OBSERVING DESIGNERS:
DISPARATE VALUES AND THE REALISATION OF DESIGN INTENT

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ABSTRACT
It is during the detail design phase that design intent is converted into information that others can use
to construct a physical artefact. Early work into the behaviour of designers found that they tend to use
rules of thumb and knowledge gained from experience to make decisions, rather than constantly
referring to reference information. More recent work into designers’ behaviour found that decisions
made at the detail design stage were coloured by the input of other contributors who held different
values to the designers. The work reported here comprised a six-month study using qualitative
methods of data collection to observe the behaviour of designers in the design office. The primary
focus was on the adoption of new products and the relationship to environmentally friendly ideals and
practices, however the research helped to identify some fundamental issues relevant to design
managers. The way in which designers make decisions and the subsequent development and
realisation of design intent to reflect and incorporate different participants’ wide-ranging values and
requirements is reported and discussed.

Keywords: Decision-making, Detail design, Design intent, Design management, Innovation,
Sustainability, Value sets.

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 and may lead to the adoption of products that are new to the office, building
product innovations.

Sustainability is, arguably, a value set that requires the adoption of new ideas and ways of doing
things. The postulate is that the current approach to the design and construction of our building stock
may be inappropriate, therefore designers need to detail buildings differently and hence consider
using products that may be new to them. When interviewed, a high proportion of architects and clients

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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 their research did not address sustainable issues, the implication in the work is that specifiers may be reluctant to change their habits and hence the uptake of new products/environmental ideals may be slower than expected.

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, detailing and specification writing. What is required is a distinct issue or situation that could be researched. Changes to national building 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 with the new regulations. This provided an ideal situation to research the behaviour of specifiers.

METHODOLOGY

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. Emmitt (1997, 2001) has used ethnographic techniques – non-intrusive participant observation - to observe and monitor specifiers in their natural work setting (supported with interviews), following the philosophy of ‘naturalism’ which proposes that organisations should be studied in their natural state, undisturbed by the researcher (e.g. Hammersley & Atkinson, 1995). 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 have become more lucid through ethnography. Since the research team wanted to try and observe how specifiers reacted to the change in the Building Regulations as well as trying to see how sustainable values were applied in the workplace, it was felt that direct non-intrusive observation of specifiers appeared to be a natural approach, but one with its own methodological difficulties (Nason & 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 in earlier research based in architectural offices (Cuff, 1991; Emmitt, 2001).

A two-stage approach

Observational methods should form part of triangulated research methodology so that the observed events and behaviours can be verified by other sources, e.g. interviews and written documents (May, 2001). The triangulated research programme was based on participant observation, semi-structured interviews and analysis of documentation produced by the designers in the course of their work. The researchers adopted what Gold (1969) describes as the ‘complete participant’ approach, being engaged fully in the activities of the organisation under investigation. The researchers were working in a design office alongside other designers and specifiers. Approval for the research was sought and granted from the senior partner of the architectural firm and the employees, although the intentions of the research were not made explicit until the end of the observational period, thus the role was covert. Two parallel pieces of research were designed to try and observe the effects of the new regulations.

The first stage observed the behaviour of two specifiers in an architectural office and their response to the new regulations over a short period of observation (see Emmitt & Heaton, 2003 for full details).
The second piece of research was planned to observe the progress of four design projects and the behaviour of two specifiers over a six-month period in a different design office to the first piece of research. 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 values were incorporated in the detailed decision-making process and codified in the resultant production information (written specification and drawings).

Four projects were identified as case studies because they were at the detailing stage and so the detailed drawings had to comply the new legislation. A specific element was selected from each project, being; the detailing of (1) windows, (2) pitched roof, (3) ground floor/wall junction and (4) entrance porch detail. In taking this course of action the designers working on these particular projects also became the focus of our attention, thus they were self selecting, and since two designers were each working on two of the projects, this limited the interviews. Designers were interviewed six times during the six-month research period, at regular intervals (although there had to be some flexibility due to work pressures). The semi-structured interviews were designed to respond to the actions being observed, and so some of the questions were designed to be flexible and pertinent to the situation, other questions remained constant. The two designers were asked the same questions at each planned interval. In taking this course of action the researchers were aware that the specifiers’ awareness to environmental considerations may be raised and their actions may be coloured accordingly. Drawings, written specifications and file/diary notes were used to check the validity of the observations and comments recorded in the interviews.

THE CASE STUDIES

A brief summary of the four case studies is provided here.

Case Study 1. Specification of windows

The case study building was a single storey specialist residential building to be built in the grounds of a hospital. The mechanical and electrical consultants were heavily involved in this project and proved to be a major source of information relating to the performance requirements of the windows and were relied on by the specifier as a source of information about the new regulations.

The M & E consultant telephoned the specifier to inform him that the chosen window specification (aluminium framed) did not comply with the new U value for windows with metal frames. The specifier telephoned the manufacturer (manufacturer A) who claimed that their windows did comply and that they were working on calculations to prove it. Later that day a second manufacturer telephoned the office in an attempt to get their windows specified (manufacturer B). The sales representative had heard from an ‘external source’ that the office had got problems meeting the regulations. (The external source was never revealed, although it was probably the M & E consultant who contacted Manufacturer B). The technical representative was invited into the office to discuss the technical requirements of the alternative window system, was given a verbal acceptance by the specifier and left the office with a full set of drawings. Manufacturer B’s written specification and drawings of the window details arrived a couple of days later and Manufacturer B was named in the specification.

This helps to demonstrate how quickly a change can be made and how informal communication networks facilitate the decision making process and the subsequent adoption of a building product innovation. Manufacturer B was unknown to the office and has since become one of a number of preferred suppliers, entering the office palate of favourite products. Manufacturer A eventually came up with the calculations and although rejected on this project, their window system was specified on later projects, and had not been rejected.

Case study 2. Detailing of a pitched roof
This study was based on a residential building. The problem here was that a sloping ceiling detail did not allow enough space for the required depth of insulation. The detailing was discussed between two specifiers who were concerned about constructability and aesthetics as well as meeting the new regulations. One of the specifiers claimed that he was aware of a new insulation product that may solve the problem, he couldn’t remember details but knew that a contractor known to the office had mentioned the product. The other specifier telephoned the contractor for details, which were forthcoming, and then contacted the manufacturer directly to obtain a sample and technical details. The information arrived the next day and the material was specified (in conjunction with a material already known to the office) as a trial, despite reservations about the high cost of the new product. This shows how the informal communication networks can aid the adoption of a product innovation by the design office, with initial awareness coming indirectly from a contractor not involved in the project. There was, however, a degree of caution expressed by the specifiers about the new product, leading to its adoption in small quantities as a trial.

Case study 3. Detailing of a wall to ground floor junction

A wall to ground junction had to be detailed by a specifier for two commercial projects with similar types of construction. The intention was to use this detail as an office standard once it had been drawn. The specifier referred to a copy of ‘The Robust Construction Details’ and copied the detail, making a minor adjustment to how the insulation continued in the cavity below the damp-proof course from that shown in the guide. Another specifier in the office questioned the detail, and so the favoured manufacturer of insulation products was telephoned to seek reassurance about the performance of the product below ground. This was forthcoming and the detail was issued as an office standard to be used on these and subsequent projects. The familiar manufacturer was used, but with a modified (upgraded) product.

Case study 4. Entrance detail

A small ancillary entrance to a city centre school was designed and detailed. Two designers in the office could not agree how best to detail the canopy to comply with the new regulations, and so telephoned the building control officer for advice. He building control officer was rather vague in his advice, pointing out that because the regulations were new he was not expecting many applications to comply fully, especially where there was some unusually difficult detailing as the case here. This caused the specifiers some concern and so the problem was discussed with the senior partner and a decision taken to try an meet the regulations as best they could. The specifier then telephoned a number of manufacturers known to the office to request technical details of their products. Again, these were new products from familiar manufacturers to the office and a rapid decision was taken to specify a product. There was evidence of gaining advice from fellow designers as well as from outside the office, yet none of the designers consulted the Approved Documents throughout the observation period.

Summary of the case studies

The introduction and adoption of building product innovations was observed in all four case studies, initiated by the more stringent thermal insulation requirements set out in the Approved Documents. The designers relied heavily on information provided by manufacturers, often picking up the telephone to ask questions and to seek reassurance rather than reading through technical literature (which supports earlier observations of Mackinder 1980 and Emmitt 1997). Although the designers were concerned with achieving the U value as stated in the new regulations there was no evidence of any designer checking the information provided by the manufacturers. Furthermore, there was no evidence that the designers consulted the Approved Documents (they were available in the office), relying solely on information from other participants to the detailing phase. Specifiers were primarily concerned with constructability and aesthetics, costs were discussed but were not given high priority given the primary concern with meeting the new regulations. Specifiers were responsible for the management of their work, there was no evidence of supervision of their work from managers, nor
was there any evidence of managerial processes that would help with the decision-making. Only when a problem occurred did the specifiers consult their line manager.

THE INTERVIEWS

An initial interview to explore the designers' values regarding environmental issues and knowledge of AD:L, followed by four interviews during the monitoring period, and a final interview to discuss some of the issues raised during the monitoring period were conducted with each specifier.

At the outset of the research both specifiers said that they frequently asked manufacturers to supply them with data, neither specifier wanted to use calculations to determine the U value, rather they were happy to accept the manufacturers' figures. Both specifiers were aware of their reliance on manufacturers and to a lesser extent building control officers for guidance, despite having attended training events based on the new regulations and having read the relevant documentation. The specifiers also believed that they would have to adjust their details and probably specify some new products, this they saw as carrying a certain amount of uncertainty and they claimed that they would have to 'trust' the manufacturers given their lack of time to investigate products thoroughly.

When interviewed about their behaviour during the monitoring period both designers failed to recount the process as it actually happened, supporting earlier observations (e.g. Yeomans, 1982; Emmitt, 1997). Events were recounted as a simplified version of that observed, or had been forgotten by the designer (when prompted by the interviewer, the designer simply said they had no recollection of doing that particular activity). In some respects this helps to justify the participant observation method and also helps to highlight the fact that detailing many different parts of a building is not something that readily sticks in the memory (thus asking questions about the process after the event may provide misleading data). The interviews were, however, more useful in helping to explore some of the values held by the designers.

The designers expressed their interest in sustainable values and ideals at the start of the observation period and claimed that their knowledge of the regulations had improved over the research period, largely through having to comply with the regulations. The specifiers recognised that their knowledge had been acquired directly from manufacturers, building control and working with contractors, with limited importance placed on the printed documents. The perception was that the regulations were having a large impact on the detailing of buildings and had lead to the uptake of new products in order to comply with the requirements.

Both designers were keen to pass responsibility for product performance to a selected number of manufacturers known to the office, primarily to save time, but also because they recognised that the manufacturers knew far more about their own products than they could hope to do within a very limited time frame. They used manufacturers they found helpful and who were willing to produce the detailed drawings and the written specification for them, and once adopted they were reluctant to change their selection unless forced to do so as observed in the case studies. This supports the earlier research into specification decision-making and supports the diffusion of innovations paradigm (Rogers 2003). These relationships were informal, and might be described as a form of alliancing, with the predominant use of prescriptive specification. As the specifiers became more familiar with the regulations through the act of detailing their interest in the subject started to wane, confirming in the interviews that they could now concentrate on other factors. Thus it would appear that the revised regulations were only deemed important while new and unfamiliar.

Both specifiers raised the problem of managerial control in the office. They claimed that the partners were aware that more could be done, but that they were so busy with other tasks. Thus the quality of the production information and the management of the production information phase had to be left to the self-management and discretion of individual designers. The specifiers also said that management issues were discussed at the monthly staff meeting, but that time and resources was
always cited as a reason to not implement improvements. Other than informal communication between members of the office, there was no means of sharing knowledge between individual members of the office. Indeed, the specifiers both claimed that there was little appreciation of what their colleagues were doing, unless they were consulted to discus a problem.

WRITTEN EVIDENCE
Final decisions were recorded in the written specification (prescriptive, not performance based) and encoded in the working drawings and architectural details, there was no evidence of any of the preceding discussions and actions observed during the monitoring period in any of the written documentation. From the records of the four projects analysed it would appear that the observations did manage to record the instances when details were changed to comply with the new regulations. This reinforces the importance of ethnographic research to better understand the intricacies of the decision-making process.

REFLECTION ON THE METHOD USED
Before any conclusions can be drawn it is necessary to comment on the method used. Ethnographic research produces unique findings that are difficult to generalise from and the actions reported here were influenced by the organisational culture of the office, the characteristics of the specifiers and projects, time pressures and the observers’ own values. The ‘ethnographer’ is ‘the’ instrument of data collection and was actively involved in the social environment in which the data was collected; thus the researcher may have affected the process in some way. Indeed, the involvement of the researchers, also specifiers, cannot be isolated from the research reported in this paper. It is also probable that the observer missed events vital to the processes being studied, partly because of the difficulty of seeing and hearing everything that was occurring in the office environment and partly because there were times when the observer was out of the office, engaged in other tasks such as visits to construction sites. The interviews were designed to try and identify any gaps in the data collection and analysis of physical documents produced by the designers (e.g. drawings, written specifications, notes in desk diaries etc) helped to confirm that the data collected was as complete as could be expected given the limitations of the method used. The observations are consistent with those conducted previously, however, it is important to recognise that the research can only highlight issues specific to the situation observed; other specifiers may act differently.

REFLECTION ON THE FINDINGS
The parallel research programme (Emmitt & Heaton, 2003) found that the designers in the architectural office were working to very stringent programmes and were unable to give adequate attention to sustainable design. The behaviour observed in the second stage of the research supported the initial findings, observing more collaboration, but there was still evidence of different values and goals between the various actors. These differences were not picked up in the observations but became evident through the course of the interviews. Both pieces of research found that the specifiers were interested in sustainable issues, but their perception was that the rest of the sector only became interested when forced to do so, i.e. through more stringent legislation, as observed here.

Although the study found a high level of cooperation between people in different organisations, at certain times there was considerable tension caused by the participants’ values and overall goals. It would be misleading to describe this as conflict, it was a far subtler phenomenon: sometimes resulting in frustration on behalf of the specifier and sometimes leading to compromise over the chosen design solution. Sustainable design ideals were important to the organisation and also to the individuals
working within the office, but were not given top priority within a project context. There was clear
evidence of different value sets within the organisation and within specific project organisations.
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. Informal relationships between
manufacturers and specifiers helped to ensure that, even with changing regulations, the specifiers
preferred to stick to the manufacturers and products that were familiar to them, only changing when
forced to do so. This naturalistic study of the detail design process and associated social interaction
that took place within and without the design office highlighted a number of management related
issues. These can be summarised as:

1. Professional fees were perceived to be too low for the amount of work required to produce
satisfactory information. The result was very tight programmes for the completion of working
drawings and associated specifications. This made it difficult for designers to spend adequate
time assessing new products and brought about a reliance on manufacturers’ information.
This raises a number of questions relating to the role of the designer and the function
expected by the client. From a management perspective, would it be better to outsource the
detailing function and/or move the function to the main contractor and sub-contractors by
using a performance approach (hence passing the decision making process along the supply
chain)? Should project programming be reconsidered to allow more time at the detailing
stage?

2. Management of the detail design phase was informal, left entirely to the individual specifier to
coordinate and to meet deadlines. Monitoring and management of individual projects was not
given a very high priority in the design office, and individuals took different approaches to
tackling problems. It is here, in the detail design phase, that the quality and constructability of
buildings is determined, where design intent is transferred into production information and
where design value is enhanced (or lost). Better management and coordination within the
design office during this phase, through a clear managerial framework (for example a QA
system) may help to inform and guide the decision-making processes. Planning of work was
very simple (hours allocated based on RIBA stages), there was no evidence of any
scheduling or monitoring of the performance of designers engaged in discrete tasks.

3. The growing dominance of building product manufacturers and their affect on innovation was
observed in the research. The designers preferred to use prescriptive specifications and
given the reliance on manufacturers’ specifications and details it would take a major shift in
practice for the designers to use a performance approach.

4. The context in which the designer works would appear to be critical to his/her reception to
new information as well as his or her ability to affect environmental values. In the design
office the context comprises the organisational values of the office combined with the more
dynamic and shifting individual project values. In the implementation of sustainable values it
is the individual projects that deliver the ideals (shared or otherwise) and greater attention
should be paid to the synergy between the management of the design office and the
management of individual projects.
CONCLUSION

The designers exhibited a high level of awareness of environmental issues. The product manufacturers played a major role in helping designers to comply with the new legislation and provided the main source of information to the designers, essentially acting as agents of change and helping to ensure the uptake of new products. This highlighted the increasingly important role the product manufacturers play in the detail design process; and helped to explain why the prescriptive approach to specification continues to be favoured over a performance approach. Management systems and managerial control within the office was poor and it was clear that the specifiers wanted better guidance and better appreciation of the time required to make informed decisions. Management relied on the competences of individuals and failed to recognise that some form of framework or guidance may help the design decision-making process. Although the research reported here is limited in its scope, it has helped to highlight the complexities of the detail design decision-making process. The value of the ethnographic research lies in the ability to better understand the detailed behaviour of specifiers in the design office, which is difficult to research with other methods. The value to the architectural management field also lies in the detail, which tends to support the more holistic literature calling for better management of creative offices and the design process. More research into the everyday working practices of designers would be useful in helping to identify issues, from which the theory and practice of architectural management may be advanced.

REFERENCES


