. The role that planning and policy might play in stimulating or supporting clients in driving innovation in projects, may also be worthy of pursuit as might research into how construction product and service providers may alter their relationships with customers to improve the opportunities to pursue innovation. Of course, clients must be accepted as part of 'the problem' before solutions to the problem can be sought.

Notes

1. A tendency also noted amongst UK house purchasers. Probably, it is suspected, because of customer interest in re-sale, and therefore with the ease of sale of the property (Guy and Shove, 2000).
2. This is less evident in the retail and transport case study in which the client had considerable interest in the construction process.
3. Partnering contracts have emerged over the last decade or so as an organizational cure for the fragmented and heavily adversarial style that pervades large projects. RTC has been a key organization in promoting partnering, about which much has been written (see, for example, Cox and Townsend, 1998). 'Partnering' effectively attempts to shape project management to reflect individual and organizational motivations through engineering incentives that encourage co-operative behaviour and joint problem solving. Partnering does this by tying the rewards given to individual firms to project success, rather than to individual success in individual parts of the project (i.e. all parties share in gains (and pain) on overall project performance). To support this, a 'no blame' culture is also fostered along with the removal of the traditional hierarchy between clients, consultants, contractors and suppliers.
4. Research into Alstom Transport's Pendolino 'tilting train' as part of the ESRCs Learning Across Business Sectors programme.
5. For example, the difficulties of some notable early 'system build' projects during the 1960s, such as the Hulme Crescents in Manchester, have provided valuable lessons for future users – such as the requirement for new skills sets amongst contractors. This learning was earned at great cost, however, to Manchester's local authority and other 'early adopters'.

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