

## How Creative Design Happens

Professor Nigel Cross  
The Open University, UK

In designing, there is a complex relationship between requirements and solutions. Creative designing can involve challenging the initial problem requirements; and sometimes the designer's job is to generate product ideas for which there is little evidence of prior requirements. This presentation draws upon a variety of research into the processes of design, with an emphasis on understanding how creative design happens. The research has been based primarily in domains of engineering and product design but covers a wide range of examples, from the exotic (Formula One racing cars and high-speed trains) to the mundane (bicycle luggage carriers and litter bins). The research includes interviews with outstanding designers and laboratory studies of expert designers. The presentation will focus on a number of specific instances of creative thinking in design, as reported or observed, and will include video and other evidence and illustrations. Although the examples are quite disparate in contexts, there appear to be commonalities between them, suggesting patterns of cognitive processes which recur in creative designing.

Professor Nigel Cross is a leading international figure in the world of design research. With academic and practical backgrounds in architecture and industrial design, he has conducted research in computer-aided design, design methodology and design education since the nineteen-sixties. His current principal research interest is in design cognition, based on studies of expert and exceptional designers. He has been a member of the academic staff of the UK's pioneering, multi-media Open University since 1970, where he has been responsible for, or instrumental in, a wide range of distance-education courses in design and technology. Recent books by Professor Cross include the third edition of his successful textbook on *Engineering Design Methods*, and he has been a co-editor of books on *Research in Design Thinking*, *Analysing Design Activity* and *Expertise in Design*. Professor Cross is also Editor-in-Chief of the international journal of *Design Studies*.