

analysis through synthesis. The problem is studied not in minute detail but in a fairly rough way as the designer tries to identify not the most important (to the client) issues, but the most crucial in determining form. Once a solution idea can be formulated, however nebulous it may be, it can be checked against other more detailed problems. In the experimental studies mentioned earlier both Eastman's and Agabani's results show the combined use of evolutionary and revolutionary modifications of early solutions. In the evolutionary phase the designer is really following his or her nose, gradually modifying the embryonic design as it is tested to see if it satisfies constraints and is found wanting. Eventually, unless the design proves totally successful, one of two things happens to halt this evolutionary phase. Either the general form of the solution reveals itself incapable of solving enough problems, or so many modifications have to be made that the idea behind the solution is lost and abandoned. In either case the designer is likely to choose the revolutionary step of starting a completely new train of thought.

This is the point where creativity is required rather than ingenuity. The train of thought is broken and no longer sequential. Some effort has to be made to look for a new set of problems or a new angle. In fact the whole primary generator may be scrapped in favour of a new focus. I have overheard many conversations between design students discussing their progress, where one will tell the other that they 'have just started again'. Such a thing is impossible, the design process can only begin once, and lessons learned, attitudes developed and understanding acquired cannot be denied. In this context, then, 'starting again' means looking for a new set of generative ideas around which to build the next onslaught on the problem. This brings us as close as we can get, so far, to the centre of design thinking, for the way in which the designer chooses to shift attention from one part of the problem to another is central to the design strategy. In experimental studies we have observed many variations. Some designers only shift attention when they come to a dead end, while others seem to deal with several ideas in parallel and we discuss this further in the next chapter.

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