What are innovation, creativity and design?

This chapter provides an introduction to innovation, design and creativity. It sets out the meaning of these words in the context of this book, how they fit together, and introduces some useful frameworks for the subjects.

**INNOVATION**

*New opinions are always suspected and usually opposed, without any other reason but because they are not already common.*

John Locke

Innovation, just as many other things in management and life, means different things to different people. What does innovation mean in the context of this book?

Often ‘creativity’ and ‘innovation’ are used interchangeably. However, there are fundamental differences. In fact, creativity is an essential building block for innovation. This is reflected in the now widely accepted definition of innovation equalling creativity plus (successful) implementation. Creativity alone, to come up with ideas, is not enough. In order to reap the benefits one needs to do something with it. History tells many tales of great inventors who were not able to reap the benefits of their labour, think of the x-ray scanner, invented by EMI but made a commercial success by General Electric, VCRs which had been invented by Ampex/Sony but were successfully commercialised by Matsushita, or the vacuum cleaner, invented by a Mr Spengler but commercialised by Hoover. Why might that be? Let’s take a closer look at the two components of innovation, creativity and implementation.

Implementation – putting ideas into practice – is made up of three aspects: idea selection, development and commercialisation, and of course creativity is needed here too. What do organisations need to achieve implementation? They need processes, procedures and structures that allow the timely and effective execution of projects; implementation is about team effort. But even companies that have all the right processes, procedures and structures in place are often unable to be innovative.

“Whilst Jurassic Park is hugely regarded by the industry and is considered to be a benchmark in this kind of animation, we established very early on that Walking with Dinosaurs would be made in the style of a wildlife documentary, with the viewer watching the dinosaurs going about their normal activities in their natural habitat.”
Taking a closer look at creativity might help to explain why that might be. If implementation is putting an idea into practice, creativity is coming up with the idea in the first place. Creativity is an essential part of innovation – it is the point of departure. One of the big concerns for many companies is therefore how to generate more and better ideas – how to become more creative. Consider a few things about creativity:

- As opposed to commonly held opinion, creativity – the act of coming up with an idea–is an inherently individual act. It is the development of an idea and its implementation where the team is needed.

- Creativity has little to do with the ‘flash of inspiration out of the blue’. To quote John Hunt, Visiting Professor for Organisational Behaviour at London Business School, “Creativity is not something where someone who has never worked in that field suddenly gets this marvellous idea. Creativity is relating a concept to a particular body of knowledge. The existing body of knowledge is as vital as the novel idea and really creative people spend years and years acquiring and refining their knowledge base – be it music, mathematics, arts, sculpture or design.”

- There is often some debate as to whether creativity is for the selected few or everyone. Fortunately more and more people realise that everyone can be creative, just the type and level of creativity vary. Let me share a comment from a large US-based company that participated in the latest round of innovation best practice research (von Stamm, 2006) on how they used an invitation for ideas from everyone in the organisation to kick-start their innovation efforts. “What we learned from the inventory [of ideas] is the following, (1) the more people you invite the better the output, and the higher the achievements; (2) when we looked at where the best, most powerful ideas had come from we could not find any link to either a particular geographical area, nor to a particular level within the organisation’s hierarchy, nor to one particular function. There were no hot spots for ‘good ideas’. The ideas were rather distributed across all dimensions. The ‘winners’ had only one thing in common: they were all quite exceptional. So we were pleased we asked everyone, otherwise we would have missed out on some fantastic opportunities.”

So while certain people are more creative on their own accord than others, creativity can be stimulated and supported through training, and by creating the right work environment and atmosphere. In her research Harvard Business School Professor Theresa Amabile identified certain characteristics that support creativity in the workplace (see Figure 1.1).

Amabile identified five environmental components that affect creativity:

- Encouragement of creativity (which encompasses open information flow and support for new ideas at all levels of the organisation, from top management, through immediate supervisors, to work groups).
- Autonomy or freedom (autonomy in the day-to-day conduct of work; a sense of individual ownership of and control over work).
- Resources (the materials, information and general resources available for work).
- Pressures (including both positive challenge and negative workload pressure).
- Organisational impediments to creativity (including conservatism and internal strife).

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1Interview for the Innovation Exchange, 1999.
WHAT ARE INNOVATION, CREATIVITY AND DESIGN?

Organisational

Encouragement of creativity

Supervisory

Work group supports

Freedom

Sufficient resources

Challenging work

Workload pressure

Impediments

CREATIVITY

Figure 1.1 Model for assessing the climate for creativity (KEYS).


The components fall into two categories: they are either stimulants to creativity (tapped by scales assessing organisational and supervisory encouragement, work group support, sufficient resources and challenging work), or obstacles to creativity (tapped by scales assessing organisational impediments and workload pressure).

However, creativity cannot be ordered, it relies much more on intrinsic motivation, on people being enthusiastic, inspired and knowledgeable. You cannot tell people to be more creative and innovative, you have to inspire them to be so.

Finally, companies tend to require hard facts but creativity and innovation are often based on intuition. And, by the way, as early as the mid-1980s authors such as Peters and Waterman (In Search of Excellence) suggested that the modern American manager’s overdependence on analytic thought and quantitative analysis was a principal cause for the loss of its worldwide pre-eminence (as reflected in stagnating productivity, ageing and obsolete machinery, and inferior but more expensive products).

So, implementation is about being organised and about using the methodological and systematic approach of a ‘hare brain’ (see Box 1.1). It needs to be structured and cannot be left to chance. Time is of the essence – you need to be fast. Creativity is less straightforward than implementation, it is not about a new process or establishing a new structure. To be creative people have to think differently. To be innovative people have to behave differently. And to be successful organisations have to employ people that think and behave differently. This is why I often define innovation as ‘a frame of mind’. Creativity is about being different, thinking laterally, making new connections.

To clarify, during the creative process intuition and thought are required – as they are for the implementation, analysis and action. However, each of the stages requires different skills and is successful under different conditions.
This has been expressed in the model of ‘cycling worlds’ by creativity consultants Synectics, whereby I would read what they call the ‘innovation cycle’ to be the creative process and what they call the ‘operational cycle’ to be the implementation cycle (see Figure 1.2).

Box 1.1  Summary extracts from Claxton’s *Hare Brain, Tortoise Mind*

In his book *Hare Brain, Tortoise Mind* (1997) Guy Claxton makes some interesting observations about the way we think that are relevant to understanding creativity and innovation. The first concerns different modes of responding to a situation. Whereas most of the other models aim to put people in boxes, Claxton goes a step back and suggests that we all are capable of two different ways of responding to a situation. The second explains how people’s unconscious exerts an influence in the classification of a new situation.

**Modes of response**

Claxton describes three different modes of how people respond to a situation. The first is spontaneous and immediate. The person does not think consciously about the situation and a possible response. Claxton classifies such a response as ‘instinct’. An example would be removing your hand when it is put accidentally on a hot hob. No one would think whether the sensation is pleasant or not, the hand would be removed as quickly as possible. Instinctive reactions can generally be observed when reacting to a threat where there might not be sufficient time to assess the situation.

The second mode is based on ‘conscious, deliberate, purposeful thinking’. Claxton calls this the ‘D-mode’ or the ‘hare mode’.¹ The following is an extract from the traits he has identified for the D-mode:

- D-mode is much more interested in finding answers and solutions than in examining the question.
- D-mode treats perception as unproblematic.
- D-mode values explanation over observation.
- D-mode seeks and prefers clarity, and neither likes nor values confusion.
- D-mode relies on language that appears to be literal and explicit.
- D-mode works with concepts and generalisations.

It seems that one could replace ‘D-mode’ with ‘management’. . .

However, traits of the D-mode are important and necessary for completing a task: a preference for structure, the ability to plan and organise, to be in control. Structuring and planning help keeping within a set time frame. Hence, the D-mode is efficient and effective when the problem is clear-cut and when there is one possible, straightforward solution. The D-mode is less appropriate when the situation is intricate, ill-defined or complex – and it seems that most product development tasks fall into the latter category, rather than into the former.

If a task is complex and fuzzy Claxton suggests that a third mode of response, the ‘tortoise mode’, is more likely to yield satisfactory results. This mode of responding is slower, less conscious and less ‘provable’. Here a person is more concerned with understanding the questions than with providing an answer fast. This might just be exactly what I suggest organisations need to do in order to improve their new product development. The process of processing the information is less conscious and people often feel that the answer has come ‘out of the blue’ and Claxton argues that there is a significant advantage in allowing the process of ‘slow thinking’ when assessing a situation. However, today people are often not ‘allowed’ to let ‘things sink in’. The emphasis,
particularly in new product development, is on speed. Claxton remarks on this particular aspect by pointing out that ‘time pressure increases the likelihood to rely on existing habits and knowledge’.

This first insight from Claxton’s book provided a better understanding of different modes of thinking. It helps to appreciate different approaches – and speeds – of finding solutions. The second insight from Claxton’s book I would like to refer to here concerns how we classify new situations as it might help to shed some light on what feeds our habits and assumptions.

**Assessing situations**

Claxton’s work provides insight into how we come to rely on habits and assumptions. Assessments are often based on familiar seeming patterns, the accuracy of which was not questioned. New patterns are fitted to match known patterns rather than being acknowledged as being different. With the benefit of hindsight, it seems obvious that people have been relying on past experience, on the seemingly obvious. This is related to the issue of prior knowledge. An established mindset, or a dominant logic, can prevent us from seeing things as they are but make us see them as we think they should be.

According to Claxton this is because our mind tends to recognise patterns without us being consciously aware of it. This can lead to something being identified as a familiar pattern while, upon closer investigation, it is not. Therefore one has to be aware of the ‘pattern recognition process’ which happens in what Claxton calls the ‘undermind’. An awareness of this process can help to keep an open mind when approaching a new problem. Once an initial assessment of the problem has been made, it should then be asked whether it actually can be taken at face value or whether there are hidden layers of complexity which need to be understood and acknowledged.

However, again human nature does not seem in favour of revising a once made assessment, as Claxton points out, “What seems to happen is that we build up an intuitive picture of the situation as we go along, and it takes work to ‘dismantle’ the picture and start again.” So if later information seems to be at odds with the picture so far, we may unconsciously decide to reinterpret the dissonant information, rather than radically reorganise the picture. And the more we feel under pressure, the less likely we are to make the investment of ‘starting from scratch’.

The last observation is particularly relevant in new product development. To illustrate how our mind responds to seemingly similar tasks I would like to cite from Claxton’s book where he relates an experiment, undertaken by Abraham and Edith Luchins in the 1950s.

They [the Luchins] set puzzles of the following sort. ‘Imagine that you are standing beside a lake, and that you are given three empty jars of different sizes. The first jar holds 17 pints of water; the second holds 37 pints; and the third jar holds 6 pints. Your job is to see whether, using these three jars, you can measure out exactly 8 pints.’ After some thought (which may, to start with, be quite logical), most people are able to end up with 8 pints in the largest jar. Then they are set another problem of the same type, except this time the jars hold respectively 31, 61 and 4 pints, and the target is to get 22 pints. And then another, with jars holding 10, 39 and 4 pints where the target is 21 pints. You will find that the same strategy will work for all three problems. But now comes the critical shift. You are next given jars of capacity 23, 39 and 3 pints, and the target is 20 pints. If you have stopped thinking, and are now applying your new-found rule mindlessly, you will solve the problem – but you will not spot that there is now a much simpler solution. The problem looks the same but this particular one admits of two solutions, one of which is more elegant and economical than the other.

Notes: ¹'D' stands for default because he feels that that is the mode we use normally. ² Please refer to Claxton’s book for examples and research supporting his proposition.
So, it is important to acknowledge that an organisation needs both: innovation and operation, and successful innovative organisations seem to manage to balance the tension between the two cycles without compromising either.

However, the verdict is still out on whether large organisations can be good at both continuous improvements and radical or even discontinuous innovation. There is a strong argument that incremental (or continuous) innovation and radical innovation are two different beasts that require different structures, processes and systems and I will come back to that in a little more detail in Chapter 21. Proponents of this view are Tushman and O’Reilly (1997, 2004) who argue that “The same organisation cannot successfully pursue various types of innovation. There are at least two types of innovation, and companies would be well advised to divide their organisations into two to pursue each type of innovation separately. The first type of innovation is incremental and should be practised by the portion of the organisation that is focused on execution. The second type of innovation is architectural or discontinuous, and should be attempted by a separate part of the organisation entirely dedicated to that more ambitious type of innovation. In the Ambidextrous Organisation model, the role of top management is to bring together both components of the organisation into a common vision of the firm and to put in place the management process that balances both agendas.”

While there is generally agreement on the components of innovation, that is creativity and implementation, there is often disagreement about what deserves the title ‘innovation’. Today it seems to be fashionable to call everything ‘innovation’, from the redesign of packaging to the introduction of hydrogen-powered cars, basically everything that used to be called ‘new product development’ in the past. The literature is full of attempts to categorise different levels and types of innovation. One of the more useful and meaningful categorisations are the four categories suggested by Olson et al. (1995):

- New-to-the-world products (products that are new both to the company developing them and to the marketplace using them).
- Line extensions (products that are new to the marketplace but not to the company).
- Me-too products (those that are new to the company but not to the marketplace).
- Product modifications (existing products that have been simply modified, i.e. they are new neither to the company nor to the marketplace).

They are more meaningful than for example ‘incremental and radical’ as this always bears the question, from whose perspective? However, it is important to understand varying degrees of innovativeness from an organisation’s
WHAT ARE INNOVATION, CREATIVITY AND DESIGN?

perspective as different types of innovation need different conditions, processes and structures if they are to flourish. We will come back to that in Chapters 3 and 31.

As early as 1942 Schumpeter made some observations regarding different types of innovations, which he referred to as ‘discontinuities’. The two types of discontinuity he identified are, first, a competence-destroying discontinuity, which renders obsolete the expertise required to master the technology that it replaces; and second, a competence-enhancing discontinuity, which builds on existing know-how embodied in the technology that it replaces.

‘Competency-destroying innovation’ – today more commonly referred to as ‘disruptive innovation’ – has gained much more attention over the past few years, not least driven by the work of Clayton Christensen of Harvard Business School. For a discourse and more insights around discontinuous innovation please refer to Chapter 31. A brief explanation of differences and definitions of different types of innovation is given in Box 1.2.

Box 1.2 Disruptive, discontinuous, radical or incremental?

Christensen (1997) comments on disruptive innovation: “A technology, product or process that creeps up from below an existing business and threatens to displace it. Typically the disrupter offers lower performance and less functionality at a much lower price. The product or process is good enough for a meaningful number of customers – indeed, some don’t need the older version’s higher functionality and welcome the disruption’s simplicity. And gradually, the new product or process improves to the point where it displaces the incumbent.” Walsh and Kirchhoff (2000) build on this by saying: “Disruptive technologies generate discontinuous innovations that require users/adopters to significantly change their behaviour in order to use the innovation.” I quite like the way Linton and Walsh (2002) put it, “disruptive technologies are discontinuous, but discontinuous technologies are not necessarily disruptive”. In their review of terminology around innovation Phillips and Nokes (2003) describe implications of discontinuous technologies as follows: “For incumbents, a discontinuous technology becomes a disruptive one when they are unprepared and surprised by the emergence of an emerging discontinuous technology, or lack the necessary experience to cope, requiring the necessary competencies and skills to either exploit or counteract this technology.” This is supported by Tripsas (1997) and Rothaermel (2002) who reveal incumbents’ survival is more likely if they have the necessary complementary assets required to commercialise the technology.

Phillips and Nokes (2003) give some examples of disruptive and discontinuous innovations:

<table>
<thead>
<tr>
<th>Disruptive innovation</th>
<th>Discontinuous innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sony v. Microsoft – Playstation v. X-box</td>
<td>GE’s digital X-ray</td>
</tr>
<tr>
<td>Kodak v. HP, Canon &amp; Sony – digital imaging</td>
<td>GM’s hybrid vehicle</td>
</tr>
<tr>
<td>Retail stockbrokers – E*Trade and Charles Schwab</td>
<td>Otis bi-directional elevator</td>
</tr>
<tr>
<td>Palm Pilot v. Apple’s Newton (handheld computer)</td>
<td>Optical fibres (Corning)</td>
</tr>
<tr>
<td>Dell disrupted Compaq which disrupted Digital Equipment</td>
<td>Nutrasweet (Searle, now Monsanto)</td>
</tr>
</tbody>
</table>
About radical innovation Leifer et al. (2000) say a radical innovation is something “with the potential to produce one or more of the following:

- an entirely new set of performance features
- improvements in known performance features
- improvements in known performance features of five times or greater
- a significant (30% or greater) reduction in cost”.

Incremental innovation finally refers to small changes and adjustments to existing products, services or processes.

While building on Schumpeter, more recent literature, with minor variations, refers to four types of innovation. They are architectural innovation, market niche innovation, regular innovation and revolutionary innovation (Abernathy & Clark, 1985; Tidd, 1993).

- **Architectural innovation** – innovation of this sort defines the basic configuration of product and process and establishes the technical and marketing agendas that will guide subsequent development.

- **Market niche innovation** – innovation of this sort opens new market opportunities through the use of existing technology, the effect on production and technical systems being to conserve and strengthen established designs.

- **Regular innovation** – innovation of this sort involves change that builds on established technical and production competence and that is applied to existing markets and customers. The effect of these changes is to entrench existing skills and resources.

- **Revolutionary innovation** – innovation of this sort disrupts and renders established technical and production competence obsolete, yet is applied to existing markets and customers.

The categories of innovation seem closely related to the categories of design devised by Morley and Pugh (1987) and Slusher and Ebert (1992). Heany’s (1983) categories of innovation (style change, product-line extension, product improvement, new product, start-up business, major innovation) are also similar to the different product categories introduced earlier. Heany provides a checklist for the categorisation of innovations, based on six different categories, which is shown in the Table 1.1.

Looking at Abernathy and Clark’s definitions of innovation one could equate their first three categories with a competence-enhancing discontinuity and the fourth category, revolutionary innovation, with Schumpeter’s a competence-destroying discontinuity.

A common categorisation of innovation is to differentiate between: (a) product innovation, the things an organisation offers and (b) process innovation, the ways in which they are created and delivered (e.g. Tidd et al., 2001). Combining levels of innovation with different categories we arrive at what I refer to as the ‘innovation-scape’ (see Box 1.3).
Table 1.1 Degrees of Innovation

<table>
<thead>
<tr>
<th>Is the market for product established?</th>
<th>Is the business already serving the market?</th>
<th>Do customers know functions and features?</th>
<th>What is the design effort?</th>
<th>Then innovation is a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Minor</td>
<td>Style change</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Minor</td>
<td>Product-line extension</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Significant</td>
<td>Product improvement</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Major</td>
<td>New product</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Major</td>
<td>Start-up business</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Major</td>
<td>Major innovation</td>
</tr>
</tbody>
</table>


Box 1.3 Levels and categories of innovation

<table>
<thead>
<tr>
<th>Discontinuous</th>
<th>Radical</th>
<th>Incremental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars instead of horses</td>
<td>Hydrogen powered cars</td>
<td>New car model</td>
</tr>
<tr>
<td>Internet banking</td>
<td>A new kind of mortgage</td>
<td>Different mortgage feature</td>
</tr>
<tr>
<td>Pilkington’s floating glass</td>
<td>Gas-filled thermo glass panes</td>
<td>Differently coloured glass</td>
</tr>
<tr>
<td>Internet</td>
<td>Online sales &amp; distribution of computers</td>
<td>Selling in business parks instead of town centres</td>
</tr>
</tbody>
</table>


I have taken the liberty to provide examples, and added ‘Business model’ though it could be argued that some of this would be covered under ‘Process’. As mentioned earlier, most organisations still focus on the bottom left corner: incremental product innovation. Here competition can generally come in quite easily and copy. To create a more sustainable competitive advantage an organisation can do two things: first to move towards the top right corner, but secondly to innovate a number of the fields of the innovation-scape. Apple’s iPod is an example hereof. The iPod combines innovation of product – the iPod itself, service and process – the downloading of music, as well as

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2In his book *All the Right Moves* (1999), Costas Markides expands on how to pursue innovation at the strategic level (business model innovation).
the business model – how money is made out of it. Such a systemic innovation is much harder for any competitor to copy, giving the innovator a much longer lead to recoup the investment.

However, most of these categorisations tend to focus on the outcome, that is the product or service, but say little about the process, and the context which is necessary to enable innovation. An approach that focuses too strongly on process is not likely to succeed in creating a continuously innovative organisation. To achieve that, existing behaviours, beliefs and mental frameworks need to be understood and shifted. It is often our expertise and experience – the things that we know to be right and work – that prevent us from coming up with something truly new. Processes can support this shift, but on their own will not achieve it. That is why I define innovation as a frame of mind. Innovation is the art of making new connections, and continuously challenging the status quo – without changing things for change’s sake.

CREATIVITY

The uncreative mind can spot wrong answers, but it takes a very creative mind to spot wrong questions.

Anthony Jay

In the previous section we have already talked about some characteristics of creativity. In this section we take a brief look at the origins of creativity, what kind of characteristics tend to be associated with creative people, the creative process, and some tools and techniques that encourage creativity.

In her article ‘Making Sense of Creativity’ Jane Henry (1991) summarises different views on the origin of creativity, identifying five sources:

- **Grace** – this is the view that creativity comes through divine inspiration, it is something that comes to us, or not, something magic which is out of our control; it is this view that believes ‘you either have it or you don’t’, and companies subscribing to this particular view could only enhance their creativity by hiring people who are graced with divine inspiration.

- **Accident** – with this view creativity arises by serendipitous good fortune and various scientific discoveries have been attributed to this kind of creativity (e.g. Penicillin) – a view that is not particularly helpful to organisations striving to become more creative!

- **Association** – under this theory creativity occurs through the application of procedures from one area to another. Lateral thinking and brainstorming are methods supporting this approach to creativity. Henry points out that we often miss such opportunities, quoting Sigmund Freud’s insight that a side effect of cocaine is numbing of the mouth without realising the resulting potential as dental anaesthetic as an example. Following this view companies would provide training for their staff with the aim to improve levels of creativity.

- **Cognitive** – here the belief is that creativity is nothing special but that it relies on normal cognitive process such as recognition, reasoning and understanding. In this view the role of ‘application’ is crucial, and examples
given are the wide range of different filaments Edison used before coming up with a functioning light bulb. The emphasis here is on hard work and productivity, and proponents of this theory such as Weisburg (1986) point out that 10 years of intense preparation tend to be necessary to lead to a creative act. As Henry puts it, “The logic of the cognitive position is that deep thinking about an area over a long period leaves the discoverer informed enough to notice anomalies that might be significant.” Companies might like this view best – just make people work harder and the result will be creative solutions. However, the research by Amabile (1988, 1989) suggests that while a challenge is conducive to creativity, demanding too much can be counterproductive. This approach also works only if the problem has been clearly identified and it is about finding the solution. This approach is less likely to result in identifying the right questions so it could be argued that the cognitive approach is about implementation, not creativity.

- **Personality** – here creativity is seen as a particular human ability, an intrinsic part of life and growth and Henry points out, “Viewing creativity as a natural talent directs attention towards removing mental barriers to creativity to allow an innate spontaneity to flourish.” Given this explanation I would find the title ‘skill’ much more appropriate for this view than ‘personality’ as the latter seems to suggest that creativity is something that we are born with.

To a certain degree the different views as to what lies at the origin of creativity are also time dependent. For example, the view that creativity is based on ‘grace’ has dominated human thinking until the beginning of the early nineteenth century. Only since the late nineteenth, early twentieth century have people begun to entertain the thought that creativity could be encouraged and trained. It probably started in 1880 when the American psychologist William James declared, “The only difference between a muddle-head and a genius is that between extracting wrong characters and right ones. In other words, a muddle-headed person is a genius spoiled in the making.”

The other four origins of creativity make some assumption that creativity is not just something that happens to us, but that it is something that can be encouraged and perhaps even trained. But even when accepting that creativity can be learned, there are some people who are just more creative than others, and much research has been undertaken to identify what their characteristics are. The report *The Creative Age*, published in 1999, by the government think-tank Demos (Seltzer & Bentley, 1999) has a rather short list:

- Creative people have the ability to formulate new problems rather than depending on others to define them.
- They have the ability to transfer what they learn across different contexts.

When looking at great innovations you will find that particularly the latter, transferring insights from one context into another, is of great importance. Think for example about Henry Ford’s production line. To come up with his revolutionary production line Henry Ford ‘borrowed’ from a wide variety of industries such as meat packaging, grain storage, sewing machines, bicycle construction and even brewing.

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**Persistence . . .**

Charles Goodyear, discoverer and inventor of vulcanised rubber, as well as Chester Carlson, inventor of electrostatic copying, the Xerox process, xerography, worked for over 30 years trying to create a solution.
To move from being a creative person to being an innovative person additional qualities that are required would include being persistent and being willing to take risk. To make things happen you often have to overcome high levels of resistance – often for no other reason than that your path has not been trodden before, as emphasised in John Locke’s introductory quote to this chapter.

The most extensive list of habits of creative people I have found has been developed in 1990 Robert Alan Black (1990). While it is titled ‘32 traits of Creative People’ I would rather credit innovative people with these characteristics: some of these characteristics are not necessarily important to come up with ideas; however, they are essential for their implementation (see Box 1.4).

**Box 1.4 32 traits of creative people**

1. Sensitive
2. Not motivated by money
3. Sense of destiny (believe that you have a special mission or purpose in life you plan or hope to fulfil)
4. Adaptable
5. Tolerant of ambiguity (accept multiple answers or causes to a single problem or challenge)
6. Observant
7. Perceive world differently
8. See possibilities
9. Question asker
10. Can synthesize (see the big picture) correctly, often intuitively
11. Able to fanaticise
12. Flexible (willing to try things in many different ways)
13. Fluent (produce lots of ideas or possibilities when working on a challenge or simply choosing a restaurant to go to)
14. Imaginative
15. Intuitive
16. Original
17. Ingenious
18. Energetic
19. Sense of humour
20. Self-actualising (focus on developing yourself to the best you can be and to discover your specific unique talents)
21. Self-disciplined
22. Self-knowledgeable
23. Specific interests
24. Divergent thinker (looks at things in many different ways at the same time)
25. Curious
26. Open-ended (don’t fix on a single idea, keep looking for many different ideas or ways to do things)
27. Independent
28. Severely critical
29. Non-conforming
30. Confident
31. Risk taker
32. Persistent

The fact that it might be quite difficult to find all these characteristics in one person makes teamwork such an important aspect of innovation.

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I would like to conclude the exploration of traits of creative people with a final list, mainly because I like the fact that it highlights one of the underlying reasons for the difficulties that companies have in the realisation of innovation: their paradoxical nature. When exploring the questions in their research

- What kind of people are creative? And,
- What kind of traits lead to creativity?

Csikszentmihalyi came to the following conclusions:4 “There may be certain neurological physiologies that predispose you to one or another type of creativity, but it doesn’t seem to take a particular talent or genius to be very creative.” He continues, “However, we do find typically creative individuals have curiosity and interest, and also a certain blend of characteristics often thought of as opposites”:

- Divergent and convergent thinking – can think ‘outside the box’ while also being good at synthesising a number of ideas into a single concept.

- Energy and idleness – high levels of energy, even at a great age (though they may have been sickly as children) but at the same time almost all of them are sometimes seen as being lazy as they don’t let themselves be pushed, or keep routines (this is related to incubation, and they feel guilty about it, but they also feel that it’s necessary).

- Introversion and extroversion – often being caught up in themselves but also being interested in a wide range of things, interacting with others and seeking stimulation.

- Masculine and feminine – creative people tend to be psychologically androgenous (men who are shy, less aggressive, sensitive women who are feminine but also dominant).

- Passionate and detached – highly intrinsically motivated, loving what they do but at the same time able to stand back, especially when it comes to evaluation.

- Rebellious and traditional – confronting and challenging the existing but at the same time building on the past. As Isaac Newton pointed out: “If I can see farther than other men, it is because I stand on the shoulders of giants.”

These lists can be used as starting points for designing training and development programmes for managers who want to improve their employees’ creativity (and innovativeness).

De Pree (2001) makes suggestions for how to manage creative people. The first point he makes is that leaders should be open towards creative people and acknowledge the contribution they can make. He further suggest that it might be a good idea to protect such people from bureaucracy and legalism and help protect great ideas from being watered down – certainly a problem mentioned in interviews conducted with members of the Innovation Exchange (von Stamm, 2001). De Pree quotes Peter Drucker as saying, “When you have a real innovation, don’t compromise.” However, at the same time he emphasises that this does not mean giving creative people carte

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blanche. He points out that, “Creative people, like the rest of us, need constraints”, and continues, “One of the most striking characteristics of the creative person I know is their ability to renew themselves through constraints.”

This is why it is so important that people are not just told: give us your ideas. Their contribution can be much more relevant and effective if they are asked to contribute solutions or suggestions to a particular problem or scenario. For example, the challenge could be, ‘How can we improve our products and services to show our customers we really care?’, or ‘How can we put men on the moon?’.

Once people realised that creativity might not just be a god-given but that it could be taught, research into the creativity process started. In 1926 Wallas summarised his own and other people’s research into the creativity process in the book The Art of Thought, concluding that there were the following four steps:

1. Preparation – identification and definition of an issue or problem, based on observation and study.

2. Incubation – this often involves laying the issue aside for a time, what was seen to be the ‘magic’ bit at the time and which in Claxton’s terms would be associated with the tortoise mind resulting in Wallas’s step 3.

3. Illumination – the moment when a new solution or concept is finally emerging, often associated with ‘the flash of inspiration, out of nowhere’ but more likely a result of the ability to make a new connection between extensive and varied bodies of knowledge.

4. Verification – checking out the applicability and appropriateness of the solution for the originally observed problem.

Comparing the various models of the creative process that have developed since Paul E. Plsek (1996) has drawn the following conclusions:

- The creative process involves purposeful analysis, imaginative idea generation, and critical evaluation – the total creative process is a balance of imagination and analysis.

- Older models tend to imply that creative ideas result from subconscious processes, largely outside the control of the thinker. Modern models tend to imply purposeful generation of new ideas, under the direct control of the thinker.

- The total creative process requires a drive to action and the implementation of ideas. We must do more than simply imagine new things, we must work to make them concrete realities.

Again it is obvious that creativity and innovation have been used interchangeably which I believe contributes to the confusion that exists around creativity and innovation, and the problems that exist in establishing an innovative organisation.

Finally, without going into too much detail, I would like to provide you with an overview of some key creativity tools and techniques that are commonly used (see Table 1.2). Remember, these techniques should enable people to look at situations or problems from different perspectives so that novel and better solutions can be produced. As Einstein said, “A problem cannot be solved with the mindset that created it.”
<table>
<thead>
<tr>
<th>The technique</th>
<th>The essence</th>
</tr>
</thead>
</table>
| Alex Osborn Brainstorming (1930s)                | ...is “a conference technique by which a group attempts to find a solution for a specific problem by amassing all the ideas spontaneously by its members”  
  - No criticism of ideas  
  - Go for large quantities of ideas  
  - Build on each other’s ideas  
  - Encourage wild and exaggerated ideas  
  Where to find out more: http://www.brainstorming.co.uk |
| Genrich Altshuller’s TRIZ (1940s)               | ...has been developed analysing 2.5 million patents, leading to insights into how engineering problems have been solved. Altshuller identified the following patterns:  
  Patterns of evolution
  - Approaches to solving problems follow similar patterns over time; using this principle solutions from other areas can be transferred to the problem area in question  
  Innovative principles
  - Altshuller identified 40 distinct groups of solutions which he translated into 40 innovative principles  
  Contradictions
  - Altshuller patents often contain solutions for what seem to be a contradiction.  
  Resources
  - Unlike our normal view of a resource, in TRIZ resources are the things that are currently not being used. Look what is currently there but latent!  
  Ideality
  - Start with what the ideal solution (maximum benefit at zero cost with zero harmful effects) would be and get as close to it as possible  
  Where to find out more: http://www.aiitriz.org/  
  http://en.wikipedia.org/wiki/TRIZ |
| Osborn & Parner’s Creative Problem Solving (1950s) | 1. Mess finding (objective finding)  
  2. Fact finding  
  3. Problem finding  
  4. Idea finding  
  5. Solution finding (idea evaluation)  
  6. Acceptance finding (idea implementation)  
  Where to find out more: http://members.optusnet.com.au/~charles57/Creative/Brain/cps.htm |
| Tony Buzan’s Mind Mapping (1960s)               | ... a diagram used to represent words, ideas, tasks or other items linked to and arranged radially around a central key word or idea; used to generate, visualise, structure and classify ideas. Connections are presented in a nonlinear graphical manner. Related concepts: semantic network and cognitive map.  
  Where to find out more: http://www.buzan.com.au (the originator’s website), also http://www.mind-mapping.co.uk |
| De Bono’s Lateral Thinking (1960s)              | ...is about reasoning that is not immediately obvious and is not following traditional linear logic.  
  Where to find out more: http://www.indigobusiness.co.uk |
Table 1.2 (Continued)

<table>
<thead>
<tr>
<th>The technique</th>
<th>The essence</th>
</tr>
</thead>
<tbody>
<tr>
<td>De Bono’s Six Thinking Hats (1980s)</td>
<td>To help take a different perspective and avoid a standard way of thinking this approach asks team members to consider a problem from a particular perspective. The six differently coloured hats signify:</td>
</tr>
<tr>
<td>White Hat:</td>
<td>Data focus; looking at past trend and extrapolating from historical data</td>
</tr>
<tr>
<td>Red Hat:</td>
<td>Using intuition, gut reaction, and emotion; also imagining other people’s emotional reaction</td>
</tr>
<tr>
<td>Black Hat:</td>
<td>Focus on negative points and what could go wrong</td>
</tr>
<tr>
<td>Yellow Hat:</td>
<td>Think only positively and about the advantages</td>
</tr>
<tr>
<td>Green Hat:</td>
<td>Freewheeling way of thinking – be creative</td>
</tr>
<tr>
<td>Blue Hat:</td>
<td>Stands for process control, generally to be worn by the chair</td>
</tr>
</tbody>
</table>

Where to find out more:
- http://www.indigobusiness.co.uk

DESIGN

*Good design is about looking at everyday things with new eyes and working out how they can be made better. It is about challenging existing technology.*

James Dyson, *Ford Magazine*, summer 1999

In this last section I take a closer look at what design actually means, explore different approaches companies take towards design, and suggest why it might be worth considering design and designers in the context of innovation and creativity. It is interesting to note that an interest in design in the context of innovation has increased significantly since the publication of the first edition of this book. At least in the US, the magazines *Business Week* and *Fast Company* have made design one of their major topics, reporting regularly on companies such as design and innovation consultancy IDEO and Procter & Gamble (P&G), which has made a conscious effort to bring design and designers into the heart of the organisation. As P&G’s CEO A.G. Lafley explained in 2005 in a *Fast Company* article, “I want P&G to become the number-one consumer-design company in the world, so we need to be able to make it part of our strategy. We need to make it part of our innovation process.” Adds Claudia Kotchka, P&G’s Vice President for Design Innovation and Strategy,⁵ “Designers at Procter & Gamble historically were called at the end of the project for superficial decoration. Design thinking puts designers and several other critical personas together at the inception of the project. The power of design is leveraged at the beginning and all through the development.”

A brief overview of the history of design as well as an introduction to different categories of design can be found in Appendix C.

Looking up the word ‘design’ in any dictionary provides a long list of entries. The Concise Oxford Dictionary offers 11 different meanings and in the British Encyclopaedia we find 33 different entries. In addition to a wide range of options of what ‘design’ refers to, there is also potential for further confusion due to national differences. Even though ‘design’ is a word used in many countries, its meaning varies. For example, according to the German dictionary, it only means to ‘sketch’ or ‘pattern’.

In the context of innovation three relevant interpretations of design can be found:

- Design is the tangible outcome, i.e. the end product of design such as cameras, cars, etc.
- Design is a creative activity.
- Design is the process by which information is transformed into a tangible outcome.

It seems that the last, design as process, is the most commonly used, and it is how I understand the word. For me design is the act of conscious decision making so I would vary the definition slightly and add the word ‘conscious’. So my definition reads:

- **Design** is the conscious decision-making process by which information (an idea) is transformed into an outcome, be it tangible (product) or intangible (service).

Design is about doing things consciously, and not because they have always been done in a certain way, it is about comparing alternatives to select the best possible solution, it is about exploring and experimenting. And exploring and experimentation are at the core of innovation.

Whereas earlier literature on the subject has looked at design primarily from a designer’s perspective, more recent books on design and design management invariably make a stronger link to new product development (e.g. Oakley, 1984; Pilditch, 1987; Walsh et al., 1992; Bruce & Biemans, 1995). This is correlated with the growing awareness of the importance of design for a company’s success and a call for a wider use of designers in the new product development process (see example of P&G above). For example, research by the British Design Council (2002) found that 75% of small and medium-sized businesses (50–249 employees) declared that design was ‘integral’ or ‘significant’ to them, up from 54% in the previous year. As early as the mid-1980s Kotler and Rath (1984) heralded the coming of design as necessary organisational competence, declaring in their article ‘Design, a Powerful but Neglected Strategic Tool’ that “Design is a potent strategic tool that companies can use to gain a sustainable competitive advantage yet most companies neglect design as a strategic tool. What they don’t realise is that good design can enhance products, environment, communications, and corporate identity.”
The British Design Council has set up a ‘Design Index’, which tracks the financial performance of the 63 most design-led companies in the UK since 1993. Whether a bull or a bear market, design-led companies have outperformed the FTSE 100 and FTSE All Share index by more than 200%. I believe that it is the increased emphasis on innovation that has finally led companies to take note of this.

However, there is often still some confusion around the boundaries between design management, new product development and innovation. A contributor to the confusion around design is that, while it is commonly understood that design is undertaken by designers, research has revealed that a significant part of design or decisions influencing design are not made by designers but by other people in the organisation such as engineers, programmers and managers (Hales, 1986; Norman, 1988). These non-designers who have such a significant impact on the design outcome without being aware of it have been titled ‘silent designers’ (Gorb & Dumas 1987).

Another reason is the differences between designers and managers on a number of issues, and a widespread belief that designers – or creative people in general – cannot be managed. However, David Walker (1990) quotes from a letter of Geoffrey Constable, Head of Industrial Division, Design Council of 17 March 1987 in which Constable states, “It is important to argue that design must be managed and can be managed. There is considerable misunderstanding on both points. Some managers believe that design is something outside normal business practice and does not benefit from being managed but due to creativity and other uncertainties is regrettably unmanageable. In fact design has to be managed just as much as anything else and the uncertainties that are involved are no more serious or disruptive than the uncertainties inherent in any other task within industry that has to be managed, for example, commissioning a new factory or exploiting a new market.”

Walker blames the educational gap. Whereas managers’ education and training tend to focus on analytical studies such as accounting and finance, designers are educated and trained to deal with projects that involve unfamiliar concepts, are predominantly visual rather than verbal, involve fuzzy problems and high levels of ambiguity, and assessments which are “variously, subjective, personal, emotional and outside quantification”. He comes to the conclusions that “The divergence between managers and designers can be detected in personality traits, in habits of thought and work, as well as in educational background.” A comparison between managers and designers is shown in Table 1.3.

While people with different professional backgrounds often have differing value systems that can lead to misunderstandings and conflict, bringing people with different perspectives and ways of thinking together is essential for
innovation. Too often habits and what has worked for us in the past drives our decisions and behaviours. That is why you need people who think differently and challenge the way things are done. As journalist and writer Walter Lipman once said, “If all think alike no one thinks very much.” That is why cross-functional teams play a key role in innovation. However, just putting together a cross-functional team and expecting it to work is to set them up for failure. The differences tend to be implicit and mutual understanding is often wrongly assumed. Eliciting the differences in thinking, preferences and even meaning of words is essential for successful collaboration.

Bringing in a facilitator who is equally at home in the different cultures can be necessary until individuals have come to develop an appreciation of the contributions of the ‘others’. For example, Claudia Kotchka of Procter & Gamble, mentioned earlier, very much describes her role as that of a ‘translator’. In a *Fast Company* article this is described as follows (Reingold, 2005b), “Like a simultaneous translator, Kotchka must express the language of design in a way that people steeped in sales, finance, or research can understand. At the same time, she needs to keep her designers motivated and clear on the fact that an idea that doesn’t increase sales is meaningless in a place like P&G.”

Teams and tools for understanding different team roles are discussed in more detail in Chapter 10.

Whether or not design actually contributes to the success of a product and a company’s performance is critically influenced by management’s attitude towards it (Hart & Service, 1988; Hart et al., 1989). In order to provide managers with insights into the implications of different approaches to the management of design Dumas and Mintzberg (1991) have described five different ways and an evaluation of each option (see Table 1.4). In their view the fifth style, infusion, is the one most likely to lead to the most successful and comprehensive employment of design. However, while the suggested categories give a description of what has been found in companies and are

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**Table 1.3 Differences between designers and managers**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Managers</th>
<th>Designers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aims</td>
<td>Long term</td>
<td>Short term</td>
</tr>
<tr>
<td></td>
<td>Profits/return</td>
<td>Product/service</td>
</tr>
<tr>
<td></td>
<td>Survival Growth</td>
<td>Reform</td>
</tr>
<tr>
<td></td>
<td>Organizational durability</td>
<td>Prestige</td>
</tr>
<tr>
<td>Focus</td>
<td>People</td>
<td>Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>Accountancy</td>
<td>Crafts Art Visual</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
<td>Geometric</td>
</tr>
<tr>
<td></td>
<td>Verbal</td>
<td>Numerical</td>
</tr>
<tr>
<td>Thinking styles</td>
<td>Serialist Linear</td>
<td>Holist Lateral</td>
</tr>
<tr>
<td></td>
<td>Analysis</td>
<td>Synthesis</td>
</tr>
<tr>
<td></td>
<td>Problem oriented</td>
<td>Solution led</td>
</tr>
<tr>
<td>Behaviour</td>
<td>Pessimistic</td>
<td>Optimistic</td>
</tr>
<tr>
<td></td>
<td>Adaptive</td>
<td>Innovative</td>
</tr>
<tr>
<td>Culture</td>
<td>Conformity</td>
<td>Diversity</td>
</tr>
<tr>
<td></td>
<td>Cautious</td>
<td>Experimental</td>
</tr>
</tbody>
</table>

Table 1.4  Styles of design management

<table>
<thead>
<tr>
<th>Style</th>
<th>Critique</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design champion</td>
<td>Whether patron, crusader, team or consultant, may not be a sufficient condition for the full realisation of design in an organisation, but he/she/it may constitute a necessary first step</td>
</tr>
<tr>
<td>2. Design policy</td>
<td>Fine as long as it clarifies the beliefs that already exist in a company; by itself a design policy is of little consequence</td>
</tr>
<tr>
<td>3. Design programme</td>
<td>Sometimes causes a specific change in an organisation and even has a lasting effect when that change serves as a model for other initiatives. But these follow-up initiatives must be implemented and that is commonly considered to require the next approach</td>
</tr>
<tr>
<td>4. Design as a function</td>
<td>For the vast majority of companies, the influence of design is as likely to be measured by the performance of marketing or production as by its own independent efforts</td>
</tr>
<tr>
<td>5. Design as infusion</td>
<td>The permeation of design throughout the organisation. Infusion is informal; the ultimate intention is to have everyone concerned with design (silent design)</td>
</tr>
</tbody>
</table>


Important for understanding different levels of commitment of a company to design, the article does not give any indications as to how or what to do to achieve a particular level of design awareness, nor does it help a company choose the approach to design management most suitable for their situation.

The categories devised by Dumas and Mintzberg are not dissimilar to a differentiation between different levels of understanding of design given by Fairhead (1988) (Figure 1.3).

Figure 1.3  Design – The world is growing.
So, we have already heard that design is an important strategic tool, but why think about it particularly in the context of innovation? I have already mentioned the benefit of bringing together people with different mindsets – and the difficulties associated with it. I would like to elaborate on this a bit more. Think about the mindset that will be dominant in many organisations today; it is a mindset that has been formed and influenced by years and years of cost cutting, downsizing and the search for ever-increasing efficiencies and epitomised by the trend to shorter reporting periods. The people who have risen through the ranks of an organisation are most likely those who have excelled in the above. Asking these people, who are good at cost cutting and paying attention to detail, to approve projects that are characterised by high levels of uncertainty – both in the process as well as the outcome – almost feels like asking the impossible. Table 1.5 contrasts characteristics that are advantageous to: (a) driving out cost and being efficient and (b) creating an environment that is conducive to innovation. People who are extremely good at one are not likely to be good at the other – or in fact even value it. Both mindsets are essential to a long-term successful organisation.

<table>
<thead>
<tr>
<th>Type A: Focus on cost and efficiency</th>
<th>Type B: Focus on support for innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention to detail</td>
<td>Bigger picture</td>
</tr>
<tr>
<td>Present</td>
<td>Future oriented</td>
</tr>
<tr>
<td>Clarity and certainty</td>
<td>Accepting of (initial) ambiguity</td>
</tr>
<tr>
<td>Predictability</td>
<td>Uncertainty</td>
</tr>
<tr>
<td>Numbers driven</td>
<td>Visual, concept driven</td>
</tr>
<tr>
<td>Tight control</td>
<td>Autonomy</td>
</tr>
<tr>
<td>Repetition</td>
<td>Experimentation</td>
</tr>
<tr>
<td>Standards and procedures</td>
<td>Open-mindedness and flexibility</td>
</tr>
<tr>
<td>Failure = disaster</td>
<td>Failure = learning</td>
</tr>
<tr>
<td>Rational</td>
<td>Emotional</td>
</tr>
<tr>
<td>Preserving the status quo</td>
<td>Challenging the status quo</td>
</tr>
</tbody>
</table>

So, we have already heard that design is an important strategic tool, but why think about it particularly in the context of innovation? I have already mentioned the benefit of bringing together people with different mindsets – and the difficulties associated with it. I would like to elaborate on this a bit more. Think about the mindset that will be dominant in many organisations today; it is a mindset that has been formed and influenced by years and years of cost cutting, downsizing and the search for ever-increasing efficiencies and epitomised by the trend to shorter reporting periods. The people who have risen through the ranks of an organisation are most likely those who have excelled in the above. Asking these people, who are good at cost cutting and paying attention to detail, to approve projects that are characterised by high levels of uncertainty – both in the process as well as the outcome – almost feels like asking the impossible. Table 1.5 contrasts characteristics that are advantageous to: (a) driving out cost and being efficient and (b) creating an environment that is conducive to innovation. People who are extremely good at one are not likely to be good at the other – or in fact even value it. Both mindsets are essential to a long-term successful organisation.

<table>
<thead>
<tr>
<th>Box 1.5 Creative traits and designers</th>
<th>Box 1.5 Creative traits and designers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sensitive</td>
<td>12. Flexible</td>
</tr>
<tr>
<td>2. Not motivated by money</td>
<td>13. Fluent</td>
</tr>
<tr>
<td>4. Adaptable</td>
<td>15. Intuitive</td>
</tr>
<tr>
<td>5. Tolerant of ambiguity</td>
<td>16. Original</td>
</tr>
<tr>
<td>6. Observant</td>
<td>17. Ingenious</td>
</tr>
<tr>
<td>7. Perceive world differently</td>
<td>18. Energetic</td>
</tr>
<tr>
<td>8. See possibilities</td>
<td>19. Sense of humour</td>
</tr>
<tr>
<td>11. Able to fanaticise</td>
<td>22. Self-knowable</td>
</tr>
<tr>
<td></td>
<td>23. Specific interests</td>
</tr>
<tr>
<td></td>
<td>24. Divergent thinker</td>
</tr>
<tr>
<td></td>
<td>25. Curious</td>
</tr>
<tr>
<td></td>
<td>26. Open-ended</td>
</tr>
<tr>
<td></td>
<td>27. Independent</td>
</tr>
<tr>
<td></td>
<td>28. Severely critical</td>
</tr>
<tr>
<td></td>
<td>29. Non-conforming</td>
</tr>
<tr>
<td></td>
<td>30. Confident</td>
</tr>
<tr>
<td></td>
<td>31. Risk taker</td>
</tr>
<tr>
<td></td>
<td>32. Persistent</td>
</tr>
</tbody>
</table>
I believe that while senior executives have bought into the concept of innovation with their mind, but not with their heart. The rationale for innovation is increasingly difficult to ignore, the figures of successful innovators speak for themselves. But the praxis of innovation, the experimentation, the uncertainty, the ‘fuzziness’ that characterises innovation – at least at the outset – is very uncomfortable territory for a Type A person.

To change the mindset of leaders and of organisations takes time – anyone engaged in change management is aware of that. One way to accelerate the process might be to bring people on board who already have an innovation-conducive mindset, that is designers. By their inclination, by their personal preferences, and by their training designers have a mindset that thrives on exploration, on challenging the status quo, on developing new solutions. Look at the 32 traits of creative (innovative) people and consider what we have heard about innovation (Box 1.5).

I have highlighted the traits that are often associated with designers too and we find that they share many characteristics of creative people (perhaps not surprising as the design profession is considered to be part of the ‘creative industry’). This does not mean that innovation should be left to the designers, only that designers might have an important contribution to make to the innovation process, and that they might be valuable members of innovation teams. Even though the link between skills and abilities of members of the creative industries and the skills and abilities required for innovation seems quite obvious, not many organisations seem to employ it to their benefit. As the UK Government White Paper on Competitiveness (1995) states, “The effective use of design is fundamental to the creation of innovative products, processes and services. Good design can significantly add value to products, lead to growth in sales and enable both the exploitation of new markets and the consolidation of existing ones.” It continues, “The benefits of good design can be seen as:

- Processes improved by gradual innovation
- Redesign of existing products in response to user needs, new markets and competitor products
- Development of new products by anticipating new market opportunities.”

One final comment on design, in the context of innovation it is the ‘design thinking’ that is critical. Tim Brown, CEO of IDEO has once described it as, “Design thinking is a human centered approach to problem solving. It is a process built from People (inspiration gained by looking & listening to them), Prototyping (ideating quickly to make things real), and Stories (getting things implemented by selling compelling narratives not ‘concepts’).” So, design thinking has four principal components:

- **Customer focus and intimacy** – really understanding what the customer wants – not to be confused with what he says he wants or what is suggested he should want (see also Chapter 9 on market research).
- **Experimentation** – the exploration of different solutions and possibilities before narrowing down on one of a few possible solutions (see also Chapter 30).
- **Prototyping** – expressing the concept in three dimensions to enable discussion, understanding and exploration of different possibilities (see Chapter 12 for further discussion on prototypes).
- **Emotional connectedness** – the end result is appealing to its user/consumer at the emotional level, creating the ‘I want one of those’ effect.
The case study presented in Chapter 2 gives an illustration of the interplay of innovation, creativity and design in a ‘real-world’ situation.

**READING SUGGESTIONS**

**On innovation**


Comment: A very comprehensive overview of issues around innovation, slightly biased towards technology


Comment: Sharing stories and insights from innovation consultancy IDEO.

**On creativity**


Comment: A good collection of articles around creativity, authors include Theresa Amabile, Henry Mintzberg, Daniel Goleman, Michael Kirton, Charles Handy and Rosabeth Moss Kanter.


Comment: Described on amazon.com as “Fresh, innovative approaches to on-the-job creativity utilize physics, history, biology, and chaos theory to help readers find new organisational structures for improved processes and products. Tips include how to design work areas for maximum creativity, and strategies for implementing innovative ideas.”

**On design**


Comment: Provides insights on planning and implementing design management practices, supported by examples of successful practice.


Comment: Built on research into how international companies manage design, the book brings practical examples together with a theoretical framework.

Comment: Nothing earth shattering but a good introduction to design and its place in business.

**SOME USEFUL WEBSITES**

**On innovation**

- [www.innovationleadershipforum.org](http://www.innovationleadershipforum.org)

  Comment: Provides tips and information on innovation (useful websites, organisations, articles).

- [www.thinksmart.com](http://www.thinksmart.com)

  Comment: The website of the US-based Innovation Network, a rich source of articles, book recommendations, a great tool for understanding innovation called Innovation DNA and much more.

- [www.fastcompany.com](http://www.fastcompany.com)

  Comment: The website of the magazine with the same title, loads of interesting articles on and around innovation, well worth a visit.

- [http://www.businessweek.com/innovate/index.html](http://www.businessweek.com/innovate/index.html)

  Comment: Business Week has now a section dedicated to design and innovation; good case studies and other information.


  Comment: The website accompanying the book by Tidd *et al.* with more case studies, tools and exercises.

- [www.innovation.gov.uk](http://www.innovation.gov.uk)

  Comment: The UK’s government website set up with the aim of helping organisations become more innovative, much of it is still under development; it also offers an electronic version of the Design Council’s ([www.designcouncil.org](http://www.designcouncil.org)) tool for the assessment of an organisation’s innovativeness (click on ‘managing successful innovation’).

**On creativity**

- [http://creativeideas.20m.com/articles.htm#General](http://creativeideas.20m.com/articles.htm#General)

  Comment: Website with lots of links to interesting articles and other information relevant to creativity and also innovation.
On design

www.designcouncil.org

Comment: The Design Council are becoming increasingly involved in design's role in innovation, and innovation more generally. They have developed a number of tools, and also provide a wide range of case studies and stories on their website.

www.dmi.org

Comment: This is the website of the Design Management Institute, some aspects of the website are only available to DMI members.

www.nextd.org

Comment: A website that is an online journal, mainly interviews around design, design management and design thinking.