

THE INTRODUCTION OF APPROVED DOCUMENT L: A STUDY OF ENFORCED CHANGE

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The majority of designers exhibit conservative rather than innovative behaviour when specifying. Earlier research found that specifiers tend to seek out products that are new to them only when their usual solution is inappropriate. In this paper we report the observation of two specifiers working in an architect's office and their response to the introduction of Approved Document Part L, which forced them to pursue new solutions. This ethnographic study helps to illustrate different approaches to the decision-making process by individuals working within the same office and within the same organizational culture. Analysis of the specifiers' action also helps to highlight a number of issues concerning the management of design and knowledge transfer. In particular some of the pressures associated with the adoption of a more ecologically friendly approach to design are revealed in the work reported here. A number of issues are raised for practitioners and design managers as well as identifying areas for further research, some of which is currently being addressed in ongoing research work.

Keywords: change, decision-making, design management, innovation, specification.

INTRODUCTION

There are few participants to the design and construction process who are not affected, either directly or indirectly, by decisions made at the detail design stage, when conceptual ideas are converted into production information that others use to construct the building. Detailing and specifying building products is a familiar process to design professionals, but an area in which little research has been published (Mackinder 1980; Barbour Index 1993, 2000; Emmitt 1997, 2001). This small body of research has shown that the majority of specifiers exhibit conservative behaviour when it comes to the selection of building products and materials, tending to specify items used previously in an attempt to save time and reduce their exposure to risk. Ethnographic research by Emmitt conducted in an architect's office found that specifiers would only search for information about new products when forced to do so by the nature of the problem being addressed. Two situations were identified: (1) the products used previously were inappropriate to the problem (e.g. because of specific detailing requirements) or (2) a new (unfamiliar) situation (e.g. new building type) required different products to those used previously. Both situations will result in a search for information to resolve the problem facing the specifier.

If we look at the issue of sustainability from a design perspective it is clear that design professionals need to consider new ideas and products if we are to realise a more

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ecological architecture. When asked, a high proportion of architects and clients claimed that their product decisions were influenced by environmental considerations (Barbour Index 2000), but to the best of our knowledge there has been no attempt to monitor this in practice. Indeed, both Mackinder (1980) and Emmitt (1997) found that specifiers tended to act in a more conservative manner than they reported. Although this work did not deal with sustainable issues, the implication in this work is that specifiers may be reluctant to change their habits and hence the uptake of new products/environmental ideals may be slow. A natural line of enquiry would be to look at specifiers when they are dealing with issues concerning sustainability, but this is difficult to address since sustainable ideals are difficult to separate out from other aspects of design thinking and detailing processes. What is required, therefore, is a distinct issue or situation that could be researched. Changes to regulations appeared to be a natural focus and an area in which there has been little debate about how regulations encourage innovation (Gann *et al.* 1998). The introduction of the UK Building Regulations Approved Document Part L in April 2002 (Building Regulations, 2001a, 2001b) provided a useful reference point. The more stringent 'U' values set out in Part L meant that specifiers had no option but to change their details in order to comply. This provided an ideal situation to research the behaviour of specifiers as they adjusted their details to satisfy the new regulations and a small research programme was designed to try and observe the specifiers in action.

METHOD

Previous research into the area of specification has tended to rely on asking specifiers what they do (Barbour Index; 1993, 2000) and asking specifiers to record their behaviour in research diaries supported by interviews (Mackinder 1980). This has provided some useful information but it cannot deal with the more detailed and subtle area of design decision-making we know as specification. Emmitt (1997, 2001) has used ethnographic techniques – non-intrusive participant observation - to observe and monitor specifiers in action. Although the findings are specific to a particular situation at a particular point in time they help to illustrate the specification process in more detail than other research techniques allow. In particular, the pressures placed on specifiers; such as the lack of time to complete the task and pressure from other members of the design process to influence the decision-making process. Since the research team wanted to try and observe how specifiers reacted to the change in regulations it was felt that direct non-intrusive observation of specifiers appeared to be a natural approach, but one with its own methodological difficulties (Nason and Golding, 1998). Consistent with ethnographic research, the goal was to interpret the behaviours of the social system being studied (e.g. Rosen, 1991); an approach adopted successfully by Cuff (1991) and Emmitt (2001) in architectural offices. Four designers working in architectural practices who were known to the research team were approached and asked if they would take part in the study, for which training in participant observation techniques would be provided. All four agreed and approval was also obtained from the senior partner of each office to allow the participant observations without the knowledge of the other members of the design office. The architectural offices were medium to large offices, located in a large metropolitan area of the UK and engaged on a mixed portfolio of work.

The four researchers started to record data approximately eight weeks before the introduction of the new regulations, and all four researchers reported that schemes were brought forward and submitted for building control approval before the April

deadline so that details did not have to be changed. This resulted in a temporary vacuum regarding detailing schemes and submission to building control. It was not until six weeks after the deadline that other projects started to reach the detailing phase and these had to comply with the new regulations. All four researchers reported that the specifiers in their offices were not happy changing their details because it involved a lot of extra work that they felt had not been adequately programmed for. Subsequent analysis of project programmes confirmed that no allowance had been made for changing details and specifications within projects, despite the fact that the designers were expected to deal with this task. As such, the concern of the specifiers was not unexpected. It was around this time that some difficulties with data collected were experienced by some of the researchers. One of the researchers had his duties reassigned to him and was moved from detailing buildings to concentrate on project administration. Since he was no longer in a position to observe the behaviour of his colleagues he had to withdraw from the research. A second researcher changed employment (unexpectedly) prior to any schemes being detailed to comply with the new regulations. Her new employer would not consent to the research programme and so she too had to withdraw from the research. The third researcher had difficulties in observing the behaviour of his colleagues because he was also running a project that developed some serious problems and so he spent an increasing amount of time out of the office (on the construction site), thus making it difficult to collect data consistently. This was a problem also encountered by Emmitt (1997), and because the researcher's observations were incomplete the data was rejected. The fourth researcher managed to observe two specifiers in action, recording consistent data that could be analysed. When the observations were complete the two specifiers were informed that they had been observed and both gave their permission for the data to be used. They also agreed to be interviewed about their behaviour.

THE OBSERVATIONS

The office in which the observations were conducted was in the process of implementing a quality management system. Part of this system was an office master specification and details, which were updated by the design manager and then used by the specifiers for individual projects. At the time of these observations neither the master specification nor the master details had been updated to reflect the change in the regulations, thus specifiers were unable to use this information source. The strategy adopted by the design manager was to wait until a detail or specification had been used on a new project before incorporating it into the set of masters. The behaviour of two specifiers detailing a cavity wall section for different projects is summarised below. Both projects were commercial buildings with very similar design for the external fabric (steel frame, brick outer-leaf, insulated cavity, block work inner-leaf).

Specifier A

This specifier was observed taking the written specification and details from the project he had worked on previously and using the information as a basis for his new specification and details. This is known as 'rolling the specification' and is considered bad practice because it can perpetuate errors. There was no evidence of the specifier accessing the office master specification, contrary to QA procedures. Aware that the insulation value had changed he telephoned the manufacturer of the cavity insulation product used on the previous project and spoke to their technical department for advice on how to resolve his problem. The manufacturer's technical representative

recommended an increase in the thickness of their insulating material to “resolve the problem”; the suggested increase was from 50mm to 75mm. The specifier then adjusted the written specification for the cavity wall detail, by simply changing the specified thickness of the previously named insulation, and issued the details to the structural engineer by fax. No attempt was made to alter the standard details. On receipt of the information the structural engineer telephoned the specifier and highlighted the fact that the cavity wall ties also needed to be increased in size, together with the foundation details, to accommodate the thicker wall section. (The change also affected the wall to roof section, wall to structural column details and details of all openings, but there appeared to be no discussion about these details at the time). After a short discussion with the structural engineer the specification was revised again to include the larger wall ties (again sourced from the usual manufacturer and checked by the specifier by a quick telephone call to the manufacturer’s technical department). The specifier made no attempt to check the details that had been provided to him, nor did he make any attempt to consider any cost implications of his decision (the thicker wall required additional materials). There was no evidence that the specifier discussed the issue with fellow colleagues nor was there any evidence of him seeking approval from the design manager. When interviewed about this after the event he claimed to be under too much pressure to get information completed to spend time discussing issues with colleagues. He had experience of the manufacturer from previous projects and therefore felt he could trust the advice provided by the manufacturer.

Specifier B

Specifier B took the same approach, referring back to his previous project and ringing the same manufacturer’s technical department and getting the same answer as Specifier A. Until this point he was unaware that Specifier A had tried to resolve this issue, only realising the fact during the telephone conversation (observed in the conversation that followed). Following the conversation with the manufacturer Specifier B had a short discussion with Specifier A and voiced his concern about the ‘knock on’ potential of increasing the thickness of the insulation material. Specifier B then went to the office product library and searched through the different manufacturers’ literature, unhappy with what he found (it was all out of date) he then contacted three manufacturers from information provided in the Barbour Compendium (a well known source of manufacturers product information). He telephoned each manufacturer’s technical department in turn and found that all three manufacturers claimed that they had a product that could meet the demands of the new regulations without having to alter the thickness of the insulation, i.e. the ‘U’ value could be achieved with 50mm of insulating material. Specifier B had not used any of these manufacturers’ products on previous projects and so all three represented product innovations to him.

Information was emailed or faxed to the office by each manufacturer. Specifier B was then observed having a brief conversation with the design manager as to which product to choose based on the information sent to him. The design manager suggested that cost information be requested from each manufacturer so that a comparative analysis of all three products could be made on technical properties and cost. This was requested from the manufacturers, but was not immediately forthcoming. All three manufacturers offered to send a technical representative to the office to discuss cost and technical issues with the specifier, this was declined because of the tight deadline the specifier was working to. As a result the specifier contacted a

cost consultant (quantity surveyor) by telephone and asked for informal advice on the manufacturers' products. The quantity surveyor had knowledge of all three manufacturers but suggested one manufacturer should be used because they were the cheapest of the three. The specifier relayed this information to the design manager who approved the product and hence this manufacturer's product was specified (there was no attempt to compare quality or 'value'.) None of this process is recorded anywhere in office documents other than confirmation of the specified product within the project specification. Following this exercise the design manager updated the office master specification and, to the best of our knowledge, the product is still being specified, i.e. this product is automatically specified on all commercial projects.

Interviews

Following the completion of the observations the two specifiers were interviewed separately (the design manager declined to be interviewed). The specifiers claimed that they always worked within tight time deadlines and so there was little time to adequately assess products, which is why they tried not to change products or manufacturers from those used on previous projects. Both recognised that there needed to be more time spent on the office details and specification given the changes to the regulations, but that they did not have the time to do so. They recognised the danger of rolling specifications and details from one project to another and releasing incomplete information, but claimed that "everyone did it" out of necessity, not through choice. Both were critical of the way projects were programmed within the design office, claiming that with every project the demands to produce information became ever more demanding and the time allocated to complete the task kept getting tighter. Both specifiers, however, recognised that this was not just a matter of better programming but that time was short because of the downward pressure on professional fees, thus some responsibility had to rest with clients. The specifiers were asked why they did not use performance specifications. Both specifiers claimed that performance specifications were only useful if written very tightly, thus limiting the contractor's choice to one or two options, thus defeating the objective of using them (the specifiers were uneasy about passing the choice of product down the chain to the contractor, their perception being that the quality of the building would suffer). They also said that they would not use performance specifications for important details, such as cavity wall insulation, because they were concerned about liability if the product failed. Although given the rather hurried manner in which the insulation product was selected in these observations we could conclude that a performance specification may have been a better option. The specifiers were also asked about their opinions and approach to sustainable design. Although they both expressed an interest in sustainable issues they both felt that the industry was not interested in such issues, being rather critical of clients' obsession with the lowest possible initial cost and speed. They claimed that change would only come through changes in legislation, i.e. sustainable issues had to be forced on all parties to the construction process, citing the changes to Part L as an example of enforced change.

REFLECTION ON THE OBSERVATIONS

Before any conclusions can be drawn it is necessary to comment on the method used. The observer may have missed events vital to the decision-making process, although there was no evidence to suggest this was the case in the observations reported here (partly because the observer was present throughout the decision-making period and partly because there was no evidence in desk diaries or written documents to

contradict any of the actions recorded). Ethnographic research produces unique findings that are difficult to generalise from and the actions reported here were influenced by the organizational culture of the office, the characteristics of the specifiers, characteristics of the project and time pressures. Naturally, the question has to be asked as to how representative this behaviour is of other specifiers in other offices. The observations are consistent with those conducted by Emmitt and the comments recorded in the face-to-face interviews are also consistent with findings from earlier research (Mackinder and Barbour Index). The findings are also consistent with a current research project looking at the behaviour of specifiers in a different design organization. So we have no reason to suspect that the behaviour observed is unusual, however, we should recognise that other specifiers may act differently. Apart from highlighting the difficulties encountered in conducting ethnographic research with a design office, the observation of the two specifiers illustrates some important issues. The new regulations were a trigger to the office rejecting a manufacturer used on previous projects in favour of an unfamiliar manufacturer. So a new product, a product innovation, was introduced to the office as a direct result of having to conform to new regulations. The actions and subsequent decisions were made within very tight time frames while the specifiers were engaged on other projects, thus there was very little time to consider the consequences of their actions. Both were under considerable pressure to produce information quickly. These two specifiers initially had the same approach, namely to telephone the manufacturer familiar to them and the office. Specifier B then adopted a different, more considered course of action. Neither specifier made any attempt to check the technical information provided to them by the respective manufacturers or the cost advice given to them by the quantity surveyor. Quality management procedures were not followed and with the exception of the written specification there was no evidence of any of the decisions being taken. This is an important observation because the cavity insulation was a new product to the market and also represented a product innovation to the design office. There is no evidence about how this product will perform in the building and therefore one would have expected the specifiers, and in particular the design manager, to take a more considered approach. It was evident in the discussion with the specifiers that they were not particularly happy with the manner in which individual jobs and also the design office were managed. Sharing of knowledge between specifiers was poor and designers were not following QA procedures that were designed to help them. It should also be noted that the specifiers did not have access to online information at the time of the observations and so they were reliant on the office library and paper based information (consistent with Emmitt's earlier work). Shortly after the observations were completed the office subscribed to an online information provider, thus negating the need for an office library. Continued observation within the office has shown that data access is much easier and quicker for the specifiers, but there is no evidence to suggest this has changed their decision-making behaviour.

CONCLUSION

The intention of the observations was to see how the new regulations affected the behaviour of specifiers. The change in regulations did force the specifiers into using new products, although this appeared to be a rather rushed process and one that arguably deserved more consideration with regard to the consequences of the decisions. The findings raise a number of issues about the detailing of buildings and the related issue of how the process is managed within individual offices, i.e. it is a design management issue. Although the importance of detailing was recognised by the

specifiers, their actions were made under considerable pressure and were not bounded by rationality; findings that support earlier work into the behaviour of specifiers. It was difficult to address the issue of sustainable design other than in the fact that specifiers had had to respond to the new legislation. In interviews with the specifiers they confirmed that they were interested in such issues but the lack of time and the way the building sector was structured prevented them from giving this area the attention it deserved. Further associated research has recently been completed by the research team, which monitored the progress of four projects and the behaviour of two specifiers over a six-month period in a design office. Again, the focus was on the introduction of Part L as an agent of change, but the longer timeframe also allowed for a better understanding of how the office dealt with sustainable design; and to see to what extent sustainable issues were incorporated and encoded into their detailed design decision-making. Although this data is still being analysed, initial findings confirm that the behaviour observed and reported here was not untypical. Sustainable design ideals are not given top priority in a project context. This appears to be related to the characteristics of the project participants who do not value sustainable design ideals particularly highly when it comes to the reality of making decisions.

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