

Chapter 2

From Imagination to Creativity

Imagination is the necessary ingredient for major innovational breakthroughs. There have been different explanations as to how imagination might start and how to keep it going. Manu (2007) maintains that starting the imagination journey is triggered by the desire for a better quality of life. However, Epstein (1996) posits that a specific challenge jolts the imagination. This chapter discusses 12 propositions that foster the imagination journey.

What Is Imagination?

If superior innovations are the goal and if we agree that imagination is the main mover of the process, then we must ask what imagination is, what makes it start, and how do we keep it going. These questions are important not only for a society, but also for a company trying to survive in the international or national marketplace.

If imagination is the ability to form images and ideas about things never seen or experienced before (Manu 2007), then it is creating new knowledge. Imagination has multiple aspects. It can provide the ability to think of something that does not currently exist but may be possible to develop. It can help develop mental images. It can explain events or activities by providing reasons rather than causes. It can foster the ability to create work that would explain human life and how to advance it. But the assumption that only gifted people have imagination is incorrect. Anyone can have imagination that can lead to creative thinking. Imagination, as mentioned Chap. 1, is connected to free thinking and knowledge creation. The starting point in the whole process is provoking the imagination. Some four approaches have been suggested – using words, visualizing, reversals, and alternatives. Imagination can be provoked by using words to explain or visualize certain abstractions, looking at the opposites of events or happenings, reversing the imagined events, and thinking of alternatives for what is being considered (Plesek 1997). Critical thinking that may absorb all these aspects and go beyond them is a real imagination activator.

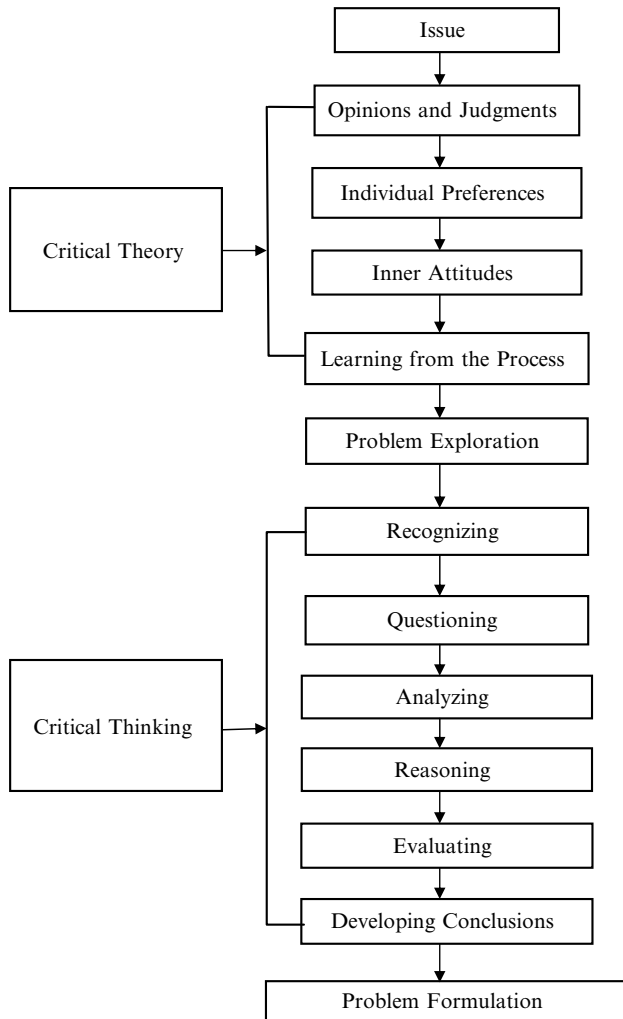


Exhibit 2.1 Critical theory and critical thinking: transformation process (Adapted and revised from Weil and Anderson 2000)

As Deming (1993) stated, learning cannot take place without some theory. If critical thinking is likely to lead to learning through imagination, then knowledge may be created, and it may be necessary to examine critical theory as the formulator of critical thinking. Exhibit 2.1 connects the mechanics of critical theory and critical thinking.

The theoretical aspect of Exhibit 2.1 illustrates my conception of critical theory. Critical theory is a way of structuring free thinking. Free thinking begins with any type of imagination provoker. It may take different forms depending on the receiving

individual characteristics as well as the nature and perceived significance of the event, happening, or news. Unlike its traditional interpretation, critical theory as discussed here does not involve criticizing society from some general theory of values and norms. Rather, it uses issues and events to create information. As Exhibit 2.1 illustrates, in this book an orientation toward issues and events go through four modifiers: opinions and judgments, preferences, attitudes, and learning from the process. I believe critical theory is individualistic and varies from one individual to another. As knowledge is created through critical theory, that knowledge is further modified through critical thinking based on six additional steps as seen in Exhibit 2.1: recognizing, questioning, analyzing, reasoning, evaluating, and developing conclusions.

The Six Steps

Recognizing an issue, an event, or a societal problem is fostered by exposure to news and other available information. It is the individual's choice to concentrate on one or few of these issues.

Questioning the merit or impact of an issue entails judging its parameters. Analyzing the issue is a natural move for a free-thinking person. Depending on his or her level of sophistication, this step can generate the foundation of new knowledge.

Reasoning is part of the analysis, but is more of an advanced form. Here the free thinker tries to determine the causality of the event or the issue.

Evaluating the event or the issue is important in determining the importance of exploring it. This is a comprehensive activity that leads to conclusions that may in turn lead to a problem statement that needs to be explored in detail.

Thus, as seen in the exhibit, while critical theory systematically explores certain events and activities that may be bothering the individual, critical thinking provides a problem formulation. As indicated in Chap. 1, without a formulated problem there cannot be creativity, and without creativity there cannot be important innovations. It is most important point to transform events into a problem and to solve that problem in a creative manner by generating important innovations. This particular series of transformations is important for the society as a whole; however, it is even more important for companies that are trying to establish a powerful presence in the marketplace and to enjoy the rewards of being very creative in the form of profits while they are enhancing the consumers' quality of life in the society through their innovations.

Imagination in Action

Here is an illustration of the process. Mr. X sees much discussion in the mass media regarding the problem of increasing energy demand in society. He reads about the BP oil spill that was caused by the company's poor management. Mr. X is a reasonably

educated man. He connects the energy problem to his rising monthly energy bill. Since he believes his country must become energy independent, he starts thinking and reading about alternative energy sources. He thinks that environmentally friendly energy production is preferable. He thinks that because digging holes in the beaches, polluting the atmosphere, and creating deadly residues are not environmentally friendly, there must be a better way of developing energy sources. He learns that fuel cells may be the best alternative. They can be used for all sorts of energy generation. They are hydrogen based and they create water rather than pollution. Thus, he learns from the process of examination and elimination that he is now ready to explore the feasibility of this possibility. Thus Mr. X uses critical theory. This basic orientation facilitates his starting to think critically about the general problem area; his thinking can be put in the form of a concrete problem. This is my take on critical theory. I apologize to the purists of this theory, but a theory needed for critical thinking, in the absence of a widely accepted theory, necessitates an approach such as this one to harness the individual imagination for corporate and global gains.

Mr. X in this case may not work for an energy company, but he can continue his critical thinking by first recognizing the possibility of fuel cell energy. The next step in Exhibit 2.1 is questioning if this alternative is feasible. Analysis of this possibility against all other major alternatives is the critical next step. Here careful reasoning about why and how this alternative can be considered viable becomes a focal point. After careful evaluation of the process and the formation of positive conclusions, it is in the hands of corporate creativity to develop and market fuel cells as a major energy alternative. Of course, if Mr. X is part of an exploratory group, the results of the critical thinking must find their way to a corporate entity that would take this critical problem as a major focus activity and carry on from there. But unless the organization has the capability to comprehend the seriousness of this problem and initiate a major research activity, this situation becomes a total waste of time (Glynn 1996). Here the failing imagination means not having an innovation to develop. Companies often make routine and innovative responses to novel and complex problems such as the energy issue discussed here (Marcus 1998). Thus, it is extremely critical that the free thinking of imagination is connected to corporate efforts so that by the aid of creativity a superior innovation can be generated.

Imagination Building

All societies, all individuals, and all businesses must make an effort to foster imagination. If imagination is provoked by words, visual imagery, considering reversals, and deviation from existing values, then that imagination will be cultivated by the training that critical theory provides, and this process would lead to further critical thinking. That thinking may start with a person who was trained in problem exploration critical theory and who will take that problem and explore it further by critical thinking. Exhibit 2.1 demonstrates recognizing a problem area, recognizing the most critical articulation of the problem area, further questioning its relevance,

analyzing if the problem area can be articulated as a concrete problem and if there is reasoning behind it, and determining how powerful its justification would be in forcing a certain conclusion that at this point is still only a problem formulation.

Enter Creativity

Creativity does not have to be connected to imagination. While imagination is free thinking independently and outside of the box, creativity is responding to a problem with the tools and knowledge in existence. It is thinking within the box. The existing knowledge base, without using any imagination, can easily lead in the direction of modest incremental developments in existing products or services. One can easily observe this progression in the example of typewriters. In the beginning, typewriters were bulky and their keyboards were not standardized. So the next step was the standardization of the keyboard. The heavy and difficult to move typewriter gave way to the portable typewriter. But it was still a manual device. The next steps were the slow and incremental development of electric typewriters and then the development of the modern personal computer. The computer made the typewriter obsolete, as computers offered all the features that typewriters offered as well as many improvements. Thus, a radical innovation took over an incrementalized product.

Indeed, the computer could not have been invented without a major imagination providing input. But incremental improvements of the typewriter could easily have taken place with some creativity without having a major imaginal input.

Imagination Versus Creativity

Although some believe that imagination and creativity are related and interdependent, I believe that they are separate phenomena. This is one of the major issues presented in this book. It is possible to display creativity without imagination. This type of orientation is depicted in this book as *thinking within the box*. Indeed, some existing products do need incremental adjustments; however, such incrementalism can be detrimental to the company and to the industry. In such situations pure creativity may have a role to play; however, many well-managed companies eventually get into trouble because they emphasize sustaining technologies. Their managers ignore what I call disruptive technologies.

A company that has been doing well in terms of profits and position in the industry may be listening to the customers' comments and utilizing prevailing technologies; hence it is practicing "good management" and may be using creativity only. It may be in danger of facing radical innovations generated by disruptive technologies that are products of the imagination (Christensen 2003). Thus, good management may blind the company and prevent it from investigating new disruptive technologies. Products based on disruptive technologies are typically cheaper, simpler,

Exhibit 2.2 Disruptive technology impact

Established technology	Disruptive technology
Silver halide photographic film	Digital photography
Notebook computers	Hand-held digital appliances
Offset printing	Digital printing
Cardiac bypass surgery	Angioplasty
Wire line telephone	Mobile telephones

smaller, and more convenient to use. However, the disruptive technologies based on the use of imagination as well as creativity are likely to be breakthrough products that are also called radical innovations. It has been stated that IBM, by insisting on the continued development of main-frame computers and ignoring personal computers, has lost about \$15 billion. Similarly, Kodak, by ignoring digital photography, lost billions of dollars. Exhibit 2.2 illustrates some of the products generated by disruptive technologies.

A greater combination of imagination and creativity gave us steam engines, iron boats, airplanes, and automobiles. The impact of these products on our quality of life cannot be underestimated. But the key point here is that, above all, imagination must be cultivated.

Cultivating Imagination

As seen in Exhibit 2.1, imagination cultivation is most likely related to systematic free thinking and not to a specific problem. At the beginning of this chapter, we discussed provoking the imagination, but it is necessary also to continue stimulating it. Exhibit 2.3 illustrates nine imagination stimulators and their impact. Perhaps the most important point in this case is that trained free thinking is not within the context of business, making money, or solving a specific problem. It is free thinking that is analyzed or formed by critical theory that may lead to formulation of a problem or an issue.

The stimulating factor in imagination is abstract thinking. If individuals reach a point of thinking up things that do not yet exist, or have not even been perceived, then the imagination is constantly stimulated.

Somewhat connected to the previous point is thinking beyond reality. The ability to develop unreal concepts and think of them as realities can be a positive stimulator.

Thinking in fictional terms and making fictional images from realities can be a powerful imagination stimulator. Perceiving events and concepts from the real world and converting them into fictional realities is a very powerful imagination activity.

In many ways the first three imagination stimulators can work individually or together to help generate mental images. The key is being to conceptualize beyond the realities of day-to-day living. Then total thinking is stimulated to the point of reasoning and connecting conceptualized mental images. Perhaps at this point events are

Exhibit 2.3 Imagination stimulators (Adapted from Plesek 1997)

Factors	Impact
Stimulating abstract thinking	Ability to think of something that has not been perceived
Thinking beyond reality	Unreal concepts are possible realities
Thinking in fictional terms	Making fictional images from realities
Generating mental images	Conceptualizing beyond realities
Stimulating thinking	Ability to reason and put things together
Identifying causes	Explaining events not by reasons but by causes
Generating beliefs	Perceptions are transformed into beliefs
Appreciating events and happenings	Converting events into meaning and value of life
Being sensitized by work	Expressing work in the form of meaning of human life

explained in terms of causality. Once causality emerges, then beliefs may be generated. All events at this point can have meaning and can have impact on the value of life.

This development process can become work related, and the individual's imagination may work in the direction of a problem area formulation. This is what Jonathan Swift articulated as "vision" – the art of seeing the invisible (Caroselli 1998). Although imagination stimulators may work individually and differently from person to person, these stimulators may also create a cumulative effect. Thus critical thinking systematically can be a continuing activity by the aid of imagination stimulators. The whole process focuses on certain problem areas.

Using Imagination for Creativity

This book distinguishes imagination from creativity. Not only are they different, but they may not even coexist. One of our key points in this book is that if imagination and creativity coexist and interact, then the chances of generating major breakthrough innovations are likely to be much higher. Therefore, one of the objectives of this book is to bring the two together.

As discussed at the beginning of this chapter, at the end of critical theory conditioned by critical thinking there will be a problem formulated for the management of an organization, at which point creativity takes over to solve the problem. The key point here is to realize that critical free thinking takes place without a problem and at the end articulates a problem. Creativity, on the other hand, starts with a problem and tries to develop new and original ideas and products primarily within the constraints of the problem defined by the imagination earlier. Thus, creativity starts with a challenge and creates a flow of ideas, one of which is likely to lead to the emergence of an innovation (Epstein 1996).

Facing the problem that is reasonably articulated does not mean imagination can go to work and come up with a winning innovation automatically, but it is a good start. One of the most critical issues facing organizations is the challenge to come up with a new and improved innovation, preferably a radical innovation. The creativity process, therefore, must take its time and proceed carefully (Burton 2009).

Exhibit 2.4 Cultivating creativity

Critical steps	Needed action
Preparation	The details of the problem must be carefully studied
Exploration	Explore in detail the alternative possible solutions
Development	Scale alternatives down to one or two most viable ones; develop prototypes if possible
Action	Consider all the details as to how to launch a new product or service

How Does Creativity Work?

Over my long professional career I found a general formula that is workable. Exhibit 2.4 illustrates how creativity may be stimulated.

Preparation for a problem-solving activity, which in this case may lead to a major innovation, begins with understanding the problem. It means not only that the problem in general must be understood, but also that its details must be carefully examined.

Exploration is the second step in the creative process. Here the key alternative solutions for the problem must be explored in detail. Although many alternatives may look equally appealing at the beginning, the critical point is being able to choose the best alternative. In order to identify the best solution there must be one or more evaluated criteria that will help identify the best solution.

The development stage is the third step. Once the alternatives are scaled down to one or two viable solutions, then in the product development process there may be one or multiple prototypes that can be tested by a panel of prospective users.

Finally, the action step deals with materializing the process by developing the details of how the new product will be launched. The early indicators of the effectiveness of the product must be developed, and a general feedback program must be established to allow quick changes or adjustments in the product.

Summary

This chapter discussed a cumbersome but necessary process for developing innovations that are likely to make a difference. Innovations are classified in terms of incremental versus radical.

The chapter emphasized that radical innovations that use disruptive technologies are most likely to make a major impact in the society and contribute to the firm’s well-being. It all starts with imagination that is thinking outside of the box, and not in terms of a product or in terms of money making. Imagination is dependent on critical theory and critical thinking. At the end of the imagination, critical thinking poses a problem. This is where creativity enters into the picture and explores how the problem is likely to be solved and how this solution can be translated into an

innovation. Without imagination, creativity leads to incremental innovation. With imagination, the innovation can be radical such as the electric motor, the telephone, the vaccine, the iron boat, the H-bomb, and the like. If the process in this chapter is followed, the activities related to critical thinking would generate a concrete problem that may lead to developing a significant innovation.

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