

even have reasons for convincing themselves that they work in particular ways and thus almost deliberately distort their account.

The answer to this conundrum is of course that a good researcher takes all this evidence into account and tries to understand the whole picture. It is also the case that as a research field matures and its participants grow more confident about their subject, the methods they use tend to change. Thus very early design methods research was based on assertion, then on very carefully controlled laboratory work, then on observation of more realistic but still controlled conditions. More recently interviews and longer term investigations of real practice have become more popular. Such investigations also tend to recognise that design is more often than not carried out as a result of actions by many people rather than solely by individuals.

## The nature of design organisations

This emphasis on the team has brought with it an entirely understandable wish to return to the idea of clearly defined maps of the design process. One particular set of enthusiasts for this view summarises the argument very succinctly. 'These researchers believe that a shared understanding can be achieved if all of the team members can agree on a shared design strategy' (Macmillan et al. 2001). They argue that in multi-disciplinary design such as construction the benefits of such a shared strategy are that the 'design teams can work in a synchronised and efficient manner'. This argument fails to identify two major problems with such a notion. First the argument assumes that efficiency of process equates with better design and absolutely no evidence is given to support such a position. Everything that we know about the creative process sadly would suggest this is unlikely to be the case. Second the argument assumes that all the participants would actually stick to the process map rather than detour from it should their own design expertise suggest this might be desirable. As we shall see in the next section, what evidence we have again suggests this is unlikely without some form of heavy policing.

So in spite of all the evidence that suggests that design strategies are extremely varied and highly personal, this group of researchers then set out to define yet another version of the process map. Interestingly they conclude that there are probably three levels at which such a map can be drawn which they call 'project specific', 'global' and 'categorical'. The 'project specific' map is rejected effectively on the grounds that it allows too much

freedom and variation. The 'global' map is rejected on the grounds that it is practically impossible to achieve. This leaves the 'categorical' process map which is a sort of half-way house in which there is a standard framework imposed which has a series of defined phases but allows for non-generic processes to occur within each phase. Such a position is justified on the basis of some interviews with designers. In these interviews it was found that designers could not clearly remember iterations of their process across the boundaries between the phases defined in the standard map, but they could remember clearly moving from one phase to another. The map is not tested but the validation relies upon interviews with designers in which they are asked if they could work with such a map. As the authors themselves admit, such recollection of the detail of a process sequence is unlikely to be reliable.

One way in which such process maps can be introduced is through some powerful controlling agent operating within the situation. We have seen the growth of increasingly powerful clients in the design world. In construction for example there are banks, transport organisations, retail companies, public authorities and many others who depend for their core business on constructing buildings through which to ply their trade. Such organisations are far from naïve clients and many of them employ architects specifically to brief the architects who design their buildings. Not surprisingly such organisations tend to seek to standardise procedures and impose some control on the design process. For this reason we have seen the renaissance in the popularity of design process maps. In the UK alone there are now many of these published. Some of them are developed by academics working with the supply side of the industry such as the Process Protocol developed by Salford University and Alfred MacAlpine Construction Ltd (Kagioglou et al. 1998). Others are designed specifically to describe design activities for a particular organisation such as the British Airports Authority Project Process (BAA 1995).

### Three views of the design process

In a recent project we were able to study the design process by taking several different kinds of data into account (Lawson et al. 2003). We studied a number of client and construction organisations over a four-year period to see how these process maps worked and how realistic they were. In general our data suggested that a shared