Chapter 6

Facilitating Creativity and Innovation

### The Driving Force Behind Research and Development

The engines behind research and development are creativity and innovation. **Creativity**[1] is typically defined as the ability to generate ideas. Creativity is actually a subset of innovation and refers primarily to the process of idea generation. **Innovations**[2] are defined more narrowly as the ideas, the products, the services, and processes that (a) are perceived as being new and different and (b) have been designed, built, and commercialized. Innovation thus includes both creative idea generation and the actual implementation of the idea.Cf. Hülsheger, Anderson, and Salgado (2009). An invention is an innovation that is not ready for prime time. Inventions are ideas that have been built or conceptualized, but not widely used and available and usually not commercialized.

Creativity is the force behind innovation and invention. Creativity has been studied for many years and a variety of models and insights have been developed in order to understand and facilitate the creative process. Figure 6.1 "Creative Problem Solving and the Creative Star Model" illustrates an updated five-phase model of the creative process that incorporates problem solving, leaning-about, and the learning-by-doing concepts.The classic four-stage model of creativity was published by Wallas in 1926. The art of thought. New York: Harcourt Brace Jovanovich.. See Lubart (2001), for an overview of the various approaches for modeling creativity. The updated model used in this book has been adapted and extrapolated from the following papers: An, Hunt, and Sanders (1993); Cerveny, Garrity, & Sanders (1990). Here are the details of the model:

1. The ability to generate ideas.

2. The ideas, the products, the services, and processes that (a) are perceived as being new and different and (b) have been designed, built, and commercialized.

3. The problem or opportunity that initiates the creative process.

Trigger[3]. This is the problem or opportunity that initiates the creative process. The trigger could occur at home, work, play, or while traveling.

Figure 6.1 Creative Problem Solving and the Creative Star Model
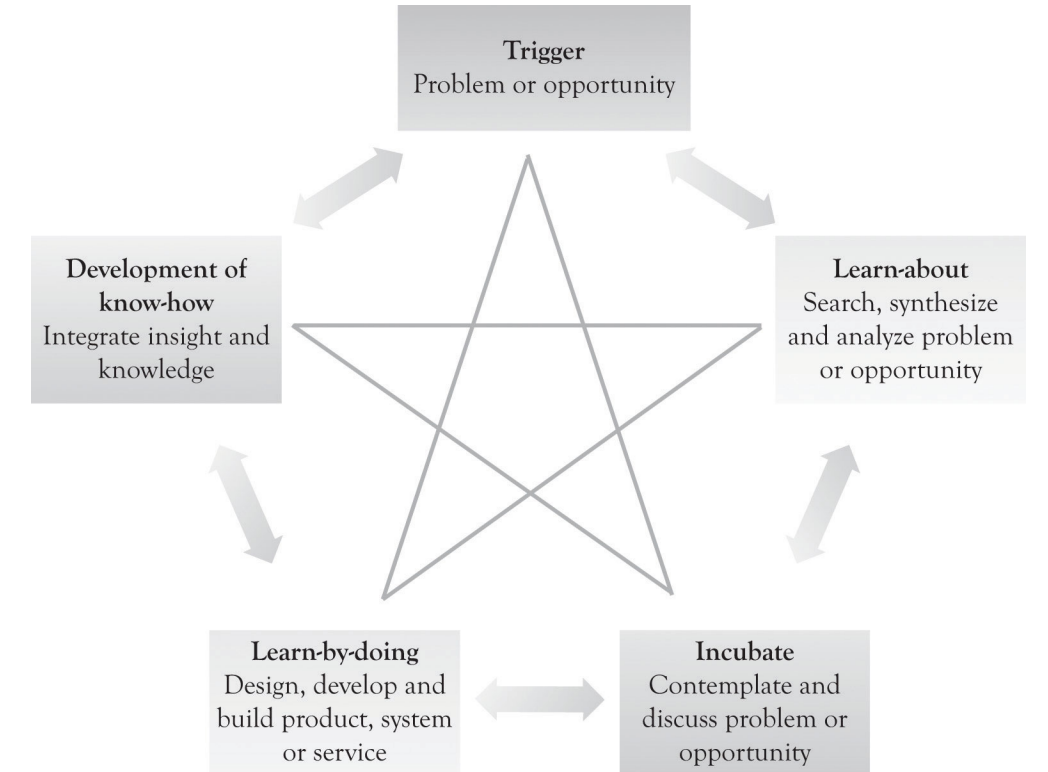
Learn-about activity[4]. This involves searching for information and synthesizing that information. It also involves struggling to understand the information and the creation of new knowledge by analyzing the problem or opportunity. The learning-about activities include reading books and magazines; one-on-one dialog with colleagues and knowledgeable individuals; looking at competitor offerings; interaction with suppliers, customers, universities and research institutes; and attending courses, trade shows, symposia, and conferences.

Incubate. **Incubation**[5] gives the mind time to work on the problem in the background. This not only involves contemplation, but also involves engaging in one-to-one dialog with family, friends, and colleagues on the problem or opportunity.

Learn-by-doing. This involves designing and constructing a solution to the problem or opportunity. It also involves designing and building a prototype, modeling with diagrams, drawing pictures, developing flowcharts, drawing digital or CAD diagrams in 2D or 3D CAD, conducting simulation, identifying system specifications, developing system mock-ups, developing business plans, and even the use of narratives. Designing and constructing might include very rough diagrams or

4. Searching for information and synthesizing that information.

5. Gives the mind time to work on the problem in the background.

developing mock-up pictures of the product or service by using sketching, drawing software, photo software, or presentation software. If the product is a software, then a mock-up screen can be designed by using a word processor, presentation software, or mock-up software. If the idea behind the product or service involves a complex process or business process, then flow diagrams can be constructed or a business process diagram can be developed with presentation software or specialized flowchart and business process diagramming software.

Development of know-how[6]. This is the expertise, skill, and knowledge that can be used to produce a product or service.In large organizations, this information may be put into complex knowledge management repositories and is referred to as knowledge management. A significant amount of knowledge is actually maintained in the largest knowledge repository of all, the World Wide Web. It is the outcome of the creative process that can be used to provide insight and to build and construct products, services, and business processes. It is the applied and practical knowledge that can be used to make the product or service. In start-ups and small organizations, this knowledge is in the minds of the owner, management and staff, and developers. The knowledge may be codified in lists or in what we refer to as Knowledge Books. These Knowledge Books can be maintained on tablets and spiral notebooks and in computer files. They can contain the following information:

- Descriptions of procedures for providing services and products
- Descriptions of what the organization is good at and what it is not so good at
- Job descriptions and links to individuals with certain expertise
- Descriptions of how business processes and tasks are completed

6. The expertise, skill, and knowledge that can be used to produce a product or service.

6.1 The Creative Process is Inherently Nonlinear

As illustrated in <u>Figure 6.1 "Creative Problem Solving and the Creative Star Model"</u>, the process is iterative and not always linear. It is indeed a rare instance that creativity emerges through a simple linear process. For example, leaning-by-doing can spur additional learning-about activity and vice versa. This, in turn, can lead to a series of little *ahas* that eventually translates into the big *aha.* The big *aha* is sometimes referred to as illumination where a solution is found to the initial problem or opportunity identified in the beginning of the creative process. This is similar to what Peter Sims refers to as investing in little bets.Sims (2011). Investing in little bets leads to little *ahas*, which eventually lead to the big *aha.*

Search is very important as we have seen in an earlier chapter, but in the early stages of developing a solution for a problem or taking advantage of an opportunity, searching should be limited to a couple of sources. Hal Varian, chief economist at Google and one of the most insightful economists in this generation, details the following approach for generating economic models.Varian (1997), pp. 2–3.

I think that you should look for your ideas outside the academic journals … in newspapers, in magazines, in conversations, and in TV and radio programs. When you read the newspaper, look for the articles about economics … and then look at the ones that aren't about economics, because a lot of the time they end up being about economics too. Magazines are usually better than newspapers because they go into issues in more depth…. Conversations, especially with people in business, are often very fruitful…. In many cases your ideas can come from your own life and experiences…. However, my advice is to wait a bit before you look at the literature. Eventually you should do a thorough literature review, of course, but I think that you will do much better if you work on your idea for a few weeks before doing a systematic literature search. There are several reasons for delay.

First, you need the practice of developing a model. Even if you end up reproducing exactly something that is in the literature already you will have learned a lot by doing it … and you can feel awfully good about yourself for developing a publishable idea! (Even if you didn't get to publish it yourself …)

Second, you might come up with a different approach than is found in the literature. If you look at what someone else did your thoughts will be shaped too much by their views … you are much more likely to be original if you plunge right in and try to develop your own insights.

Third, your ideas need time to incubate, so you want to start modeling as early as possible. When you read what others have done their ideas can interact with yours and, hopefully, produce something new and interesting.Varian (1997).

The takeaway from this discussion is that the creative process is recursive and iterative. For example, you can spend a little time on learning-about by examining just a few magazines or talking to a few people and then go to learning-by-doing after you let the idea season in the incubation phase. Then, you might go back to the learn-about stage or even the trigger stage as you begin to converge on a solution to the problem. The initial search process should be limited to a few sources and then expanded in order to take advantage of ideas that might have been missed in the early stages of the creative process.

6.2 The Lonely Genius

A common theme that pervades the creativity literature is that creativity demands discourse, tension, dialog, and debate among the interested parties.Gardner (1994). Creativity endeavors are driven by interaction, search, and solitude. One of the most pervasive myths is the notion of the lone genius. The lone genius is the individual who toils away in the confined small room developing a grand theory and innovative ideas with little or no interaction. In reality, many inventions and innovative ideas are derived not in a vacuum of isolation, but rather in a sea of collaboration that is countered with periods of solitude and incubation. The prototypical lone genius is Albert Einstein. Einstein worked as a patent examiner during the time that he developed his ideas on relativity and theoretical physics. Einstein did not develop his ideas in solitude. His knowledge was based on intellectual foundations including his university studies, contemporary research papers of his time, and patent applications he viewed at the patent office. There is also evidence that he drew extensively on his academic contemporaries including Marcell Grossman (a classmate), Michele Besso (a friend at the patent office), and Mileva Einstein (his first wife) as sounding boards for his ideas.See, for example, Highfield and Carter (1993); Isaacson (2008); Ohanian (2008). The point is that anyone can become a wizard of *ahas* if they engage in serious learning-about and learning-by-doing with a pinch of collaboration and dialog. Curiosity and questioning are central to the success of creativity.For an overview of convergent and divergent thinking and questions related to these typologies and the psychological, sociological, and biological theories related to creativity, see Runco (2006). We are assuming that curiosity and questioning have not been completely driven out of the creative DNA that is hardwired in all humans.

6.3 The Habits of Successful Entrepreneurs

Creativity, as we have suggested earlier, can be learned. Dyer, Gregersen, and Christensen investigated the habits of 25 successful innovative entrepreneurs (e.g., Steve Jobs, Jeff Bezos, etc.) over the course of a 6-year study.Dyer, Gregersen, and Christensen (2009). Here is an overview of their findings related to entrepreneurs:

- They make unusual and unique associations and combinations of processes, products, and technologies.
- They are good at asking questions related to the why, why not, and what-ifs processes, products, and technologies.
- They like to observe and scrutinize processes, products, and technologies.
- They are experimenters with processes, products, and technologies.
- They are good at networking.

The authors of the study also note that these skills can be developed through practice and by creating an environment conducive to their development. The following section presents a series of steps that we have identified to create an environment that fosters creativity.

6.4 Environmental Factors Affecting Creativity and Innovation

Creativity, invention, and innovation are driven by a series of little *ahas*.Sawyer (2006). When the little *ahas* are stitched together, they lead to innovative products, services, and business processes. Creative ideas are built on a tapestry of other ideas and the little *ahas* are the basis for both incremental and radical innovation.

Although innovation and creativity can emerge in a variety of settings and situations, some environments are more conducive to the creative process. In one large study, it was found that having a vision, being task-oriented, and engaging in external communication had a strong relationship to creativity and innovation.Cf. Hülsheger et al. (2009). The following section presents the environmental factors that encourage the creative process. They are drawn from a variety of sources including Sawyer,Sawyer (2006). Amabile, Hadley, and Kramer,Amabile, Hadley, and Kramer (2002). Goldenberg and Mazursky,Goldenberg and Mazursky (2002). and Nalebuff and Ayres,Nalebuff and Ayres (2003). and Michalko.Michalko (2006). The following environmental factors can facilitate the creativity and innovation in individuals, departments, and organizations:

Need a shared mission that is focused on a single goal. Creative and intellectual energy is not unlimited. If an individual or a group is working on too many projects, then it is difficult to focus on one particular problem. If the group has a shared mission, this will also lead to group cohesion and further contribution to solving a problem.

Create an atmosphere that facilitates one-on-one collaboration. Group meetings can sometimes provide focus and insight, and assist in bringing focus to the team. It, however, is the one-on-one collaboration that is most effective in fostering the little *ahas* and individual creativity. It is like reciprocal tutoring. Through discussion and dialog, both individuals, the tutor and student, are better able to understand and grasp their particular problem. This is true even when one individual has more knowledge than the other. The teacher often learns more than the student during discussions.

Promote risk-taking and permit failure. There are many paths in life that can lead one astray. Sometimes we can avoid them by gathering additional information, but many times we cannot know that a path is a dead end or is too roundabout until we travel the path. Risk-taking should be encouraged even when the risks are daunting. The road less traveled may be the right path. The idea of learning by making mistakes is the essential part of the learn-by-doing approach. Consider Steve Jobs. He is the prototypical example of failure leading to success. The path to

success was fraught with disappointments including the Apple Lisa, the Power Mac G4 Cube, NeXT computers, and perhaps Apple TV. Counter these failures with the iPad one of the most successful technologies ever released.

Experimentation not only invariably involves some level of failure, but also leads to understanding and insight into what works. As illustrated in a later chapter, investing in a variety of projects diversifies risk and provides opportunities for the future. Making the right investment decision on the right projects and the right products is a combination of having the right information, intuition, and luck by learning-by-doing. Steve Jobs (Apple) and Jeff Bezos (Amazon) intuitively or explicitly invested in real options by exploring the applicability of emerging technologies to create unique products and services.

Allocate quiet time and solitude in order to help individuals think inside the box. There are some creative people who have a special place to go when they want to solve a problem. Quiet time and solitude are essential for the creative process and generating the little *ahas.* Quiet time can be in an office, in a special room, inside a refrigerator box, during an evening run, on the treadmill, in bed, or in the shower. Isolation and quiet time facilitate the creative process. The first thing solitude does is to help us focus on the problem. Even if you are not focused on the problem during quiet time, the mind works in the background reorganizing knowledge and ideas to help solve a problem. For many people, the best time for solitude and creative work is during the first 2 or 3 hours in the morning. I call these hours the Golden Hours. The mind has spent the previous 8 hours organizing knowledge and is primed for problem solving and insight. There is some evidence that artists have their Golden Hours after 10 pm.Wang and Chern (2008). These so-called Night Owl Learners seek the cover of night and solitude to produce their creative endeavors.

Make things by developing prototypes and experimenting. A **prototype**[7] is a real, workable, and quasi-usable system built economically and quickly with the intention of being modified. As noted earlier, a key strategy for sparking creative activity is the learn-by-doing process. Learning by doing means that you make and build things, try experiments, and construct prototypes. Prototypes can be built for products and services, including software. A prototype is essential for learning about what you are trying to invent and also for illustrating proof of concept. The prototype is part of a continuous ongoing process of experimentation and review. If you need to write something or develop something that is artistically creative, then the same advice applies. The initial writing, photograph, painting, or sculpture is the prototype. The mantra of those involved in creative pursuits should be *Prototype or Perish* or *Build or Bust.*

7. A real, workable, and quasi-usable system built economically and quickly with the intention of being modified. The original or mode on which something is based or formed.

Anyone can be creative. Half of the battle of being creative is convincing yourself and others that anyone can be creative. I sometimes hear friends and students say that they are not creative. Anyone can be creative; it just involves applying all of the following strategies:

- Have a mission and focusing on a single goal
- Need one-on-one collaboration
- Take risks and permit failure
- Need quiet time and solitude
- Need to prototype and experiment
- Work hard

In an ideal world, management would be responsible for creating an environment that is conducive to creativity. In reality, it is the individual's responsibility to create such an environment by balancing time at work, at play, and at home that will match the desired level of creative activity. Everyone needs a bit of *aha* in his or her life.

6.5 How to Hinder Creativity

The first way to hinder creativity is to reduce thinking time and try to eliminate solitude. Management can accomplish this in six easy steps:

1. Schedule many meetings. In addition to weekly project meetings, schedule daily meetings to solve all kinds of problems and to show off what has been accomplished.
2. Have each team member account for all of his or her time in detail.
3. Tell people not to talk to each other about their tasks.
4. Interrupt individuals whenever possible. Give team members new tasks to accomplish. If problems arise on other projects, then send them over to help out.
5. Change the product specifications and put in new features at the last minute.
6. Have the team members stay at work 12 hours per day and have them work on weekends.

Lack of time and interruptions are enemies of the creative process. Creativity is diminished when individuals are under-the-gun and the workdays are fragmented with many meetings, with busy work and interruptions.Amabile et al. (2002). Creativity is not very efficient. It takes time to understand a problem and to develop ideas.

6.6 Embrace Some Adversity and Avoid Chronic Stress

There is some indirect evidence that some adversity can make you stronger. Researchers such as Mark Seery, Alison Holman, and Roxanne Cohan Silver found that a certain level of exposure to adverse life events resulted in better mental health and well-being outcomes.Donovan (2010). They found that a history of lifetime adversity, in contrast to low and high levels of adversity, was related to lower global distress, lower levels of functional impairment, less post-traumatic stress, and high levels of satisfaction. Yes, some levels of adversity can make us feel better.

Chronic stress, however, can have a negative influence on health, the immune system, cognitive performance, learning, memory, and brain development in general.Lupien, McEwen, Gunnar, and Heim (2009). When the brain detects some sort of threat, it releases hormones that are used to cope with the threat and the body goes into a fight-or-flight response. Extended or chronic exposure to these hormones and the fight-or-flight arousal state can significantly impair health and cognitive functions and, by extension, the creative process. The bottom line is that a little adversity might be ok; but if the adversity leads to chronic stress, then it will damage the individual.

6.7 Creativity Techniques

The effectiveness of creativity techniques is unclear. This section presents several techniques that have been used to foster the creative process. They are essentially problem-solving strategies for generating new ideas for product and services. This section is a compendium of ideas from a variety of places. You are encouraged to look at the various books that are available for additional insight into the approaches.c.f. Michalko (2006).

Challenge Assumptions by Recombining, Adding, Deleting, or Changing Product Features

Assumptions about how a product should look and perform create intellectual boundaries. As noted by Michalko,Michalko (2006). they become so ingrained that they are never challenged. FlippingNalebuff and Ayres (2003). and reversing are techniques for challenging the assumptions. For example, it is assumed that delivered pizzas should be cheap, hot, fast, and have standard toppings. How about cold, slow, and nonstandard toppings? Cold pizza is not a good idea, but perhaps expensive pizza, with slow delivery and gourmet ingredients, could be a winner. The first thing to do in this approach is to list all the features of a product, reverse the features, and then see what features make sense.

Other ideas where assumptions and product features have been challenged include the following:

- Taking your car to the glass shop to have the window repaired
- New assumption: The glass shop repairs the crack in the car window at your work.
- High-resolution expensive camcorder with many features
- New assumption: The popular Flip Mino was a low-resolution inexpensive camera with very few features. It was popular at one time because it could easily upload files to the Internet.
- Use global positioning system to get you to a location
- New assumption: Give other people your location and let them find you or come to you.
- Putting condiments in glass bottles
- New assumption: Flipping by putting condiments in plastic and turn them upside down (ketchup).
- Have spaghetti tonight, chili tomorrow, and macaroni and cheese the next day

- New assumption: Have Cincinnati Chili tonight. It includes spaghetti, chili, onions and lots of cheese.

Social networking Web sites have championed the idea of combing services in new ways (often referred to as mashups). For example, Facebook combines blogging, photo sharing, marketing, and instant messaging. Twitter has combined text messaging, mini-blogging, instant news, customer tracking, and paparazzi activities in one simple yet powerful system. All in one printers, multipurpose stadiums and Kansas City Chili are additional examples of how simple ideas can be combined into useful products.

Idea Arbitrage: Steal Ideas and Products From Someone Else

Taking ideas from others is idea arbitrage.Nalebuff and Ayres (2003). If the idea is not patented or copyrighted, it will be copied. And even if it is copyrighted or patented, it will probably still be copied.Choate (2005). Legal searching for ideas can come from a variety of sources including basic science journals, the popular press, conferences, and trade associations. As noted earlier, innovation benefits from search. And usually, the more sources you search, the better (this is probably true up to about 11 outside sources). The ideas can also come from other countries and cultures. There is a Web site in China called AliBaba.com where there are literally thousands of products that have never been seen in the West. With idea arbitrage, the goal should be to steal the gem and not the entire crown. Take the best ideas and combine them in order to differentiate your products from the competition.

One interesting application of the idea arbitrage is Etsy.com. Etsy is an online store that provides a market for crafts and handmade items. It has drawn on ideas from both Amazon and eBay and has recently begun to encroach on both eBay's and Amazon's market. It is a superb example of a monopolistic competition marketplace, where product differentiation rules the day.

Midas Approach: Product and Services Developed with Unlimited Resources

The idea behind this approach is that you can generate ideas for solving problems by throwing money at the problem.Nalebuff and Ayres (2003). The problems are the headaches. Even though contemporary life in the USA is pretty much headache free, by 18th-century standards, there are numerous instances where products and services are being developed to relieve irritations. For example, if you have a problem with technical support, then have a technical guru sit outside the door until you call for his or her expertise. Need help with school and homework? Hire a full-time assistant as a tutor. Having problems with snow on the driveway? Install a

heated coil driveway. If you cannot guess when the mail arrives; install a sensor that transmits the status of the mailbox.

Barry Nalebuff and Ian Ayers describe the "*What Would Croesus Do?*" approach in their book entitled *Why Not?*Nalebuff and Ayres (2003). This is essentially a problem-solving approach where you have unlimited resources at your disposal. The goal is to identify products and services for the high end where the consumer is not price-sensitive and is interested in many different features. As noted earlier, we have renamed *Croesus* to *Midas* because it is easier to remember and because it imparts a very colorful and explicit image of high-end features. *Midas* products and services are designed for consumers who are not price-sensitive.

Hermes Approach: Products and Services Developed with Limited Resources

In an earlier chapter, we discussed the Hermes approach to problem solving and developing products and services to relieve headaches. The Hermes part of the demand curve is where the consumers are price-sensitive. This could include students, seniors, and, in general, individuals with low levels of discretionary income or individuals who are value-conscious. In designing products and services for this group you can use the "*What would Hermes Do?*" approach. Hermes was the god of the traveler, the shepherd, the athlete, the merchants, and the cunning, and was linked to invention and commerce. There are a variety of very interesting products and services that have been developed for the price-sensitive end of the demand curve. The idea is to use the top and bottom of the demand curve to generate new ideas for products and services. The point is creating dynamic tension between the two ends of the demand curve and eventually producing the best products for the price-sensitive (Hermes), the high end (Midas), and the middle of the demand curve (Atlas).

Nightmare Features: Think of Ways to Put Your Company Out of Business

An extension of the alleviate headaches approach is to think about ways to put your company out of business or for that matter any company out of business.This idea has been attributed to Alan Kay, one of the pioneers behind object-oriented programming and the graphical user interface, when he was a scientist at Xerox's Palo Alto Research Corporation in the 1970s. When using this approach, the individual should marshal all the creativity approaches, including using unlimited resources to generate problem solutions, borrowing ideas using idea arbitrage, flipping ideas, and recombining products and services. Many of the ideas that have led to putting companies, industries, and even countries out of business were the

result of disruptive technological innovation (e.g., the printing presses, armaments and tactical innovations, networking, computing, communications innovations, etc.). **Disruptive technologies**[8] are product or process innovations that eventually eclipse or overturn the existing dominant technology. They are part of a product life cycle described by 19th-century economist Joseph Schumpeter that leads to Creative Destruction.Rose (2002). Schumpeter was a strong proponent of the entrepreneurial spirit. It was his position that products and services emerge, die, adapt, and re-combine in a never-ending cycle of birth, growth, and decline.

Fostering Creativity in Meetings and with Your Colleagues

The way we perceive the world is constrained by culture, social mores, institutions, education, and neurobiology. In some cultures and businesses, there is a distinct power distance that separates and modifies social interactions.Hofstede and Hofstede (2004). **Power distance**[9] is the degree to which powerful individuals in a country, culture, occupation, or an institution accept and indeed demand subordination, obedience, and differential respect. Institutions with high levels of power distance are characterized by bosses pulling rank, requiring subordinates to clear everything with the boss, and having excessive rules for interaction and task completion. In general, when power distance is high between superiors and their subordinates, there is an aura of authoritarianism and class distinction. This is in contrast to work environments where the power distance between superiors and subordinates is low. In this situation, superiors treat individuals as somewhat equal, giving subordinates important tasks, permitting failure, and giving credit where the credit is due.

It should be noted that the appropriate degree of power distance is contextual. There are some jobs where high levels of power distance are needed (e.g., the military, some construction jobs, and police work) and others where low levels of power distance are desirable (e.g., research and development, piloting a plane, and creative endeavors). Malcolm Gladwell described a situation where high levels of power distance between flight crew members contributed to the plane crashes of a Korean Airlines in the late 1990s.Gladwell (2008). Planes produced by Airbus and Boeing are supposed to be flown by two pilots without a significant power distance between them, where one pilot corrects the other when necessary. As a result of the large power distance between the pilots of Korean Airlines, the co-pilot would not correct mistakes made by the other pilot, which in turn led to the fatal mistakes and crashes. There has even been speculation that the Madoff debacle was the result of too much power distance between the Securities and Exchange Commission and Bernard Madoff.Selling (2009).

It is important to reduce the power distance relationship within teams and at meetings when the objective is to encourage creativity and innovation. As noted

8. Product or process innovations that eventually eclipse or overturn the existing dominant technology.

9. The degree to which powerful individuals in a country, culture, occupation, or institution accept and demand subordination, obedience, and differential respect.

earlier, having a mission, focusing on a single goal, encouraging one-on-one collaboration, encouraging risk taking, embracing failure, and having quiet time can all facilitate creativity. This can, of course, be very difficult to do because the power distance relationship is a somewhat durable, cultural, and institutional variable. Overcoming situations where the power distance relationship is high requires a dramatic approach, such as the *Six Thinking Hats* technique.

Six Hats Approach to Creativity

Edward de Bono has developed a technique for creativity that has been outlined in his book the *Six Thinking Hats*.de Bono (1999). The objective of his approach is to encourage problem solving and creativity by having team members wear different hats. This approach just might help to reduce relationships where the power distance is high. The following presents a brief overview of how the different hats influence team interactions and information gathering:

- **White Hat Thinking**[10]: This involves gathering facts and figures related to the problem. It is also used to identify areas where more information is required.
- **Red Hat Thinking**[11]: This involves emotional thinking. Gut feelings and passionate evangelism are permitted.
- **Green Hat Thinking**[12]: This is where creativity is encouraged. Creative solutions are in order and you can draw it from the approaches discussed earlier (flipping, idea arbitrage, combining ideas, and unlimited resources).
- **Black Hat Thinking**[13]: This involves the use of critique and judgment to assess the negative aspects of a solution. Key questions to be asked include whether the solution is viable and whether can it be executed.
- **Yellow Hat Thinking**[14]: This involves the positive aspects of a solution. It is important to be optimistic about the solution when under the yellow hat.
- **Blue Hat Thinking**[15]: This involves trying to get a strategic look at the problem. An attempt is made to get at the big picture in terms of where were we, where do we want to go, and how do we get there.

The six hats approach is a useful activity that may help to bring different perspectives into the creative process as well as reduce high levels of power distance. When implemented properly, it encourages participation and helps reduce dysfunctional power relationships among team members.

10. Involves gathering facts and figures related to the problem. It is also used to identify areas where more information is required.

11. Involves emotional thinking. Gut feelings and passionate evangelism are permitted.

12. Where creativity is encouraged. Creative solutions are in order and you can draw it from approaches like flipping, idea arbitrage, combining ideas, and unlimited resources.

13. Involves the use of critique and judgment to assess the negative aspects of a solution. Key questions to be asked include whether the solution is viable and whether can it be executed.

14. Involves the positive aspects of a solution. Optimistic about the solution is important.

15. Involves trying to get a strategic look at the problem. An attempt is made to get at the big picture in terms of where were we, where we want to go, and how we get there.

6.8 Conclusion

In this chapter, we have discussed the concept of creativity and innovation, and identified various approaches on how to foster them. There are several all-encompassing lessons that can be derived from the previous discussion:

- Innovation is the result of willful and serendipitous interconnections between the little *ahas.*
- Innovation usually involves intellectual and technological maturity levels so that learning-by-doing is possible.
- Innovation requires dialog, learning-about, encouragement, time, solitude, experimentation, construction, and some pressure, but not too much.
- Learning-about, learning-by-doing using prototyping, and hard work are the keys to creativity and successful innovation.

Innovation is an important driver leading to organizational financial performance.Han, Kim, and Srivastava (1998). It is after all the catalyst for developing differentiated products and services for competing in monopolistic competition markets. Research and development is driven by the diffusion of science and the translation of basic science into commercially viable products and services. R&D by entrepreneurs may not involve basic scientific research, but it does involve searching for ideas that will lead to differentiated and marketable products and services.