

Reflection of Tacit Knowledge

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Introduction

We have to know about “cognition”¹ first, which carries out the leading function in communication activities. This is because communication activities involve not only sense and perception but also memory, judgment, reasoning, decision, discovery and resolution of problems etc. In general cognition is thought to play the central role in communication activities, but in fact it is not the only one.

In this article the author focuses on and tries to scrutinize tacit knowledge. In communication activities “cognition” usually plays the main role, but “tacit knowledge” does not appear on the outside, like a *kuroko* or a kabuki stagehand dressed in black to be inconspicuous, supporting activities of cognition as a sceneshifter or stagehand, often unconsciously. It is reasonable to think that “cognition” and “tacit knowledge” form a harmonious whole and interact with each other while communication is carried out.

Tacit knowledge, however, is thought to be in a different dimension beyond the perception framework. Therefore it can be said that tacit knowledge itself is difficult to research, but it is essential to know as much as possible about it.

Furthermore, the term “tacit knowledge” seems to vary among study fields or among persons in its definition, but in this article the author tries to make clear the structure of “tacit knowledge.”

1. Structure of internalized knowledge

The author calls “internalized knowledge” for the knowledge which has been acquired and accumulated inside the body since birth up to this moment through the channels of

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sight, hearing, smell, taste, touch etc. Internalized knowledge is not just knowledge, but includes information, experience, skill and knowhow. The author tries to categorize internalized knowledge as below. The breakdown can be specified as in

Figure 1, so the relations between internalized knowledge and communication become clear to a certain extent. Then he will scrutinize tacit knowledge.

Figure 1 Internalized knowledge

(express)	(transmit)	
		(a)externalizable and transmittable knowledge (information knowledge + body knowledge)
		(b)unexternalizable but transmittable knowledge (body knowledge)
		(c)unexternalizable and intransmittable knowledge (body knowledge)

Note : The white portion means possible, and the black portion impossible.

(a) Externalizable and transmittable knowledge

This is externalizable and transmittable knowledge out of the knowledge which a person has acquired through information, or his or her own experiences. In this article, the knowledge acquired through information is referred to as “information knowledge” and the knowledge acquired by experience as “body knowledge” or “experience knowledge.” In other words, externalizable and transmittable knowledge consists of “information knowledge” and “body knowledge.” While “information knowledge” is “externalizable and transmittable knowledge”, “body knowledge” is made up of “externalizable and transmittable knowledge”, “unexternalizable but transmittable knowledge” and “unexternalizable and intransmittable knowledge.”

For example, in the definition of a dictionary, “yogurt is a thick liquid food that tastes slightly sour and is made from milk, or an amount of this.” (*Longman Dictionary of Contemporary English*, 3rd ed.). If one has never eaten yogurt yet, he or she cannot imagine the taste of yogurt. The knowledge from a dictionary is “information knowledge.” The knowledge actually acquired by eating yogurt is “body knowledge”, and the explainable portion of the body knowledge by language such as “a little sour”, “slightly sweet” etc. is “externalizable and transmittable knowledge.” The remaining unexplainable portion of the knowledge is classified into the following “unexternalizable but transmittable knowledge” or “unexternalizable

and intransmittable knowledge.”

“Externalizable and transmittable knowledge” is transmittable to others by expressing what one intends through language, numbers, physical movements, colors, pictures etc. “Body knowledge” is transmittable by common experience (at the same time in the same place or at a different time in a different place), but it is limited to externalizable knowledge. In this article “externalizable and transmittable knowledge” is sometimes referred to as just “externalizable knowledge”, and it can be called also “explicit knowledge.”

“Externalizable and transmittable knowledge” exists as a continuum from “knowledge transmittable with ease” to “knowledge transmittable with difficulty.” Not all externalizable and transmittable knowledge can be transmitted with ease. The former can usually be transmitted when context such as the same language or values or world view exists between communicators. The latter cannot easily be transmitted firstly when little context exists between communicators. For instance, when one speaks to someone else in a certain language and he or she does not understand the language, they cannot communicate with each other well, but they may be able to communicate to a certain extent by gesture etc. Or in the days when everybody believed in the geocentric system, even if someone advocated the heliocentric system, people would not accept it easily.

The author’s “explicit knowledge” includes any knowledge which can be expressed,

Table 1 Digital and analog signs or symbols

sense	digital	analog
sight	language, number, numerical value, formula, musical note, light signal etc. (letter <i>or</i> word)	circumstances, appearance, facial expression, physical movement, finger movement, article, color, picture, map etc.
hearing	language, number, numerical value, musical scale etc. (voice <i>or</i> sound)	accent, intonation, rhythm, melody, tone, tune etc.
smell	smell, odor, scent, fragrance
taste	taste
touch	touch, press, warmth, cold, pain

Note : According to *Psychological Dictionary*, Heibonsha, sense includes not only sight, hearing, smell, taste and touch, but also movement, balance and internal organs, which are omitted above.

whether digital or analog. “Explicit knowledge” of some scholars seems to be limited to only digital signs or symbols, or at least it seems that they attach importance to digital signs or symbols (*infra*).

The author tries to define “digital” and “analog” for communication : “digital” is expressing or transmitting by discrete signs or symbols such as language, numbers, numerical values, formulas, etc. ; “analog” is expressing or transmitting by a continuously variable physical quantity or something except discrete signs or symbols. Table 1 shows the category of signs and symbols used in communication into “digital” and “analog” according to the channel.

(b) Unexternalizable but transmittable knowledge

This is not knowledge just obtained through information, but knowledge based upon a person’s experiences, that is to say, “body knowledge” or “experience knowledge.” This knowledge is impossible to externalize but possible to transmit or share. It becomes possible to transmit if others have the same experience. In case of sight, even if it is impossible to express the face of others, animals or plants in detail by language, it becomes possible to transmit by pointing at the objects for others. It can be called common experience by sight. This is so called ostensive definition. Or it is impossible to emit taste or smell as knowledge out of body, but it becomes possible to transmit or share by letting others experience the same taste or smell. The author thinks that new skills obtained by watching the master is included in this knowledge.

The author has once thought that this “unexternalizable but transmittable knowledge” is part of tacit knowledge in the respect of difficulty of externalization², but now he does not think that it is included in tacit knowledge. This knowledge is transmittable by cognition, that is to say, through senses such as sight, smell, taste etc. It means that the process of encoding and decoding in communication can be performed. Accordingly we should not think that this knowledge is in the same dimension as tacit knowledge.

(c) Unexternalizable and intransmittable knowledge=Tacit knowledge

Unexternalizable and intransmittable knowledge out of “body knowledge” or “experience knowledge”, which a person has acquired through experiences, is “tacit knowledge.” It is because tacit knowledge works that we have a good command of speaking our own language, manage to ride a bicycle, cook dishes without seeing a recipe, master sports, or acquire skills. Some of a person’s proper experiences cannot exactly expressed in language or transmitted to others even though they can be comprehended by the individual. Namely, some of the knowledge or skills that a person has acquired in his or her own way is impossible to transmit to others. Individual’s tacit knowledge is unique to each person, and impossible to

transmit and share with others. If tacit knowledge of a genius should be shared with others completely, anybody could become a genius.

“Tacit knowledge” is the concept presented by Michael Polanyi (1891–1976), the genius scientist, who was born in Hungary and conducted research in Germany, England, USA and Canada. Tacit knowledge is the “knowledge of untold portions which supports what is told.” We can know more than we can tell. It is unexternalizable and intransmittable “body knowledge”, “experience knowledge”, “subjective knowledge” or “personal knowledge” that a living person, not a machine or a computer, has acquired inside the body. We can recognize a certain person’s face among a lot of faces, or medical doctors can identify diseases, or scientists can identify rocks, plants or animals. It is because tacit knowledge is at work.³ Tacit knowledge in this article is based upon Polanyi’s tacit knowledge.

It can be thought that Polanyi’s “tacit knowledge”, that is to say, “knowledge of untold portions which supports what is told” is mostly unconscious and impossible to externalize and transmit. This tacit knowledge is personal knowledge such as naturally acquired skills or routine knowledge including knowledge about how to walk straight or how to drive a car well, which is usually unconscious and quite hard to explain in detail. This is the knowledge that a body knows. The tacit knowledge of Polanyi is called “intuition” by his collaborators and students.

The encoding and decoding process of “tacit knowledge” in communication is inscrutable or unexplainable. To be exact, “tacit knowledge” is elusive and unspecifiable because the encoding and decoding process of tacit knowledge in usual communication is inscrutable. It is unspecifiable how and through which sense it is acquired. It is because it is said that tacit knowledge is arranged as multi-items and less coherent or coordinated. Anyway “tacit knowledge” is in a different dimension from usual cognition. In other words, it is beyond the framework of cognition.

However, the “tacit knowledge” used in management, as referred to in Nonaka’s “knowledge creating company theory”⁴ seems to be a little different from Polanyi’s “tacit knowledge.” If the “tacit knowledge” is highly personal and hard to formulize, making it difficult to communicate or share with others (*The Knowledge-Creating Company*, p.8), Nonaka’s “tacit knowledge” is not so different from Polanyi’s “tacit knowledge.” However, if the tacit knowledge can be converted to and from explicit knowledge or socialization from tacit knowledge to tacit knowledge can be conducted (*ibid.*, English version, p.9), it is a different story.

The author understands that Nonaka wants to say that skills or knowhow which has

been performed without making a manual should be externalized and manualized as much as possible. If so the “externalizable and transmittable knowledge” that has not be externalized yet, becomes externalized. That is all. If this knowledge is called “tacit knowledge”, it is “externalizable and transmittable knowledge.” Furthermore, it is impossible to externalize or manualize all of such skills or knowhow completely.

For example, when an artisan tries to transmit his or her skill or knowhow to his or her apprentice, he or she may prepare a manual on the skill or knowhow and oral supplementary explanation may be added, and when necessary he or she may show by gesture etc. while the apprentice is watching. But some of the knowledge still cannot be transmitted. The author thinks that the manual, oral supplementary explanation, and showing by gesture etc. and watching are Nonaka’s knowledge, and the knowledge still intransmittable even after manualizing, explaining by language and transmitting by showing and watching is Polanyi’s knowledge which is called “intuition” or “knack.” Knowledge transmitted by “manual” and “oral supplementary explanation” is “externalizable and transmittable knowledge”, and knowledge transmitted by “showing by gesture etc. and watching” is “unexternalizable but transmittable knowledge.” In other words, Nonaka’s “tacit knowledge” which should be externalized and manualized is “externalizable and transmittable knowledge”, and his “tacit knowledge” which is sharable by observation, imitation or practice is “unexternalizable but transmittable knowledge.” It turns out that Nonaka’s “tacit knowledge” includes both “externalizable and transmittable knowledge” and “unexternalizable but transmittable knowledge.”

It is a common point that both Polanyi’s tacit knowledge and Nonaka’s tacit knowledge are “body knowledge” or “experience knowledge.” The difference between the two is that Polanyi’s “tacit knowledge” is “unexternalizable and intransmittable knowledge”, and Nonaka’s “tacit knowledge” is both “externalizable and transmittable knowledge” and “unexternalizable but transmittable knowledge.” The author is skeptical that Nonaka’s *transmittable* “tacit knowledge” should be called “tacit knowledge” since he thinks that “tacit knowledge” is “unexternalizable and intransmittable knowledge.” From Polanyi’s viewpoint, tacit knowledge is called “tacit knowledge” because it cannot be externalized or transmitted.

Synthesis of the same kind of knowledge, that is to say, combination of “externalizable and transmittable knowledge” or socialization of “unexternalizable but transmittable knowledge” will be possible. However, how can two different kinds of knowledge, that is, “externalizable and transmittable knowledge” and “unexternalizable but transmittable knowledge” be converted to and from each other and sythesized? The transmission system or sharing system of these knowledge is not necessarily the same. Then the spiral phenomena of knowl-

edge in his theory (tacit knowledge→tacit knowledge→explicit knowledge→explicit knowledge) becomes doubtful.

Nonaka's tacit knowledge could be called "para-tacit knowledge", but it should be re-named because it leads to misunderstanding.

The author would like to mention one more thing concerning Nonaka's theory. His "explicit knowledge" attaches too much importance to digital signs or symbols such as "language", "number", "formula", "numerical value", "data", "manual" etc., except "picture", "map" etc. The author thinks that "picture", "map", "graph" etc. are analog signs or symbols, but one can regard them as digital from a different perspective. In Nonaka's category, these may be digital. The analog signs or symbols such as "circumstances", "appearance", "facial expression", "physical movement", "finger movement", "rhythm", "melody", "smell", "taste", "touch" etc. are not mentioned in Nonaka's explicit knowledge. The author's explicit knowledge includes both digital and analog signs or symbols.

2. Tacit knowledge in communication activities

It is thought that human communication is not performed by "externalizable and transmittable knowledge" alone or "unexternalizable but transmittable knowledge" alone, or "tacit knowledge" alone. Communication is carried out while they interact with each other.

Human communication is conducted either (a) by expressing through signs or symbols encoded from externalizable and transmittable knowledge, or (b) by sharing taste, smell etc. with others with "unexternalizable but transmittable knowledge" working. But in both cases (a) and (b) above tacit knowledge assists other knowledge. In actual communication activities, (a) and (b) are mostly carried out simultaneously. That is, while "externalizable and transmittable knowledge" and "unexternalizable but transmittable knowledge" are assisted by tacit knowledge, more accurately speaking, these three kinds of knowledge interact with each other, externalizable or transmittable knowledge is externalized or transmitted.

Human communication is an unspecifiable process with highly developed tacit personal commitment involved. Both processes of externalizable and transmittable knowledge assisted by tacit knowledge and of unexternalizable but transmittable knowledge assisted by tacit knowledge, whether verbal or nonverbal, are likewise unspecifiable. Communication between human beings is a way to manifest the knowledge acquired inside a human body quite unlike communication by robots or machines. Without tacit knowledge, even language does not work as an effective communication means.

3. Other roles of tacit knowledge

Tacit knowledge has other roles besides its role in communication. The author would like to specify two points we should take note of concerning “tacit knowledge.”

(a) Effective learning

Learning can be categorized into “pattern learning” which is learning by repetition with textbooks, and “experience learning” which is learning by personal experience. For actual learning, integration of information from textbooks and personal experience is necessary, but one should make good use of not only information but also all the senses including sight, hearing, smell, taste, touch etc. in person to acquire new skills. From time to time, watching the master or someone else who can be a master may be effective.⁵ You may find limitations on pattern learning based only on textbooks or manuals. To enhance communication competence, thinking just in the brain is not enough, but one must set a goal and practice to a certain extent after getting necessary information, otherwise one cannot gain the goal. It is the same thing in the case of mastering foreign languages. In fact, one cannot master foreign languages if one learns only by deskwork as in studying for entrance examinations. The communication style of Japanese is mostly different from that of people from different cultures, which most Japanese do not recognize due to lack of real intercultural experiences. If we take this matter into consideration, one cannot expect to master foreign languages effectively without practice. This is because tacit knowledge will not develop. From the above perspective there is room for discussion in introducing foreign languages to infants or children, including elementary school pupils.

Manual learning has its limits. Manuals or textbooks may be expected to work effectively in their own way at an early stage in the acquisition of new skills, but they are perfunctory and inflexible. The more developed skills are, the less effective manuals gradually become since they cannot respond to complicated situations which always vary. This is because if one becomes more skillful one becomes more intuitive and needs flexible situation judgments. Manuals gradually disappear into the background. This is a limitation on the subjects that need practice in school education, or on education with manuals.

The author was born and brought up in a snowy area. The locals usually start skiing at about three years old and become skillful skiers and manipulate skis quite freely. The inexperienced may not be able to understand it, but manipulating skis freely is a quite advanced skill. Self-defense forces are stationed in the native town of the author, and the great majority of the members are from southern parts of Japan such as Kyushu, Shikoku and Chugoku

and they have never skied before. They cannot slide on skis, much less walk a step if they try it for the first time in their life. Although they are explained about how to ski by language, they cannot do well and so they are made a fool of by the local children. Highly developed skills are unspecifiable or unexplainable in detail through language. One has no alternative but to practice in person. We should recall why and how we become able to walk straight or ride a bicycle freely, or to have a good command of speaking Japanese or to use chopsticks (if he or she is Japanese). Even if we learn these skills thoroughly on paper from textbooks, it is impossible to acquire such skills practically. No manual is needed for highly advanced skill such as sake brewery by a *toji* or chief brewer, pottery by an expert, or *shogi* or Japanese chess and go or the national board game of Japan by grade holders. The more developed skill becomes, the more obstructive manuals gradually become.

(b) Promotion of device, invention and discovery

Furthermore, tacit knowledge becomes the source for creative activities to know the existence of problems or to discover or invent something new.⁶ When one gets accustomed to something, one incorporates it in one's body, or extends one's body to include it, and one comes to dwell in it. In other words, tacit knowledge or intuition develops. From time to time something new is devised, and invention or discovery is performed. Half-finished work is useless. The degree of incorporation or indwelling of geniuses is extremely high. Their intuition is highly developed and they can guess or get a rough idea of what the conclusion is. Geniuses can invent or discover something new, but ordinary people also can devise something new : for example, original ideas for improving machinery and equipment, and new and original ways to achieve goals or learn something effectively. It is also possible to devise something new for acquiring communication competence or mastering foreign languages. We must take this into consideration. This is not what we should learn only from others, but what we should acquire by making the most of our whole body. We cannot say that what we learn only from others is our own device. Our own personal device is required.

Conclusion

Now the term “tacit knowledge” is sometimes discussed in theories of business management, but the existence of tacit knowledge is almost unknown in the area of communication study. One of roles of “tacit knowledge” is realizing communication by interacting with cognition. Without tacit knowledge, communication cannot be carried out. In other words, even language does not work as an effective communication means without tacit knowledge. Other

roles of tacit knowledge involve acquisition of skills and becoming the source for creative activities to know the existence of problems or to discover or invent something new. We should have tacit knowledge in mind when we discuss communication activities and so on. In concrete terms, “tacit knowledge” is essential for studies into how to enhance communication competence or how to master foreign languages effectively. In other words, it is important to think by what kind of experiences we acquire “tacit knowledge.” It can be said that theory without practice is useless and practice without theory is dangerous, but the existence of tacit knowledge is indispensable to fill the gap between the two.

Furthermore, when we discuss this kind of knowledge, we should not discuss “externalizable and transmittable knowledge” alone, or “unexternalizable but transmittable knowledge” alone, or “tacit knowledge” (unexternalizable and intransmittable) alone, but rather “body knowledge” which is the knowledge accumulated and integrated inside the body through experiences. That is to say, “body knowledge” is composed of “externalizable and transmittable knowledge”, “unexternalizable but transmittable knowledge” and “tacit knowledge.” For further studies, there is a need to research from a broader point of view, i.e. from the viewpoint of “body knowledge.” As mentioned above, these three kinds of knowledge interact with each other in communication.

Notes :

1. In general communication is performed through the channels of sight, hearing, smell, taste and touch, the senses. Messages are replaced with signs or symbols, are received in order of sense→perception→cognition and sent in the reverse order : cognition→perception→sense.

“Sense”, “perception” and “cognition” could be clearly defined, but there is a recent tendency to think that the three of them are a continuum of cognition.

“Senses” are generally defined as each of the special faculties connected with a body organ, by which man and other animals perceive external objects and changes in the condition of their own bodies. Usually reckoned as five – sight, hearing, smell, taste, touch (*OED*, 2nd ed., 1989).

“Perception” is defined as both the experience of gaining sensory information about the world of people, things, and events, and the psychological processes by which this is accomplished (Corsini, *Encyclopedia of Psychology*, 2nd ed., 1994).

“Cognition” is a general term or a “generic term used to designate all processes involved in knowing.” “Cognition” comprises all mental activity or states perception, attention, memory, imagery, language functions, developmental processes, problem solving, and the area of artificial intelligence (which lies outside the discipline of psychology) (*ibid.*).

2. Osaki, Masaru, “Komyunikeshon niokeru Anmokuchi to Keishikichi”, *Otsuna Review*, vol.30, 1997 (in Japanese)

3. Polanyi gives explanations from several points of view. One of them is an explanation by proximal

term and distal term, that is to say, by probe and hand. When we have knowledge of things that we cannot tell, it is knowledge as a proximal term. We learn to feel the end of a tool or a probe hitting things outside. We may regard this as the transformation of the tool or probe into a sentient extension of our body. Our awareness of our body for attending to things outside it suggests a wider generalization of the feeling we have of our body. Whenever we use certain things for attending from them to other things, just as we feel our own body in terms of the things outside to which we are attending our body, these things change their appearance. We can say that when make a thing function as the proximal term of tacit knowledge, we incorporate it in our body or extend our body to include it so that we come to dwell in it (Polanyi, *The Tacit Dimension*, p.16).

When a blind man taps his way with a stick and feels as if he felt a part of his body touching it, he incorporates it in the body, extends the body to include it, and dwells in it. With a racket in case of playing tennis or a car body in case of driving a car, it is the same thing.

Our body as a tool of tacit knowledge is a proximal term. While distal term has focal awareness, proximal term has proximal awareness (*ibid.*, p.11).

Polanyi gives explanations also from the viewpoints of functional aspect, phenomenal aspect, semantic aspect, ontological aspect etc. However, “tacit knowledge” cannot be explained clearly even through language.

4. Nonaka’s theory of knowledge creating company is that when communication is conducted from a person to a group, inside an organization and among organizations, tacit knowledge and explicit knowledge interacts with each other, and “socialization” from tacit knowledge to tacit knowledge, “externalization” from tacit knowledge to explicit knowledge, “combination” from explicit knowledge to explicit knowledge, “internalization” from explicit knowledge to tacit knowledge occur, and finally knowledge creating, namely, innovation is caused by interaction among persons at the place of group through spiral communication of knowledge. According to his explanation, “socialization” is for members of a group or organization to share the tacit knowledge of an individual. “Externalization” is the process of expressing the tacit knowledge as a clear concept. “Combination” is creating new explicit knowledge by combining diverse forms of explicit knowledge. “Internalization” is to change explicit knowledge to tacit knowledge.

5. Under the system of living in the home of the master, adopted by professional singers, Japanese dancers etc. or the apprenticeship for artisans, the skill and knowhow are transmitted mainly by watching the master.

6. Polanyi, *op.cit.*, p.6.

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