Chapter 2/

Four-dimensional systems integration

called “human being”

1. What is the "mind"?

The relationship of all things is communication. However, not all communication becomes a system. A "system" is a connection that is built and survives by itself. Some communication becomes a system, and some does not. The overwhelming majority of communication in this vast and open universe is communication that does not become a system, and innumerable communication has occurred and disappeared.

It is "structuring" that makes communication a "system". The system maintains itself by constantly drawing boundaries with the environment. It is the work from the inside that draws the boundary line, and this work is called "structuring". The system is constantly maintained by "structuring". The above is explained in the introduction. Below, I would like to take a concrete look at the communication system.

Living being as a system

If the relationship between things is communication and it is the system that maintains itself by drawing boundaries with the environment, then multicellular livings are a fine system of communication.

For example, like the "tick" impressed by Uexküll, living beings demarcate and maintain inside the border by forming a "perceptual-reaction" pathway in the

environment ("Streifzüge durch die Umwelten von Tieren und Menschen: Ein Bilderbuch unsichtbarer Welten"). At this time, it is "structuring" that intervenes in the "perception-reaction" path and directs and adjusts it.

Human beings, a type of multicellular organism, are, of course, communication systems. Humans are highly organized among multicellular organisms, where multiple communication systems such as metabolism, immunity, endocrine system, and nerves are integrated. However, it is a story of body-level integration, not body-based mind-level integration. Then what is the "mind" that distinguishes it from the body?

Mind

The original meaning of the mind is, as explained in Chapter 9, the center of the invisible interior space behind the visible body (the heart of the five viscera and six halves). It also includes the pulsation and function of the center. In other words, the movement of the center inside the body as seen from the outside is the "mind ①". In ancient Egypt, in addition to the heart, breathing and thinking were also considered to be the main body of the "mind" (cf. "Book of the Dead in Egypt").

The work of the "mind ①", which is the center of the body, is linked with various functional communication systems to form a network of communication systems. This is the body. However, it is not the "mind ①" as a circulatory communication system, but the "mind ②" of the cranial nerve communication system that plays an integrated control function in this body.

The reason why the "cerebral nerve communication system" is sought for the integrated center of the body is that the body is targeted and observed from an outside perspective. On the other hand, when we shift our perspective to the inside of our body and experience the same integrated center from there, we become the "mind" that we usually feel, imagine, and think about. This is "mind ③".

"Mind ①", "mind ②" and "mind ③" are common to both humans and animals. What makes humans different from other animals is the dimensional composition of "mind ②" and "mind ③", which is four-dimensional for humans. In this chapter, we will focus on the dimensional composition of "mind ③". The "mind" also has a "soul" as "mind ④", which I would like to discuss in Chapter 9.

2. "Knowing" pathway

In the case of the human mind, the first half of the "perception-reaction" pathway is "knowing" and the second half is "responding". First, let's think about the "knowing". At this time, knowing is represented by visually "seeing." Of course, human senses are not limited to "seeing," but it occupies a special position for humans. This is a measure that takes this fact into consideration.

Now, knowing begins with "seeing." "Seeing" is to trace, highlight, and simplify the contours of what humans encounter in their environment. In other words, it is "classifying". It is the "form" that can be seen through the division. If we follow the path to know that starts with "form" as an opportunity, you will have the following four phases.

Four-dimensional pathway

⑴ Pattern (perception)

The "form" of things changes from moment to moment while showing various appearances. If so, living beings cannot react accurately to the environment unless they capture the same relationship in the constantly changing "form". That is, it cannot survive. The invariant relationship in "form" is called "pattern". It is "perception" to know this pattern. For example, within the bounds of common sense, whether it is a real apple, a picture-drawn apple,

or a virtually synthesized apple, there is a common pattern. Therefore, they are all perceived as the same "apple".

⑵ Type (imagination)

When you close your eyes, the visible "form" disappears. However, even if you can't see it, you can think of "form". What is working at this time is the "imagination" that envisions the "pattern". Imagination retains the identity of the "pattern" with or without "perception". In addition, similar relationships can be envisioned between the various "patterns". What occurs in this case is "type". Whether it is face recognition or scientific research, there is a "figure" as the basis for knowing, but it is the "type" that supports this ("figure thinking").

⑶ Concept (thinking)

living beings other than humans have reached the point of grasping the "type" by imagination, to a greater or lesser extent, but most of them stop there. On the other hand, human beings move from typology to the dimension of "concept" by manipulating "symbol" expressions that are unrelated to physical expressions. A concept is a relationship between types. In general, finding the relationship between concepts is "judgment", and finding the relationship between judgments is "reasoning". Communication between symbols in this way is "thinking" *.

* There are three types of symbols in this context. The first is spoken language, which is an extension of physical expression. This is a body symbol as an expression of the state of mind. The second is letters (written words), which are signs that have nothing to do with physical expression. The characters themselves are targeted as things. The third is a symbol between the two. Symbols can be expressed both physically and in things. It is magic that makes full use of symbols, and religion (organizing magic) that creates and manipulates characters. The above will be described later.

⑷ Self-reference (reflection)

Humans were able to construct the world of "concept" because they used signs that had nothing to do with physical expression. However, the connection between linguistic signs and thus the linear connection between concepts is merely a thought, and does not reach the so-called "reflection" dimension. Therefore, linguistic communication needs to be connected back (recursively) to linguistic communication itself. That is self-dialogue (self-questioning and self-answering) communication. "Self" is born in this communication. This "self" reference is "reflection." "Reflection" is the work of knowing the environment as one's own work.

Both directions of development

The above is summarized. Knowing begins with the "form" that can be seen in the first place. Based on this "form", the "pattern" as the identity of the "form" first arises. Next, "type" arises from the similarity of "pattern". Furthermore, it leads to "concept" as a relationship of "type". This is the "meaning" of the "form" that can be seen so far. Finally, the "self" that refers to and gives meaning to "meaning" appears.

Let's follow the direction of development in the opposite direction. In order for the referring "self" to know the "meaning" of the world of expression, the "concept" must first be schematized as a "type", and then the "type" must be envisioned according to this schema. In this way, you can finally meet the "form" that you can see. In other words, no matter how indirect, we need a visible "form". Here is a summary of the developments in both directions.

Form of things ⇄ Pattern (perception)
⇄ Type (imagination) ⇄ Concept (thinking) ⇄ Self (reflection)

From the above, it can be seen that there are four-dimensions of "knowing" of a person: "perception," "imagination," "thinking," and "reflection." At that time, what we know originates in "form" and returns to "form" again because

the foundation of the whole integration of the communication system of humans is the "body"(cf. A. Damasio). And the body is nothing but an integrated body of the life communication systems, as will be described later in Chapter 9.

3. Phenomenon and Reality

Now, let's look at the outside world, which is the environment of the human system. The main premise introduced in the Opening Chapter is that "the relationship among all kinds of things is communication." If so, it would be a set of communication among things in the outside world. But how can we say that about the invisible world of the outside from the inside of the system?

Visible "form" is an expression of invisible "pattern". Taking "apple " as an example, within the bounds of common sense, the form of an" apple "is clear. Then why does it look like a clear shape? This is because we are looking at it repeatedly. But is the "apple" there as well when I'm not looking?

Many people believe so. If so, there must be something (real apple?) beyond the visible form (apple phenomenon). How can we know that? This is Kant's "phenomenon and thing itself" problem, which is famous in the history of philosophy. If we narrow down the idea of this problem, we will get the following four positions. Let's look at them in order.

Four positions

(1) Substance-oriented view

This position regards "reality" as an independent and self-reliant individual with certain characteristics, that is, a "substance." This position is further divided into two. On the one hand, the phenomenon is considered to be a substance as it is. On the other hand, it is assumed that there is a true

substance apart from the phenomenon. The "substance" of either view does not break the law of noncontradiction.

⑵ Interpretation-oriented view

In this position, "reality" is ambiguous and multifaceted, and it is difficult to grasp it unambiguously. Therefore, the interpretation of "reality" has to be diverse depending on the context. Therefore, "truth (true knowledge)" is plural. This is a denial of substance-oriented view.

⑶ Relation-oriented view

This position captures real knowledge (truth) in negotiations between different things. There are several versions of this. For example, "you can know the reality in the relationship that creates and is created" (eg. Kitaro Nishida or Kiyoshi Miki), and "you can reach the whole knowledge (truth) through mutual denial in the conflict" (Hegel dialectic). This denies substance and interpretation.

⑷ Indifference-oriented view

This position considers "reality" to be chaotic and indistinguishable. Inside this position, there are views such as "cannot be verbalized", "can be done with negative expressions", "captured only by experience", "captured by holy language beyond everyday language", and so on. This is a denial of substance, interpretation and relation.

Conversion-oriented view

The idea of this book is different from any of the above four positions, and focuses on the correspondence between types of phenomena and reality. In other words, it is considered that the "type" of the form of the visible thing corresponds to the "type" of the real thing. However, at that time, the real complex type is reduced to the simple type of the phenomenon and converted. This conversional correspondence is "dividing". Let's call this conversion-oriented view.

To generalize this idea, a communication network in which various things are intricately interwoven is spreading outside the communication system of humans. And, very rarely, the system starts up from the complexity of this network. It is a living system, and it is a human system that is based on the living system.

4. Backgrounds for four-dimensional integration

Let's go back to the structuring of the pathway again. Following the knowing path is the "responding" pathway to the environment. The "knowing" pathway analyzed earlier goes from the outside to the inside of the system. On the contrary, the "responding" pathway goes from the inside of the system to the outside. Structuring works on the nodal points in the middle of the two paths, directing and coordinating, or controlling. In the case of human beings, the structuring also becomes four-dimensional corresponding to the four-dimensional knowing.

Four-dimensional structuring

(1) Emotional communication system (instinct or drive)

It is the first-dimensional structuring that controls the path of "pattern-response" based on perception through the adjustment of "emotion". The root of emotion is pleasure and pain, and the function of behavioral adjustment by pleasure and pain is called "instinct (drive)".

For example, crickets communicate emotionally using the three voices of "rope," "anger / fight," and "attracting the opposite sex." They can convey clear messages rather than the pheromones (biochemicals) used by most insects. Crickets are evolving among insects in that they use voice.

⑵ Imaginary communication system (intelligence)

The second dimension of structuring controls the path of “type-response” based on imagination through segmentation of time. "Intelligence" is responsible for this. Time segments (present, past, future) make predictions possible.

For example, the dog companion coyote is good at catching prey by ambushing in front of a nearby hole that is a short distance away, rather than in front of the hole in which the mouse escaped. This is because they know the behavior of mice and predict their behavior. Badgers, on the other hand, keep waiting in front of the first hole.

⑶ Thinking communication system (reasoning)

It is the third-dimensional structuring that controls the pathway of "concept-response" based on thought through the manipulation of signs. It is the broad sense of "reasoning" that makes judgments and inferences. Here, the sign is connected to the sign. As will be described later, deep learning performed by artificial intelligence (AI) is also in this dimension.

⑷ Self-referential communication system (insight or intuition)

The fourth dimension of structuring controls the pathway of "self-dialogue (self-question-self-answer)" based on reflection by repeating self-reference. It is "insight or intuition" that is responsible for this. The basis of insight is sign communication by reasoning, but simply connecting signs to signs does not give rise to insight. It is necessary that sign communication leads to sign communication itself. Rodin's "The Thinker" symbolizes this insight.

From the above, it becomes clear that the human mind is a four-dimensional communication system controlled by structuring.

Fig. 6

Four-dimensional integration of the mind

The human mind is an integrated body of four-dimensional communication systems. It is the fourth dimension of self-referential communication system that controls and integrates the four dimensions. The integration of the four dimensions as a whole means that the four dimensions do not move separately, but, for example, instinct functions as an instinctive aspect within the overall integration. The same is true for intelligence, reason and insight.

In the integration of the four dimensions, the communication systems of emotion (instinct), imagination (intelligence), thinking (reason), and self-reference (insight) are such that the preceding dimension supplies energy from the body and the following dimension controls it.

The four-dimensional integration of structuring is the basis for the logic of four-dimensional correlation taken from the process of mutual communication in the previous chapter. Therefore, the logic of four-dimensional correlation corresponds to the four aspects of the process of mutual communication because the human mind is an integral part of the four-dimensional communication system in the first place.

Instinct in integration

…External dimension I…Information detection / response execution

Intelligence in integration

…Internal dimension II…Intention interpretation

Reason in integration

…Others-oriented dimension III…Interpretation comparison

Insights in integration

…Self-oriented dimension IV…Comprehensive evaluation / decision making

However, in order to say that the logic of four-dimensional correlation

penetrates not only mutual communication but also human communication as a whole, we must look at the evolution of human communication.

5. Evolution of communication

How did humans become an integrated body of four-dimensional communication systems? This book seeks the answer to the complexity and sophistication of human communication. From this point of view, let's outline the evolution of communication. It is also the evolutionary path of ethics.

(1) Compassion/transmission function by body sign expression (implicit rule)

The basis of the evolution of communication is a herd of familial animals. Flocks have implicit rules. For example, "do not contend with each other", "share prey", "return favorably to favor", "keep rank in the flock", etc. (Wade "The Instinct of Religion", Frans de Waal "The Origin of Compassion?"). The basis of the ethics of human groups is also in this implicit rule. As long as the peers can see each other, "body" sign expressions such as gestures and voices fulfill the compassion and transmission function of communication.

(2) Coordination/Adjustment function by symbol sign expression (magic)

As the size of the group expands and the scope of activities becomes remote, conflicts become apparent inside, and conflicts between groups occur outside. Special ingenuity is needed to maintain close relationships with people and ensure communication between peers. That is the magic that uses the "symbol" sign expression to perform the coordinating function of the group. Symbols are typographical expressions such as "○" and "△", which can be expressed by things and/or the body. Shamans use symbols (spells, etc.) to mediate people with "spirits (souls and gods") and create a strong sense of

unity within the group *.

*Takaaki Yoshimoto reconsiders imaginary in his book "Common Illusion Theory" that common illusions (rules or the gods) are formed and confronts the real community when the community expands from family to clan (family union), from clan to tribe (country of clan alliance), and from tribe to nation (tribe alliance). Among them, Yoshimoto paid attention to the deep psychology of the shaman 覡, and the man's shaman overlapped the self-illusion with the common illusion, and the woman's shaman overlapped the common illusion with the couple illusion. There are many studies on magic and shaman, but there is no other analysis that delves into the deep psychology of shaman.

(3) Integration function by non-body sign expression (ritual religion)

When tribes collide with each other and a unified kingship that unites the tribes emerges from the turmoil, the magic that is valid only within the tribes cannot cope with the relationship of domination and obedience among different tribes. What was newly created at this stage was "religion" as a state ritual that reorganized magic. Only here is the non-body sign (character) created as an integrated function. Unlike body sign expressions, symbol expressions can be used for remote control, but they are still ambiguous. Non-body sign expression as a combination of sign strings overcomes this multi-meaning ambiguity.

(4) Reflection function by self-referential sign expression (introspective philosophy)

When "religion" as a state ritual faces a crisis due to pressure inside and outside the nation, a self-referential reflection function is created from within non-body sign communication. A highly self-referential religion is born on the extension line. This point applies not only to Early Buddhism, but also to Early Confucianism, Taoism, Judaism, Christianity, and Islam. All of them embarked

on the path of introspective universalization from negative experiences such as defeat, alienation or humiliation (Shirakawa "Confucius", "Early Buddhism", Izutsu " Islam ", etc.).

In short, it was the evolution of expression that supported the complexity of communication. This evolution goes from (1) the compassion / transmission function by body sign expression, (2) the coordination function by symbol sign expression, and (3) the integration function by non-body sign expression away from body sign expression. And the sign expression also creates a self-referential reflection function. In other words, it can be said that behind the four-dimensional integration of the communication system of "humans" was there the complication of communication itself brought about by the evolution of the expression of "human" communication.

6. Kant and Parsons

The logic of four-dimensional correlation runs through the world of human communication (and therefore the world of ethics). If so, all matters and events related to meaning interpretation should be reconstructed by four-dimensional correlation. However, when the logic of four-dimensional correlation is not used consciously, inconsistency and incompleteness will occur. Let's take up two such cases here. Pre-training (practice) is indispensable for applying logic consciously. First, consider the "category table" of the German philosopher Kant (cf. my article "Why do people divide into ‘four’ ", in "Transformation of Philosophy and Cross-border of knowledge").

Kant's category table

The category table is the classification principle of thinking that constitutes empirical object recognition, and according to Kant, it is inherent in human

cognitive ability ("Critique of Pure Reason"). He derives the category table from his own judgment table and makes it a "4x3" structure. Of these, the four basic configurations are "quantity," "quality," "relationship," and "modality." In addition, "modality" is related to thinking itself unlike the other three.

However, Kant himself had not been able to explain why it has four configurations. Object recognition is an abstraction from communication as a process of meaning interpretation. It is thought that the reason why the category table corresponds to the four-dimensional correlation even if it is abstract is that Kant used the logic unknowingly. So let's make aware of the logic of four-dimensional correlation. Then, the necessity of the four configurations clearly emerges as follows.

Quantity: (1) unity, (2) multiplicity, (3) totality)

… External dimension I

Quality: (1) affirmative, (2) negative, (3) restrictive

…Internal dimension II

Relationship: (1) substance, (2) causality, (3) interaction

…Others-oriented dimension III

Modality: (1) possibility, (2) actuality, (3) necessity

… Self-oriented dimension IV

Even if the four configurations can be explained above, where does the order of "three" (1), (2), and (3) come from? Kant mentions the chronological order, but this remains a hint. In the view of this book, the basis of "three" is sought in the process of generating a communication system. That is, (1) communication between elements (repetition of generation and disappearance) → (2) formation of structuring within communication between elements → (3) establishment of a communication system (functional movement of a part in the whole).

From this perspective, the German philosopher Hegel's "dialectic" is also one

of the versions of this generation and development. However, as long as it ends with (3), the system generation process is stopped halfway. If the viewpoint of generation is consistent, the evolution of the system should be taken into consideration, and (4) system dismantling should be added.

However, it is not logical to mix the generation process in the four-dimensional correlation, which is the internal order of structuring. Originally, "4x3" in the category table should have been "4x4". If Kant was aware of that point, then "x4" should have become a repetition of the four-dimensional correlation nesting (fractal), that is, external dimension (i)/internal dimension(ii)/others-oriented dimension(iii)/self-oriented dimension(iv). For example, in the modality (dimension IV), i)possibility / ii)probability /iii) actuality /iv) necessity can be considered.

Parsons' AGIL schema

Next, I would like to consider the "AGIL (or LIGA) schema" of Parsons, an American sociologist and system theorist (cf. "Structure and Change of Social Systems"). The breakdown is as follows.

A: Adaptation … Dimension I
G: Goal-attainment …Dimension II
I: Integration … Dimension III
L: Latent pattern maintenance … Dimension IV

The AGIL schema does not have the process of meaning interpretation that characterizes human communication. The object of this scheme is "biological behavior" abstracted from human communication. Nevertheless, it is thought that the reason why this scheme corresponds to four-dimensional correlation is that Parsons unknowingly uses the logic of four-dimensional correlation.

The origin of the AGIL schema is the "Pattern-variables" of actions, but going back further, arrives at the famous group typology, "Gemeinschaft

(community)"and "Gesellschaft (profit society)" by the German sociologist, Tönnies.

Parsons extracted five "type variables" from Tönnies' group typology. That is "emotional/emotional neutrality", "group-oriented/ego-oriented", "individualism/universalism", "innate principle/performance principle", and "unlimited/limited". The former term of each of these five pairs is the characteristic of "Gemeinschaft", and the latter term is the characteristic of "Gesellschaft".

Parsons himself couldn't explain why the "variables of type" are in five pairs and how they are divided into four AGILs. So, let's consciously apply four-dimensional correlation to action types and group types instead of Parsons.

First, of the five pairs, "community-oriented/ego-oriented" can be interpreted as representing the general characteristics of "Gemeinschaft (GA)/Gesellschaft (GS)". Therefore, if this is shelved, the following measures can be obtained.

Innate principle GA/Performance principle GS
…External dimension I
Emotional GA/Emotional Neutrality GS
…Internal dimension II
Individualism GA/Universalism GS
…Others-oriented dimension III
Unlimited GA/Limited GS
…Self-oriented dimension IV

The Parsons' scheme swept the social sciences for a period of time, but it was omitted afterwards, except that it was transformed and inherited by Luhmann in the direction of functionalism, partly because the rationale was unclear. If he was aware of the logic of four-dimensional correlation, the fate of the AGIL

schema might have been different.