Double Diamond

Extract from the Mechanical Design Handbook

Goldenberg and Mazursky (2002) in their review of research on creativity identified that many investigators have used one of three approaches to explain how creativity happens: the creative person; the creative process; the creative idea.

- A creative person is able to choose high-quality ideas from a wider set of ideas. In order to solve problems, a creative person often focuses on finding methods to generate a number of ideas. Some methods are suggested such as brainstorming (see Section 3.4), synectics, random stimulation and lateral thinking.
- Research at the end of the 1980s showed that restricted processes of thinking are more reliable for creativity than unrestricted scopes.
- Some research showed that through the use of the previous creative ideas it is possible to formulate new, successful, creative ideas. For example, Genrich Altschuller's TRIZ (Altshuller (1984) and described in Section 3.8) uses a systematic method, based on previous successful inventions, to guide engineers and designers toward creative solutions. After years of research and reviewing more than 200,000 successful patents and invention disclosures, Altshuller and his colleagues defined 40 patterns of inventions that could inspire engineers and designers to generate creative solutions. In some of the modern TRIZ platforms this analysis has been extended to over two million patents and has confirmed the original selection of just 40 patterns.

Wallas (1926) in his pioneering work suggested that the creative process can be modelled in four phases.

- Preparation – becoming immersed in a problematic and interesting set of issues.
- Incubation – churning ideas around consciously and unconsciously.
- Illumination or insight.
- Verification or evaluation.

Such phases need to be combined and followed by elaboration, or detailing, in order to work the idea up into something that can be realised and effectively used. It is one thing having a good idea; it is quite another turning this into reality. As Thomas Edison famously noted '*Two percent is genius and ninety-eight percent is hard work*' (The Ladies' Home Journal (1898)). Of course, such a model of the creative process is a generalisation and simplification of the complex processes involved which will differ from person to person, or group concerned, as well as topic.

The Design Council (2007) reported a study of the design process in eleven leading companies and identified a four-step process referred to as the ‘double diamond’ design process model, involving phases of: discover, define, develop and deliver. In Figure 3.1, the divergent and convergent stages of the design process are indicated, showing the different modes of thinking that engineers and designers use.

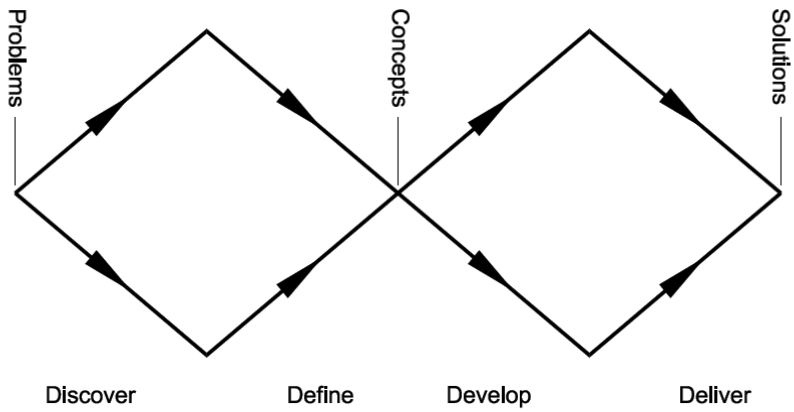

Figure 3.1: Double-diamond schematic describing the design process (Design Council (2007)).