Chapter 2
Freedom from Time

Abstract Humans stick to a current situation unless a new stimulus occurs. Without any external stimulus to brain, a person would focus on or stick to the moment, and the mind would remain in its current location. Question can stimulate the brain and break the current situation. In this chapter, asking questions on time is recommended, and which can be a navigator to extend our thoughts along the time axis. Three specific rules are presented regarding how to move on the axis or change the order of a sequence.

Keyword Creativity • Asking questions • Time • Time axis • Navigation • Extension of thought • Idea travel • Transpose • Tempo • Translation

As stated earlier, humans stick to a current situation unless a new stimulus occurs. Without any external stimulus, a person would focus on or stick to the moment, and the mind would remain in its current location. In terms of area as well, the person would stick to a certain area that interests him. Such a status quo hinders a person from thinking of something else, but the situation changes as an external stimulus affects him. A question, for example, may become an external stimulus to the brain, making the mind depart from the status quo and move to another area that the question leads into.

Here, the question can be spoken of as a three navigation system—a navigation system that leads a vehicle to movement. Likewise, the question described here functions to move our thought. A suggested question may be used when the mind has lost a train of thought and no new idea comes up.

How to ask a question on time will be illustrated here. This is a navigation system that moves the brain on a time axis.

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2.1 Time Axis Traveling

A question on the time axis comes first. The time axis indicates the present moment and we are on the current point of time as illustrated in the Fig. 2.1. On this axis, you can see not only the current time but also that in 10 or 20 years. It would be good to move our thinking on this time axis. You may move your thought to 2024, 10 years forward, or 2034, 20 years forward. Turning back to 10 years ago, you may go back to the year 2004.

Performing this cannot be done automatically. When a problem occurs, you may move the time axis by asking a question to yourself. On a time axis, questioning can lead not only to movement but also change in the order of time.

As if driving a vehicle according to the guidance of a navigation system, the thinking is led by the time axis. Ask yourself how the given problem or situation may change as you go time traveling, so to speak, on the time axis.

This mind activity can be applied to almost every situation. Think about a paper cup. You want to make a disposable paper cup that is convenient, cheap, and eye-catching. What would you do?

As stated earlier, think as you move backward on the time axis. To free your mind, you need to break free from the present moment. Would your paper cup still be used 30 years from now? This "question" might hit you if you are not bound by time. Think of how the society might change in 10 or 20 years. A new idea may come up if you think of what kind of disposable cups would be used in such a changed society.

- A plastic cup that degrades?
- A cup that is foldable?
- A cup that is edible after use?
- A cup that is hygienically in good condition even after it was used?

There could be a lot of interesting ideas in addition to those above.
Let us say that we are thinking of a marketing strategy for vehicle sales.

- Would the life pattern of people in 20 years be the same with that now?
- What would the society in 20 years be like?
- How would habits of using a vehicle change as the society changes?
- Would the use of vehicles still be limited merely to transportation in time?
- How would the time that people spend in vehicles change?
- Would people drive with their hands on the steering wheel like today?
- What would people do in a car?
- How would marketing and promotion media change?
- Would people buy a vehicle in cash?
- Would cash be the major means to pay in the future?

Fig. 2.1 Time axis

2.2 T1: Transpose

Three specific rules are presented regarding how to move on the axis or change the order of a sequence. A question may be asked according to the suggested three rules.

The first is the Transpose rule called T1. We may think of a certain event according to time passage from the past to the future, or from the present to the past. In this rule, a question associated with order change may be asked when a problem arises. Time is changed on the time axis in other words.

A question may be asked in various perspectives as follows.

- Reverse—what if the flux of time is reversed?
- Periodic—what if the flux of time is periodical or irregular?
- Continuous—what if the flux of time is continuous or discontinuous?
- Pre-action—what if works are processed earlier than planned?
- Re-sequencing—what if the order is resequenced?
- Skip—what if a certain step in the order is omitted?

A further explanation is added below with some figures. Figure 2.2 shows a laundry machine. State-of-the-art laundry machines reset the program based on the extent of dustiness prior to cleaning. By using the corresponding buttons, the machines may be adjusted to reset such options as how long the cleaning will last, how much water will be used, how high or low the temperature will be, how many times the clothes will be rinsed, or when the spin-dry will be initiated. This is one example of re-sequencing of the laundry order in application of the Transpose rule. The question "What if the Transpose rule is applied to existing laundry machines" is asked here. When the order and length of washing steps are changed, different results occur and new products are developed in reflection of this finding.

Figure 2.3 shows ramyeon noodle. How would you cook ramyeon? Mostly people would boil water first. When the water is boiled enough, you would put noodle into it. When the noodle is cooked, you would add vegetable base, powder, and egg. The cooking ends then. Here, you may ask the question "Does ramyeon always have to be cooked in this order?" For example, you may put in powder first and then the noodle. Simply changing the order of cooking ramyeon may alter its flavor. If the resulting change to the flavor is positive, an added value is revealed. This is another example of applying the T1 or Transpose rule (Fig. 2.4).

In general, there is a certain order to cooking noodles: boil noodles in the water; throw out the water and transfer the noodles to another vessel; make some soup or sauce for the noodles; add the soup or sauce to the noodles once it is ready; the

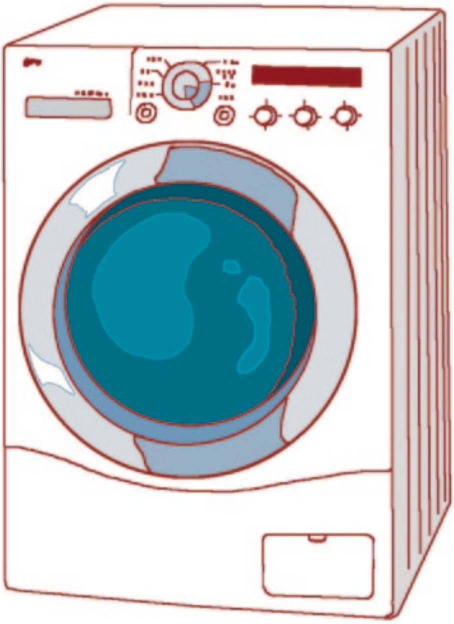

Fig. 2.2 T1: transpose

Fig. 2.3 T1: transpose

cooking is completed. Here, one question may arise. Why do boiling noodles and making soup have to be separate? Could the order of boiling noodles and making the sauce be changed in some way? You may change the order after asking if cooking should be done a certain way necessarily. Why is the water used to boil noodles always thrown out? What if noodles are boiled in the water just as in cooking ramyeon, and the water is used as the soup and as part of the finalized dish?

Fig. 2.4 T1: transpose

Fig. 2.5 T1: transpose

Another example is sushi. Sushi, soy sauce, and horseradish are shown in the Fig. 2.5. There could be different orders to eating sushi. For instance, you may add some horseradish in the soy sauce and then dip sushi in the soy sauce containing the horseradish. You may also dip sushi in the soy sauce without horseradish and put some horseradish on the sushi once you eat it. There will be some difference in taste between these two approaches. The order of adding horseradish and soy sauce makes the difference. This is another added value in application of the Transpose rule.

Figure 2.6 shows the dual spiral structure of DNA, a gene of living creatures. This is a structure that connects the four bases—A, T, G, and C, each of which is arranged in an order. The phenomenon of living creatures is decided by their order. Different orders result in different phenotypes. When DNA is inherited from the parents, this order might change. The crossover (change of the order) when the DNA is reproduced could be the cause. Further, a mutation might remove a certain part of DNA or add a new element to it, changing the order of DNA and causing a new phenotype.

At the bottom of the figure below, a genetically-altered GMO corn is shown. A large percentage of corns that we eat today are those that are genetically altered. These are of a certain species of corns that were artificially made for higher productivity and resistance to diseases. Mass production for food wealth is a means to solve the problem of food shortage. This is another example of applying the Transpose rule.

Fig. 2.6 T1: transpose

Fig. 2.7 T1: transpose (*Left* is ABS, and *right* is non-ABS brake)

Another example of applying this rule follows: The road might be slippery for drivers when it is snowing or raining. You need to be careful especially on a slippery road with curves. In such a case, you would step on the brake to reduce the speed. Stepping on the brake of common vehicles may cause the vehicle to totter and for it not to stop instantly. To prevent this from happening, a brake system called ABS has been developed. Common brakes keep the wheels stopped while ABS stops them discontinuously so that the vehicle does not totter but stops properly. This is another example of applying the Transpose rule that involves the question stated above. We may think that a brake is supposed to stop the wheels continuously. ABS applies the principle that holding discontinuously prevents the vehicle from losing its direction and places it on the right track (Fig. 2.7).

Fig. 2.8 T1: transpose

$$Y = -2x + 1 + x^2 \quad (1)$$
$$= x^2 - 2x + 1 \quad (2)$$
$$= (x - 1)^2 \quad (3)$$

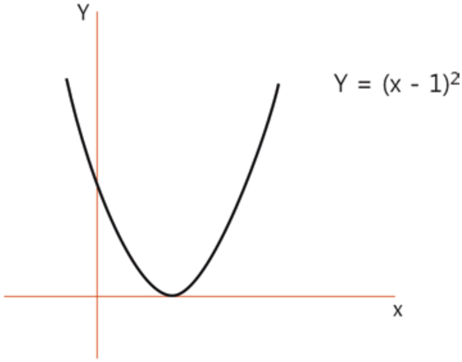

Fig. 2.9 T1: transpose

Figure 2.8 includes numerical expressions. Expression 1 is $-2x + 1 + x^2$. It is difficult to reason the relation between the value x and value y. Let us go to Expression 2. The order of Expression 1 has been changed to $y = x^2 - 2x + 1$. This expression might be changed to Expression 3 as well; that is, $(x - 1)^2$. This will help you to deduce a two-dimensional curved line. Such is also an example of applying the Transpose rule to numerical expressions. A new idea was drawn out by changing the order of terms. The relation between x and y is visually represented by applying the Transpose rule (Fig. 2.9).

2.3 T2: Tempo

This section presents the second rule of time, which is T2 or tempo. Tempo indicates speed. A new idea may be drawn out by questioning the speed change on the axis of time. The questions below might be asked.

- What would happen if the speed increases?
- What would happen if the speed decreases?
- What would happen if the speed is adjusted in a uniform rate?
- What would happen if the speed gradually increases?
- What would happen if the speed gradually decreases?
- What would happen if the speed changes irregularly?

Figure 2.10 illustrates bicycle riding. When the speed of the bicycle that you are riding is close to 0, it is likely to fall. A bicycle needs to maintain a certain level

Fig. 2.10 T2: tempo

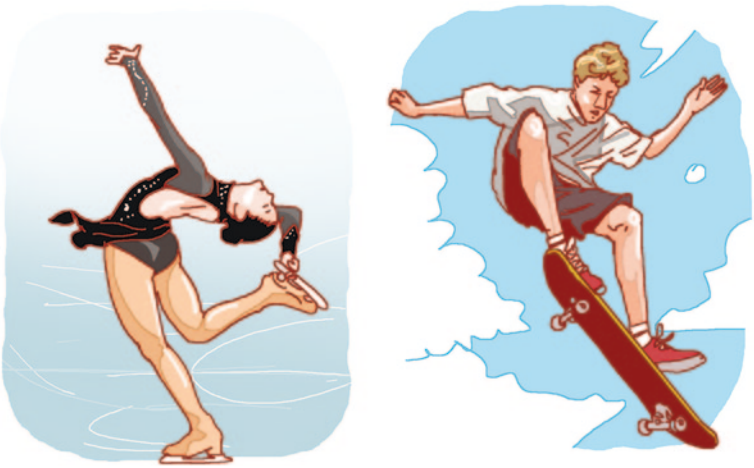

Fig. 2.11 T2: tempo

of speed for it not to fall down. This bicycle has been invented in reflection of this principle. The T2 or Tempo rule was applied with the questions above in inventing the bicycle.

Figure 2.11 show an example of gaining a newly added value by increasing speed. The figure on the left side shows someone figure skating in a beautiful posture, which cannot be done unless a certain level of speed is maintained. A variety of beautiful postures can be presented only when the skater maintains a certain level of speed. Roller boarding is another example. A roller board needs to

Fig. 2.12 T2: tempo

Fig. 2.13 T2: tempo

maintain a certain level of speed to exhibit routines as in figure skating, both being examples of adjusting speed.

Figure 2.12 shows a top spinning. The top would stop turning if you do not spin it. It would continue spinning if it maintains a certain measure of speed, which is another example of gaining added values by changing the tempo.

Figure 2.13 is a Drop Zone in the Children's Park. Think of this: Who would ride this machine if the Drop Zone comes down slowly? This is another added value produced by applying a sudden fall or free fall. This is another example of applying the Tempo rule.

Figure 2.14 shows an airplane landing on the aircraft carrier. The most difficult moment for an airplane taking off is landing. As you may know, the runway where an airplane lands on is relatively short; thus, the technique to land on this short runway is of great importance. If the airplane does not stop properly on it, the aircraft will fall into the sea.

To prevent such an accident from happening, a hook comes out of the back of the airplane when it lands as shown in the figure. This hook is linked to one of

Fig. 2.14 T2: tempo

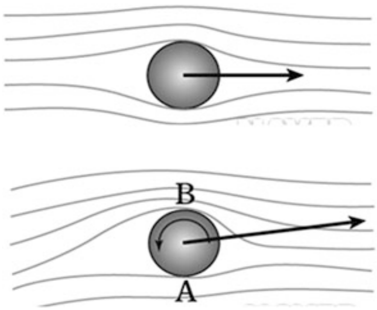

Fig. 2.15 T2: tempo

the four wires on the runway of the carrier for safe landing. When the hook is not linked to the first one properly, then hopefully it will to the second, the third one, or the fourth one. What if the hook is not linked even to the fourth one? The airplane would fall into the sea. Is there any method to prevent the worst scenario from happening?

In general, the pilot would speed down the airplane when lending. However, right before landing on the carrier, the airplane would maintain the highest speed. The airplane is expected to be linked to the wire on the runway so that it speeds down and lands safely. If it is not linked even to the fourth wire, the airplane can take off since it has maintained enough speed before trying to land.

This is an example of doing away with the fixed idea that an airplane is supposed to speed down when landing as it could speed up to the highest level to be able to land on a short runway safely.

Figure 2.15 shows a curveball that a pitcher throws. The ball that the pitcher throws changes direction as it moves forward. Such magic depends on the speed and spinning of the ball. The figure above shows a ball that moves ahead without spinning. The ball goes straight with no change in direction no matter how fast it is since it is not spinning. The ball in the figure below, in contrast, is spinning. If you look closely at the surface, the air speed at Part A is slow while that at Part B is fast. Pressure goes down when an object moves fast. This is called Bernoulli's Principle. The ball changes its direction toward the part where it receives less pressure and which makes the ball curve. This is the magic of speed.

2.4 T3: Translation

The last and third rule of time is T3 or translation. A lot of available data is on a time axis. Such data is in direct relation to the passage of time. The Translation rule is an attempt to interpret it in exceptional situations. To do this, the data set is represented in graph. Such questions below might be asked about whether there are any new exceptional situations on the time axis:

- Is there any exceptional data?
- What form of graph does the exceptional data make?
- What form of graph does the exceptional data turn to?
- Does the exceptional data increase or decrease in quantity?
- Is there a certain pattern for such an exceptional data?
- What should be done to turn the data pattern to your desired shape?

As shown in the Fig. 2.16, the data is represented as a graph in the time axis. The data rapidly increases in quantity and forms a graph. In general, a sudden, abnormal phenomenon to the data is likely to be neglected as a mere mistake in a certain experiment or measurement. However, questions need to be asked on such an occasion. An unexpected fact might be found depending on how you interpret such exceptional, suddenly emerging data. This exceptional data might reveal a secret that was not expected from the data.

In the graph (Fig. 2.17) where the values of data gradually increase, whether such movement involves a certain trend of gradual increase or decrease needs to be addressed. In addition, whether such a phenomenon involves any new, unexpected factors needs to be examined in application of T3 or the Translation rule.

Alexander Fleming's discovery of the penicillin is one of the examples of such a translation. When Fleming went on his vacation, he left the bacillus plates outside. After coming back from his vacation, he found that the experiment failed due to the bacillus reproduction, but he happened to observe that a certain part of bacilli died as he was about to throw them away. He found blue molds around that part. If he neglected this exceptional data, it might have taken a lot longer before the penicillin was released. Fleming did not simply take for granted the dead bacilli where there were blue molds. He figured out that blue molds functioned to kill bacilli after investigating the cause for a considerable period of time. Such efforts resulted in the development of penicillin which made a remarkable contribution to mankind (Fig. 2.18).

Fig. 2.16 T3: translation

Fig. 2.17 T3: translation

Fig. 2.18 T3: translation

2.5 Designing the Future

Everyone dreams of success in the future and tries to realize the dream that they have. When do they expect their dreams to come true? Tomorrow? The next month? In 5 years?

Most people who dream of success would not expect it to happen right away, and it could not. The periods that they expect to take might vary, but it certainly is a prolonged period of time, which could be 5 years or 10 years. Young students in particular may expect that to happen when they have fully grown. A 15-year-old student may imagine success to happen when he becomes 35 years old, which is about 20 years from now.

How would you prepare if you expect success in 20 years? Certainly, you would imagine the 2030s, when you will be realizing your dream. This frees you from the bounds of reality. In other words, asking yourself the following questions will free you from the limits of reality:

What would the world be like in 20 years?
What kind of mobile phones would be used in 20 years?
What kind of vehicles would be used in 20 years?
What would schools be like in 20 years?
What kind of TV would we watch in 20 years?

The questions above prompt us to travel on the time axis. When we leave the world to 10 or 20 years from now, we can free ourselves from "today" where we are bound. Being freed from the reality of today, you can give full play to your imagination with much more fresh thoughts. People thinking of the future will be strengthened to overcome the difficulties of reality that they are facing. It will become easier to overcome current trials if they look forward to good results.

There is a book entitled *Don't Eat the Marshmallow… Yet!* written by Joachim de Posada and Ellen Singer. The basic idea is that if you save the marshmallow that you want to eat today, a bigger reward will follow tomorrow. This encourages you to patiently resist the temptations of reality, wait for rewards, and prepare for the future. The same applies to the point addressed here.

If today were the only day that you have in your life, you better eat up the marshmallow right away. But if you look further into the future, you may find that you can eat a lot more marshmallows if you practice moderation now. Controlling your desire to eat the marshmallow right in front of your eyes is in line with developing your skills for the future. If you make it a habit to look to the future in 10 years, suffering at the moment may seem less difficult to overcome.

This applies to when you argue and get angry at someone. When you are exasperated, you may want to vent your wrath in some way, but you can compose yourself if you think of the future after one year since what just happened would be nothing important by that time. If you move yourself to another point on the time axis, you can calm down after the outburst of emotions. People may recover their composure by moving themselves on the time axis.

2.6 The Founding of Nexon

Nexon is an Internet gaming company that released such popular games as *Kingdom of the Wind, Maple Story, Kart Rider, Dungeon Fighter, and Mabinogi.* This group is known as one of the the world's top three Internet gaming businesses next to Nintendo and Activision Blizzard. Nexon has more than 3,000 employees, and its annual sales reaches 1 billion dollars. About 0.3 billion individuals in 140 countries around the world are using Nexon's games.

China accounts for 37.5 % of the entire sales of Nexon, with Korea 32.7 %, Japan 14.3 %, and the U.S. 8 %. According to Forbes, a magazine in the U.S., the private properties of the founder, Jeongju Kim, reached USD 2 billion early in 2011, the 595th highest in the world. Late in 2011, as Nexon's stocks were listed in the Japan stock market, its properties increased to USD 6 billion.

Jeongju Kim, the founder and chairman of Nexon, was an eccentric student with yellow hair who would daydream in my research laboratory at KAIST about 16 years ago. He would say that he was developing a program through which people far from each other could play a computer game. I told him:

> Computers need to be linked through a network for graphic images to be delivered between stations real-time. Networks need to have enough speed for real-time games too. Your idea may not be realistic.

Back then, the Internet was not widely accessed, and there was no high-speed communication network through which images could be transmitted real-time. Only telephone lines were used for PC-based communication. He replied:

> Professor, in about ten years, every computer will be linked to a super high-speed communication network. I will make computer games that can be used in that time.

A brick-breaking game called Tetris was popular back then. It needed no network since it was a person-to-computer game. The fact that a human can play a game through a computer was innovative. Thus, his idea to make network-based computer games through which people far from one another could play seemed to be quite imaginary and unrealistic. Many were thinking of making Tetris II, an upgrade of the original version of Tetris, which was popular before.

Not "the present" but "the future" in 10 or 20 years was in his mind. With a map for the future 10 years ahead, he was shaping what was supposed to be the future of gaming. People around him, stuck in reality, could not understand his idea. They considered him an odd student. He attended classes during the day and developed games at night. Finally, he released his first product *Kingdom of the Wind.*

As the 21st century began, ultra-speed communication networks started to be established. Many started thinking of Internet games. Since Jeongju Kim's team started earlier, it is no wonder he burst ahead of others in this area. This is a result of moving oneself 10 years ahead on the time axis.

2.7 Summary

1. Whether we notice or not, we stick to the current point of time. When a question is asked, we break our attachment to reality.
2. When given a question on time, we move our line of thought to the point of time that the question addresses.
3. If we move along on the time axis, our thoughts can be freed from reality.
4. Rule T1: Transpose

- Reverse—what if the flux of time is reversed?
- Periodic—what if the flux of time is periodical or irregular?
- Continuous—what if the flux of time is continuous or discontinuous?
- Pre-action—what if works are processed earlier than planned?
- Re-sequencing—what if the order is re-sequenced?
- Skip—what if a certain step in the order is omitted?

5. Rule T2: Tempo

- What would happen if the speed increases?
- What would happen if the speed decreases?
- What would happen if the speed is adjusted in a uniform rate?
- What would happen if the speed gradually increases?
- What would happen if the speed gradually decreases?
- What would happen if the speed changes irregularly?

6. Rule T3: Translation

- Is there any exceptional data?
- What form of graph does the exceptional data make?
- What form of graph does the exceptional data turn to?
- Does the exceptional data increase or decrease in quantity?
- Is there a certain pattern for such an exceptional data?
- What should be done to turn the data pattern to our desired shape?

2.8 Exercise

1. What would result from asking a question in application of T1 rule to the menu order of my mobile phone?
2. Which rules (T1, T2, T3) could be applied to the process of factorization?
3. Which rules (T1, T2, T3) could be applied to the motions of riding a bicycle on a curved road?
4. Which rules (T1, T2, T3) could be applied to the motions of dismounting a bicycle?

5. Think of the process of making a hamburger. What change would result from applying the three rules of time (T1, T2, T3) to this?
6. Think of drinking water in an artificial satellite in zero gravity. What change would result from applying the three rules of time (T1, T2, T3) to this?
7. Analyze the process of tornado formation. What could be done to prevent such a tornado from being formed?
8. Think of the motions to catch a fly. What could be done to catch it fast before it flies away?
9. Evaluate mathematical the expression $y = -4x + 4 + x^2$ by applying the rules.
10. If we do not put case of a pen for white board in class room, it's ink is often dried. What kind of questions can we give to protect such dry out?

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