Three Dimensional Creativity
Three Navigations to Extend our Thoughts
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Three Dimensional Creativity

Three Navigations to Extend our Thoughts
What is creativity? Simply put, it is the power to create a new idea. A new idea means that you are different from another person or the man you were yesterday. Everyone says that creativity has gotten more important since the society has become complicated and uncertainty has increased. As the society and technology change rapidly, any knowledge, no matter how important and good, may become of no use in 10 years.

We may ask ourselves: How much effort and time am I putting into developing that important creativity? Most would answer not even more than an hour. It is strange, is it not? Even though we know the importance of developing creativity, we put no effort into it at all. No class of creativity is conducted at school. No training course for creativity is offered at companies.

Have You Invested at Least One Hour to Develop Your Creativity?

Why don’t people invest time in cultivating their creativity? It may be that people think creativity is not something they can earn by sowing effort. They may think that creativity is something that people are born with, and it cannot be enhanced even if they work at it in a classroom.

Is creativity something that we are simply born with and cannot hone with effort?

Some say that reading a lot of books contributes to developing creativity. Some say that setting aside some time to imagine a lot works. Some say that if you focus on a certain matter, a new idea may come up. Indeed, such methods can contribute to enhancing creativity, but they are too vague. It is similar to saying you have to “practice very hard” to be good at playing soccer. The fact that you hear only those vague words indicates that people do not fully understand what creativity really is.

In general, our thinking sticks to reality unless there is any external stimulation. Thinking is fixed on a point of time, a position, and an area that we are interested in. With our thinking fixed on a certain situation, it becomes difficult to come up with a fresh idea. A fresh idea is likely to come up when our thinking is freed. When it is absorbed with an object, we cannot say that it is freed. We may see those around us who imagine a lot to create many original ideas. They make countless new ideas since their thinking is unhampered.

Questions Hinder Your Mind from Sticking to Reality

To come up with new ideas, it is necessary to break your adherence from reality. Once you do this a new environment will be ahead of you and your brain
will be stimulated by it. The stirred brain is activated to create new thoughts. That is why some say that traveling or reading books helps create new ideas. These activities spur the individual, directly or indirectly, toward a new environment.

It can be challenging, however, for us to go on a trip or read books constantly. Is there any other way to stimulate the brain?

Yes, there is, and it is by “questioning.” The brain is kindled when given a question as the brain concentrates on what the question presents. When a question arises on the Winter Olympics in 2026, the thinking is directed to the year 2026 and to winter sports.

When a new problem comes up at school or work, people may gather together for brainstorming as a way of solving the problem. Brainstorming is a discussion among people in which they question each other. What they say becomes a question to another, and what others say becomes a question to them. While exchanging words, they may come up with new ideas, and often they are directed to the solution to solve the problem. In other words, asking questions rouses the brain and makes it produce fresh ideas.

Although people may not question you, you may ask yourself questions to constantly stimulate your brain even when you are alone. New ideas are churned if you continuously throw questions at yourself. This routine gradually will help you become a creative person.

Two issues are involved in developing creativity: First, what questions would you ask yourself? Second, how can you make yourself ask questions?

**What Questions Would You Ask Yourself?**

Let us think about the first point. A question needs to be universal so that it can be applied to various areas. The question has to be about the basic elements of things. In this regard, three questions are suggested as follows:

1. **Question of Time:** When a problem arises, question yourself on a time axis first of all. How would the matter be handled 10 or 20 years from now? Such question will stimulate the brain, and this line of thought will move to the point of time that the questions lead to. When directed to a new point in time, the brain starts to imagine the environment in that point in time.

2. **Question of Space:** When given a problem, ask yourself some questions on its spatial elements. How would the matter be handled in Saudi Arabia? How would the matter be perceived in China? How would the shape change? Think of the given problem in another angle of space. In the process, you may encounter a new environment, which will stimulate your brain and make it come up with a fresh idea.

3. **Question of Field:** Apply the given problem in a variety of fields. How would the matter be handled in the field of music? How would it be treated in the field of electronic engineering? If you think of the matter in different fields, a convergence among fields takes place, and new ideas are likely to emerge.

Because the three elements explained earlier are basic components consisting of almost everything in the world, everything can be defined by them. Questions about them can touch almost all the important aspects of given problems.

Asking yourself the three questions above will make your brain travel in a new environment more freely. True, this is a theory. A theory, no matter how good it is, would be of no use unless you apply it. For instance, no matter how good you are
at reading musical scores, you cannot play music well unless you practice playing frequently and get familiar with an instrument. You need to repeatedly practice to the point of making something your habit.

**How Could You Make Yourself Ask Questions?**

All mental behaviors of humans originate from the brain. All its processes are recorded in its circuit that consists of brain cells. It is a neural circuit that controls recognition and judgment. Memorizing new facts is a process that creates a neural circuit. Playing repeatedly to be familiar with music and adjusting to local time in an overseas trip involve the formation of a neural circuit. Every memory and every habit are made by a neural circuit, and such a neural circuit is never formed at once; rather, repeated efforts are necessary to make one. This is why you need repetition to memorize a new word or be adept in playing music.

What makes an individual repeat a pattern? Humans resort to pleasure. Pleasures are a strong element that induce human behavior. Pleasures depend on dopamine, a neural substance released from the brain. Humans secrete dopamine when commended. Commendation pleases a person and makes him want to be commended again. Such repetition results in the formation of a neural circuit. Commendation is important when it comes to repeated efforts. It leads to repetition, forming a neural circuit, a habit, and a good disposition in an individual. Parents and teachers need to give commendations to elicit good conduct.

But how could you make yourself ask questions when alone? It is necessary to make it a habit to ask the three questions of time, space, and field in such moments. When it becomes your habit to ask yourself questions, a lot of new ideas will come to you. Make a neural circuit that asks the three questions. Self-questioning is necessary when a problem that needs to be solved is encountered. As the process of questioning is repeated, it will become a habit, and this ingrained tendency will help you to become a creative person.

![Content flow of creativity]
The Three-Dimensional Navigation That Expands Your Thinking

The three questions suggested here are given on the three axes: the axis of time, the axis of space, and the axis of field. Combining these three results in forming a three-dimensional world, and you can free yourself from reality as you move on the three axes in the three-dimensional world. In such a free state, the brain produces a wealth of new ideas.

The three questions are universal and applicable to every problem. They are subdivided so that they can be readily applied to practical matters: The question of T (time) is divided into T1 (Transpose), T2 (Tempo), and T3 (Translation). The question of S (Space) is divided into S1 (Shape), S2 (Site), and S3 (Size). The question of F (Field) is divided into F1 (Function), F2 (Fertileness), and F3 (Fusion). These categorized rules are applied on the three axes, respectively.

When a brain is given a question, thoughts move along the direction the question points out. Thus, questions play the role of directing our thinking. This navigation prompts us to explore another area. When navigating another place, we encounter a new environment and tend to produce new ideas. Hence, the three questions suggested here can be spoken of as a navigation that expands our thinking, and the three-dimensional axes a frame that enables us to think three dimensionally.
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Abstract Can creativity be cultivated? Or is it something inherent that cannot be built despite one’s efforts? This chapter gives an answer to this question. New ideas come from stimulation of brain. In general, we are fixed on reality, and thus a new idea doesn’t come up easily. Asking questions stimulates the brain to release us from reality, and repeating such questions forms the habit of asking questions that increases creativity. Repeating forms neural circuit corresponding to the habit in the brain. Three types (time, space, field) of questions are recommended.

Keywords Creativity • Asking questions • Habit • Neural circuit • Neural network • Time • Space • Field • Brain

Canoeing and rafting are two popular boating games. Canoeing is an event for paddling along a fixed course on a serene lake, in which it is important to exert power uniformly at the captain’s command, and rafting is paddling downward in the valley along the river, in which no one knows when he will be confronted with a rock or a whirlpool. New situations develop all the time, for which there is no fixed manual. Therefore, all members of a team must be on strict alert for problems that may appear at any moment.

Living in modern society defying the forecast of 1 year later is something like rafting. For one thing, it is hard to predict the world’s economy satisfactorily for the next month. We are in the dark about whether another Steve Jobs will appear next year after the earthquake in the industrial world. This really convinces us that we are living in the age of uncertainty.

Creativity shines up even more in such times. The future does not unravel in a definite course and is hard to prepare for in advance. We have no choice but to respond anew at every turn of the moment. Under these circumstances, standardized knowledge is outshone by creativity that can devise a new idea to work out a problem. For such reason, it is said that in the twenty-first century, “creativity” is the most important trait we need to be equipped with (Fig 1.1).
Can creativity be cultivated? Or is it something inherent that cannot be built despite one’s efforts? Answering this question requires an attempt to define creativity. Creativity is the characteristic of thinking differently from others. It means having different thoughts from the next one or from yesterday as a self. Creativity also means the ability to come up with a new idea.

1.1 Creativity Starts with Asking Questions

Analysis shows that around 20 % of the Nobel Prize winners in history are Jews. Since there are about 16 million Jews living on earth, this number corresponds to only around 0.22 % of the 7 billion population of the world. So what makes it possible for a people accounting for only 0.22 % to take away 20 % of the Nobel
Prizes? Isn’t that something enigmatic? Can the Jews be born with special genes related to creativity? It is biologically impossible.

The Jews have their people’s identity maintained through their maternal line. If a mother is Jew, her child also becomes a Jew whether the father is Jew or not. Since genes are mixed at random, it is impossible to keep preserving the mother’s genes and hand them down to children. Thus, we cannot assume that the Jews are born with special genes for creativity.

I have once met and asked a Jewish friend about their creativity but he said he didn’t exactly know the explanation for it. He did say, however, that he had heard a lot since childhood about the virtue of asking many questions, asserting oneself, and discussing matters. He said he had made many discussions at home with his parents and been encouraged at school to ask many questions, adding that Talmud, the traditional textbook for Jewish education, says so, too. I have finally found that it is Talmud education that makes the Jews what they are.

Education means excavating and developing talents, not just looking at what is natural but developing ability by artificial endeavor as well. So is creativity. Some people say that creativity is something natural and cannot be acquired by endeavor, but actually they don’t know the mechanism of creativity. As the Jewish Talmud implies, asking many questions and generating discussions can cultivate creativity.

When we are fixed on reality, a new idea doesn’t come up easily. In this case, getting out of reality can bring forth a new idea. Since asking questions stimulates the brain to release us from reality, repeating such questions forms the habit of asking many questions that increases creativity. Asking questions frequently requires a third party’s praise each time. In short, it is asking questions and obtaining compliments that cultivate creativity. This means positive enforcement is important to building creativity (Fig. 1.2).

Incidentally, the fact that this kind of repeated endeavor can trigger creativity can be fully explained by the theory of neuroscience. What we humans think and remember are brought about by a network of neurons. Synapse among neurons constructs a connection and creates a network among neurons. If you repeat something by endeavor, it builds a neural network and this builds a habit. Practicing a foreign language or playing an instrument also involves building a neural circuit.

1.2 Methodology for Developing Creativity

When we need to emphasize or learn something, it begins with a methodology. For example, in learning to play soccer, there is a way of practicing it. Practicing running, kicking a ball far, passing a ball, shooting, etc. will lead us to being a good soccer player in the long run. Likewise, there is a way of learning to play the guitar. We hold the strings of the guitar and play a few keys that make a chord. After combining these keys and producing continuous sounds, we create music.

However, there seems no way to develop creativity, which everyone says is important. Being asked how to increase creativity, they simply say reading many books or
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thinking often leads to creativity. It sounds like one should practice much in order to play the soccer well. How much would it serve the one who was asked to play the guitar well if he were just told to practice without any concrete way presented?

This book was written to answer precisely how to develop creativity. The theory for developing creativity referred to in this book chiefly follows theoretical development as described below.

- Creativity is hitting upon a new idea.
- A new idea is likely to occur while asking questions.
- Asking questions to ourselves helps release us from reality.
- A habit can be formed by creating a neural circuit.
- A neural circuit is built through repetition.
- Giving compliment is important for reinforcement of the neural network.
- Building a habit of asking questions increases creativity.
- It is while we are alone that we can nurture the habit of asking.
- Ask questions by extending thoughts along the three axes of time (T), space (S), and field (F).
- Cultivate the habit of asking questions in three-dimensional TSF.
- Taking the habit of asking three-dimensional questions can make a creative person.
- By knowing the mechanism of creativity, we will not simply give up and say that being creative is natural.

1.3 Extend Your Thoughts Guided by the Three-Dimensional Navigation

The writer has long had a tendency to think of what will happen 5 years later or how things will change 10 or 20 years later. It seems that I have paid even more attention to the future due to my major of Computer and Bio-and-brain
Engineering, which are fields that undergo change extremely fast. Not only to myself but also to my students have I mentioned words oriented toward the future or change of “time.”

With the advancement of information and communication technology, the concept of distance has changed. It has become possible to exchange information even with people far away as if they were next to us. The world has become something like a small city and to adapt to this kind of change, people have been forced to talk about globalization, or consider pulling down the wall caused by the walls in “space.”

As modern society turns even more complex, the field is becoming departmentalized. The complexity of social phenomena is hard to comprehend totally with human ability, so people have come to concentrate on only part of it. This concentration on a particular discipline results in not knowing what is happening in a field next to ours. Thus, looking around many spheres by converging “fields” can lead to a new idea.

The three elements (time, space, field) explained earlier are basic components of almost everything in the world. Almost all the things can be defined by them. When a problem is given, it’s important aspects can be touched by questions about the three elements.

While if simply being unchanged we are likely to adhere to reality and be entrapped in a fixed idea, moving along the three axes (time, space, field) mentioned earlier can get us out of that reality. We can escape from a fixed idea along the three navigations. This book is intended to present a three-dimensional navigation (i.e. questions) and explain the way to escape from a fixed idea with this navigation. It is also a method to cultivate creativity by extending our thoughts with this navigation of three components (Fig. 1.3).

1.4 Creativity Made by a Neural Circuit

The three axes of TSF (time, space, and field) are bound together into one frame, that is, three-dimensional creativity. This is the combination and integration of TSF components already existing as individual elements. By combining three dimensions, a three-dimensional world is formed and traveling this three-dimensional world allows escaping from a fixed idea because we cannot be restricted to reality anymore. Like the prince in *Le Petit Prince* by Antoine de Saint-Exupery, we can watch the world from outside of the earth. Escaping from a fixed idea releases our thinking (Fig. 1.4).

What I want to emphasize here is the fact that we must make it a habit to ask questions to ourselves along the TSF navigation. This is just a theory and if we simply follow a theory and remain there, we cannot learn from experience. However enthusiastically we may “read the music,” we won’t be able to perform music well. Instead, we must keep practicing while reading music until it becomes our habit since it is all repetition that makes a neural circuit.

All our memory, thinking, and action are managed by the brain. In our brain, there are 100 billion neurons. Each neuron, singly, cannot function properly although it
Creativity can be cultivated but has not been clearly identified yet what each of them does. Neurons cannot function smoothly unless they do things jointly in mutual interaction. Synapse connects neurons and acts similarly as in an electronic circuit, where numerous electronic components do not each function independently but do definite things only when they are interconnected to make a circuit (Fig. 1.5). This is similar to the case of a company in which a single worker cannot perform a big duty properly alone. The given responsibility cannot be performed well until many people help one another in mutual cooperation. In short, in the brain, too, neurons cannot perform their own functions.
An electronic circuit, which is an inanimate object, does not change once the circuit has been made. However, since neurons are animate objects, a neural circuit can change along time. If neurons are made to cooperate often, a strong connection forms among them to turn out some sort of teamwork. It is like in a company. If workers are made to cooperate often, teamwork is developed. In the same manner, things easily repeated with neurons through teamwork (memory, judgment, and action) are called a habit.

Moving along in life, we pick up many habits. These habits are nothing but the result of a circuit made though the teamwork of neurons. In a company, too, a department with good teamwork implements an order immediately or carries it out on its own judgment. A department without teamwork fails to perform properly even what it is told to do.

Given a question, we think hard to answer it. If we ourselves were able to ask a question, this would set us thinking voluntarily to answer it. Asking questions to ourselves helps us to have different thoughts releasing us from reality. Asking questions of our own accord can bring forth many new ideas. This is the very basic theory for cultivating creativity and all we have to do is nurture the habit of asking our own questions in our mind.

After which, in order to create a new idea, what kind of questions should we ask in our mind? It doesn’t work well to ask questions in a random way so make three axes and ask questions moving along the axes. First, try asking questions by moving the “time” in relation to the currently given subject. For example, you can ask, “What will happen to the subject 10 years later?” Second, try asking questions by moving the “space,” say, what it is like in the U.S. or Saudi Arabia. The third axis refers to field. It is to try thinking by changing the sphere of a given subject. If a given subject is marketing, try thinking what this subject is like in the field of biology. Moving along the three axes like this can be regarded as asking questions traveling a three-dimensional world or moving along three navigations.
So what is a habit? As shown earlier, it is nothing but forming a neural circuit in the brain. Therefore, it only matters to create harmony among neurons. Persistent repetition simply produces teamwork and a neural circuit as well. Artistic performers or athletes practice over and over again because it is the process of building a neural circuit in the brain. If we ask the aforementioned three-dimensional questions repeatedly, it makes a circuit in the brain, which exactly means making a habit. As such, if we make the habit of asking our own questions in our mind, we are led to many new ideas and at last become a creative person.

1.5 Foresights of Future

Is it possible to foresee futures? Of course, we don’t know well. But one thing for sure is that 20 years later things will be quite different from the present. Why? Compared to 20 years ago, things have become so much different today. Twenty years ago, there was neither Internet service at home nor cell phones. Just imagine a world without the Internet or a cell phone. Such things have been born in the past 20 years.

The future will change faster. We should not fix your eyes on things looking good today. It is important to look out on the change that will take place with a perspective of 20 years. However, that is easy to say but hard to accomplish being buried in reality. Indeed it seems not a good idea to plan the future for children after what is said to be good ‘today’.

Today becomes the past in the future. We can prepare for what looks good today but 20 years from now, it will have been a thing of the past. Twenty years from now when these children are in their prime, I think the world will have been a global village without national borders. We should surmount the space of this country where we are now. Major disciplines in the limelight will change one after another.

There is no special secret in foreseeing the future. However, I see that continuing to observe the changes in technologies, environment, populations, and international relations will enable us to read the flow of the world. These are important factors of changing the world. To observe these changes, it is useful to view the world from the three dimensions of time, space, and field. We must look from three dimensions disengaged from the reality we are placed. As I said in the previous sections, we are unconsciously shut up in the ‘wall’ of reality. So we must ‘break away from reality’ by getting out of this wall.

Apart from reality, we can see the world from ‘a bird’s-eye view.’ We can see much better than those who have their view blocked by a wall. Even what seems as a matter of course to those who are buried deep in reality looks different if seen from a distance. It is the same principle that applies at chess as a kibitzer reads the board better, which, if seen differently, will lead us to form ‘questions.’ These questions set us thinking freely.

If we are complimented at this time, we will come to ask questions even more often. Giving compliments is important for making habits. Thinking three-dimensionally can be called “a frame of thinking” that enables one to ask questions