What is "Communication"?
—Beyond the Shannon & Weaver's Model—

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The purpose of this study is to illustrate how the concept of communication prevalent in Japan is overemphasized from the perspective of cybernetic tradition and to propose to view the communication phenomena by using the dialogical-dialectical approach between cybernetic tradition and semiotic tradition of communication theories. Based on the analysis of Information Study textbooks, communication was defined as "information processing" reflected in cybernetic tradition. However, reality is constructed through communication. Thus, the definition, "intersubjective mediation by signs" provided by semiotic tradition will be useful to identify two communicators not as "I" and "the other" but as "I" and "we" as a unit. This approach will reveal the importance of caring for others and the affective domain. Hence, by using the dialogical-dialectical approach between cybernetic tradition and semiotic tradition of communication theories, it will be beneficial to observe communication phenomena from a variety of perspectives.

Keywords: Communication, cybernetic, information study, semiotics, textbook

Introduction

The purpose of this paper is to indicate how the concept of communication prevalent in Japan is overemphasized from the perspective of cybernetic tradition and to propose viewing the communication process by using dialogical-dialectical approach between cybernetic tradition and semiotic tradition of communication theories. In 21st century, the term 'communication' is used in a variety of fields and the importance of communication is emphasized strongly, however, a serious discussion of what communication is lacking.

The term "communication theory" was not widely used until the 1940s, when it primarily referred to certain fields of electrical engineering that included information theory and cybernetics (Craig & Muller, 2007). During the early 1950s, many leaders in the audiovisual instruction movement became interested in various theories or models of communication, such as the model presented by Shannon and Weaver (1949). These models focused on the communication process. A process involves a sender, a receiver, a message, a channel, and medium through which the message is sent. Since then, conceptualization of the communication phenomena is influenced strongly by the development of media such as a telephone, a radio and television as utilized in mass communication (Griffin, 2012).

In the 21st century, SNS (social networking service) such as Facebook, Instagram, Twitter, LINE, and YouTube and so on is the key media to consider when examining the communication phenomena. For example, some people who use Facebook stoically scrutinize to the number of "Like" s/he can get. That person will concentrate to write messages that make stronger impact to get more feedback from many unknown persons (Ito, 2019). Then, to whom does he address the message? Whose feeling does s/he want to move? This is one of the communication phenomena, but it will be different somehow from our social communication commonly observed in a community.

In the 21st century, students are required to acquire three categories of skills for their future career. They are learning skills, literacy skills and life skills. Among them, learning skills are represented by critical thinking, creativity, collaboration and communication. Therefore, it is understandable that communication is one of the more important learning skills needed when pursuing a career. However, what is 'communication'? How does communication differ from collaboration?

In Japan, Communication Competence has been the most important factor at job interviews for more than 16 years, according to a survey conducted by the Ministry of Economy, Trade and Industry in 2018. Then, what is communication competency? Is it possible to nurture it in education?

Following these trends, the National Curriculum Standards was revised in 2017 in order to make it "suitable for a new era with the aim of realizing a 'curriculum open to society.'" In addition to identifying competencies that will be required in the future, "implementing proactive, interactive, and deep learning improving classes from the perspective of active learning, reassessing subjects, and enhancing curriculum management as well as learning assessment" (Overview of the Ministry of Education, Culture, Sports, Science and Technology, p.8) are emphasized in the revised National Curriculum Standards. Thus, in Japan, proactive, interactive, and deep learning are the new trend words in

order to improve the students' abilities for the future. Thus, "interaction" is the key element to understand the concepts of communication or raising the ability of communication competence.

Consequently when a variety of group discussions were introduced to enhance active learning, interactions among the group members were limited. There is a 'free riders' who just followed what others said (Mori, 2015). Thus, students' engagement is the important element to create a learning community (Barkley, 2009). Barkley states that integration of the cognitive, affective and psychomotor domains creates the synergy that enhances the learning community.

Therefore, it seems that communication is the basis for interaction or collaboration, but the concept of communication is not clear. At least, we, the human being use language, thus, communication is a symbolic process whereby reality is produced, maintained, repaired and transformed. However, as the fish cannot be aware of water, the very medium that forms its ambience and supports its existence, communication, through language and other symbolic forms, comprises the ambience of human existence (Craig & Muller, 2007).

In Japan, according to the revision of the National Curriculum Standards, all textbooks used at elementary school, lower and upper secondary school and special needs schools were also revised and will be implemented gradually by 2020. These textbooks are authorized in accordance with the National Curriculum Standards and are very influential to the students and teachers. Among the main subjects, the subject called "Information Study" at high schools is mandatory and this subject might be included as the main subjects of the entrance examinations of the universities in the near future (The educational newspaper, 2019.4.15).

This textbook covers the topics of utilization of information, telecommunication networks and communication, tasks for information society and information morals, and future of information society. Thus, these topics are very familiar to all students and the textbooks significantly influence students.

Therefore, in this study, the information textbooks and the daily communication is investigated in order to suggest the perspective of semiotics tradition beside cybernetic tradition that are needed to overcome constraints from the Shannon and Weaver Model and to capture the phenomena of 'communication' more appropriately for 21st century.

Cybernetic Tradition

In the cybernetic tradition, on which well-known Shannon & Weaver Model (1949) is based, communication is defined as "information processing" (Craig, 1999). In the Shannon & Weaver Model, the process of information transmission from a source to a receiver is examined thoroughly, and the importance of reducing noise and the concept of channel that mediate the information is proposed (Figure.1).
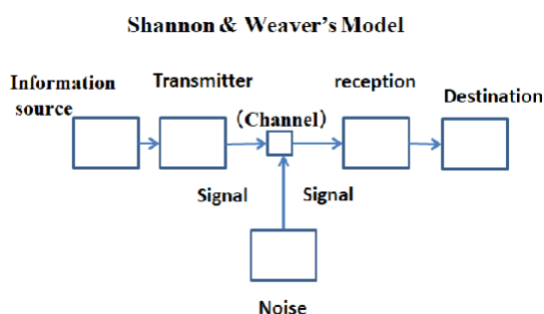

Figure 1.Shannon & Weaver's model

Shannon & Weaver's model shows one way communication. It means that a sender sends a message to a receiver through channels, the five senses, and while sending the message, noise should be reduced as much as possible in order to send the message effectively and accurately. Four types of noise are identified. 1) Physical noise such as noise from construction outside of the classroom or room temperature. 2) Psychological noise such as prejudice, biased attitude towards the other person. 3) Biological noise such as disease, fatigue or hunger of a sender and/or a receiver. 4) Semantic noise such as slang or special terms. A sender encodes a message before uttering a word and decodes the message to interpret a message. The Shannon & Weaver Model provides the key components of 'communication process,' that are a sender, a receiver, a message, encode, decode, noise, and channel (Yashima & Kubota, 2012). These seven components are minimum requirements for understanding the process of communication.

Based on this model, the scientific definition of communication generally refers to the process of information transmission between a source and a receiver who share common signs.

Semiotic Tradition

In the semiotic tradition, communication theories are approached as "intersubjective mediation by signs" (Craig, 1999). A sign is "viewed as that which in some sense, stands for something else—its significate" (Cronkhite, 1984, p.53). Liska (1994) proposes a continuum that consists of sign behaviors that she describes as "symptom", "semblance", or "symbols" depending upon the degree of arbitrariness of the particular sign.

The followings are the definition of each sign given by Liska (1994).
    Symptom: A sign that bears a natural, functional, or physiological relationship to their significate. Symptomatic signs directly achieve their effects or, directly satisfy biological needs (Liska, 1986). For example, a blushing face at a presentation indicates to the audience about the speaker's nervousness.
    Symbol: A sign that bears no conceivable natural or functional relation to its significate. In other words, symbols are totally arbitrary signs. With the exception of onomatopoetic words, almost all words are symbols.
    Semblance: A sign that either resembles the symptoms of the conditions on which they are based or bears a perceptual similarity or resemblance to their significates. "Ritual semblance have their origins in symptoms but become exaggerated and transplanted into other contexts. Iconic semblance resemble their significates, as in the case of a line drawing of a person, a map of a territory, or a photograph of a gorilla" (Liska, 1994, p.238). Onomatopoetic words appear to be a mixture of symptom and symbol; that is, they are to some extent arbitrary but the choices are restricted to mimicry. Some of the Japanese language (a pictograph)such as 川（river）or 山（mountain）are semblance since they are resemble the significates, while English language is based on symbols.

In order to grasp the concept of three signs easily, Figure 2 was drawn by the author based on Liska (1986; 1994) and Yashima & Kubota (2012).
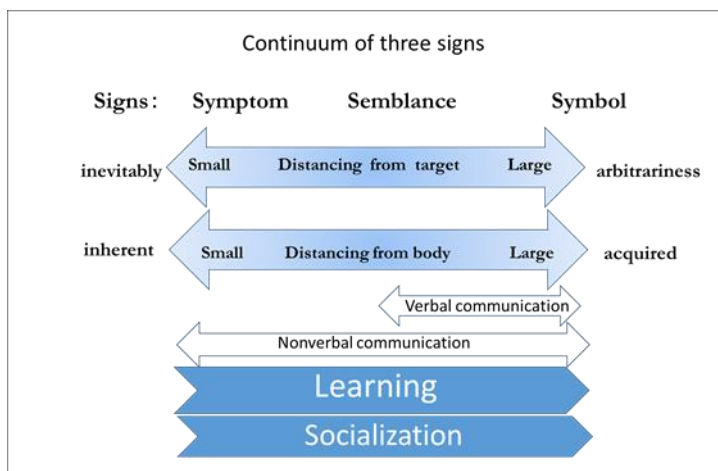

Figure 2. The continuum that consists of three signs   (Yashima & Kubota, 2012, p.47)

In Figure 2, on the top, three signs, symptom, semblance and symbol are lined along the continuum. The second arrow shows the degree of arbitrariness and the third arrow shows how to acquire the signs; whether it is inherent or by learning. Verbal communication is done by using semblance and symbol while nonverbal communication is done by three signs. People will learn symbol through education and socialization that will be totally different from animals. The important point of Figure 2 is the continuum, with symptom one end and symbol the other end. In general, verbal communication such as language is digital while non-verbal communication such as walking, hugging, bowing are analog. It means, if you stopped talking, the other person cannot grasp any meaning from the digital information, however, the other person can grasp some meaning from non-verbal cues, such as physical appearance, artifacts, environments, timing, body touching, and spacing since these are analog information. Analog information will be sent simultaneously, or are sent through multichannels. (Among nonverbal cues, some hand gestures are symbol because they are assigned arbitrary meaning. Thus, hand movement for 'coming' in Japan has the meaning of going away in the U.S.A.)

Liska (1994) "refers to 'social communication' as an organism's response to non-symbolic signs and uses the term 'symbolic communication' to refer to an organism's response to a symbol" (p.172). Thus, social communication occurs to the extent that an organism responds to nonarbitrary signs, that are 'symptoms' here.

In the case of communication between an infant and his caregiver, Kujiraoka (1997) stated that it is quite natural that communication occurs not from the sender's side but from the receiver's side (caregiver's) since the infant cannot intentionally send any meaningful verbal message to his caregiver. Kujiraoka (1997) investigated the human development of communication by researching the relationship between an infant and a caregiver thoroughly, and found that the caregiver is always instinctively in tune with her baby. Therefore, the caregiver will easily notice the infant who expresses his feelings through the vitality affects (Stern, 1985). Thus, Kujiraoka (1997) calls this kind of communication Prelingual Affective Communication. Prelingual Affective Communication is defined as various non-verbal interactions that happen mainly when two psychologically connected persons discover a common ground for their feelings and establish a relationship. It can be observed not only between caregiver and infant; husband and wife; boyfriend and girlfriend and between any two people who are close. Once we acquire a language, we tend to forget this pre-verbal ability of Prelingual Affective Communication; however, we all have this ability (Kujiraoka, 1997). Figure 3 shows the diagram of the communication between an infant and a caregiver (Kubota, 2008).
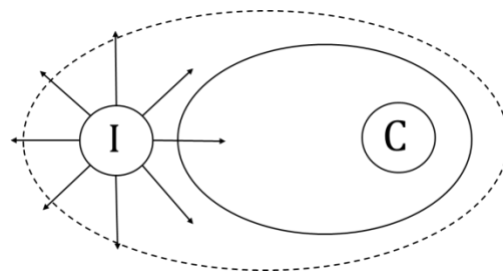

Figure 3. Image of Prelingual Affective Communication

The relationship between an infant and a caregiver will differ depending on three key concepts: "a meta level of interest", "a depth of interest", and "a way of expressing mood" (Kujiraoka, 1997). For example, when an infant cries, both the mother and the father can easily hear it. This is because parents are always instinctively tuned towards their baby. Thus they have the "meta level of interest" in their baby. However, if the mother notices that the cry is little bit different from the usual one, then, "her depth of interest" will be different from the father's. The mother will pick up the baby who is crying from a fall and say by herself "Ouch! Ouch!" with empathy while patting the baby's head, but the father who picks up the baby will say, "It hurts, doesn't it?" These are different ways of expressing the "mood". Figure 3 shows that the vitality affects of an infant are expressed without any intended directions and the receiver will notice differently depend on "the depth of interest".

Development of Communication Media

Since Kujiraoka (1997) was interested in the concept of the development of an infant, he focused on the code system and psychological distance of two persons, and presented the development of communication media as shown in Figure 4. The vertical axis shows the degree of contract of coding, while the horizontal axis shows the degree of psychological closeness between two persons as well as the type of communication. The communication between infants and caregivers are described in the left lower end. They communicate through facial expression, posture, looking, touching, and voicing.

The information study textbook based on cybernetics tradition emphasized the communication mainly occurred in the upper right side in Figure 4. This means that information can be transmitted without mistake although the two people are apart physically, since the contract of code is rigid.
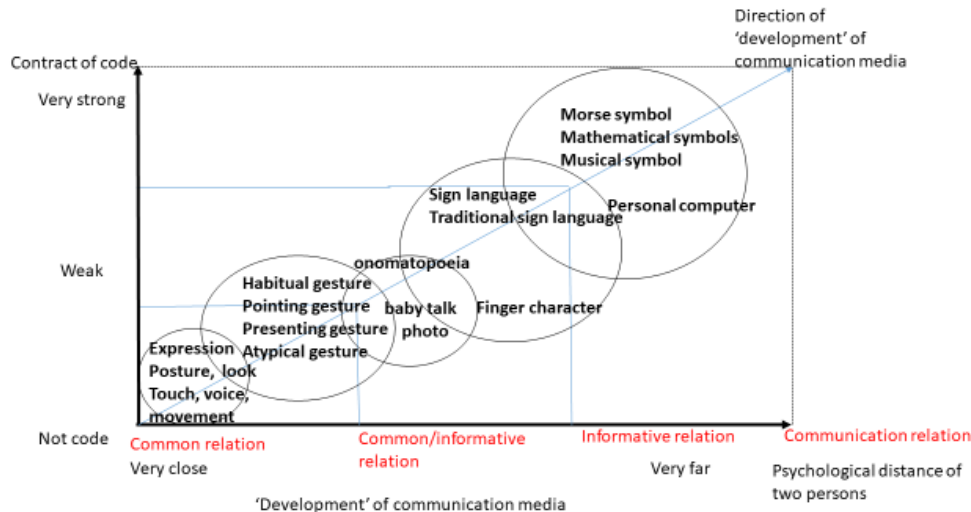
Figure 4. The development of communication media (Kujiraoka, 1997, p.177)

Objective

The purpose of this study is to illustrate how the concept of communication prevalent in Japan is overemphasized from the perspective of cybernetic tradition and propose to view the communication phenomena by using dialogical-dialectical approach between cybernetic tradition and semiotic tradition of communication theories.

The research questions are as follows:

RQ1: How is the concept of communication presented in Japanese educational field?
RQ2: What kinds of assumptions are there in the concept of communication process?
RQ3: How does the dialogical-dialectical approach between cybernetic tradition and semiotic tradition of
    communication theories help to observe the communication phenomena?

Methods

In order to start the discussion about the communication phenomena from the perspectives of cybernetic tradition and semiotic tradition, some evidences for both tradition will be presented as follows.

As the evidence for cybernetic tradition, eight Japanese textbooks of information study used in high schools were analyzed to clarify the usage of terms of 'communication' as well as 'information'. In the Japanese high school, two kinds of textbooks are used: Information Study by Scientific Approach and Information Study for Participating Community. However, 80% of the high school students study Information Study for Participating Community, thus, six Information Study for Participating Community textbooks, and two Information Study by Scientific Approach textbooks were chosen for analysis.

As the evidence for semiotic tradition, two examples of Japanese conversation from the information study textbook and TV drama were chosen to illustrate the communication phenomena.

Based on these evidences, the dialogical-dialectical approach between cybernetic tradition and semiotic tradition was applied in order to answer the research questions.

Results

Analysis of eight textbooks
Tables 1 & 2 show the results of eight textbooks analysis. There are definitions of information in seven textbooks while there are definitions of communication in three textbooks. (Since the title of the textbooks are similar, hereafter, the names of publishers are used.)
Some of the definition of "information" are as follows:
    *Information is the noticing of events and the knowledge about the world, and that is useful to judge
     appropriately   (Tokyo Shoseki, p.6).

*Information is knowledge about some target such as persons, things, and events, etc.

(Daiichi Gakushuusha, p.4).

*Information is what the data, that consist of number and letters, is purposefully collected and arranged

(Jikkyou Shuppan, p.6).

The definition of "communication" are as follows.

*communication is to exchange information expressed with letters, sounds, still pictures and movies, through media such as telephone and e-mail, and to interact each other   (Jikkyou Shuppan, p.106).

*Exchanging information is called communication. Note: The word 'communication' is used for transmitting people's feeling or intention between people   (Suken Shuppan, p.106).

*Communication is the exchange of intention, feeling, and thought among people   (Nihon bunkyo, p.16).

These definitions indicate that communication is an active term involving the exchange of "information". To exchange something like information, at least two persons are required to complete the activity.

Although the definition of "communication" is not written in a textbook, the term "communication" is used in a variety ways in all textbooks. For example, communication tools, a variety of communication, communication on the network, means of communication, and lack of communication, types of communication, characteristics of communication, effective communication, and variation of communication.

In addition, the number of appearances in the textbooks are as follows.In the case of the textbooks of Information Study for participating community: Tokyo Shoseki, Jikkyou Shuppan, Kairyudo, Daiichi Gakushuusha, Suken Shuppan, Nihon Bunkyo, 11, 30, 41, 39, 8, 27 respectively. In the case of the textbooks of 'Information Study by Scientific Approach,: Tokyo Shoseki and Jikkyou Shuppan, 20 and 22 respectively (Table 1 & 2).

This data illustrates that the term "communication" is a very important word and useful to explain the information society in a variety of ways.

Table 1

Analysis of textbooks (1)

textbook	NEW Edition/Information Study for participating community	Latest/Information Study for participating community	Information Study for participating community	Information Study for participating community
the Publisher	Tokyo Shoseki	Jikkyou Shuppan	Kairyudo	Daiichi Gakushuusha
Total number of pages	171	175	167	191
Publication year	2018	2018	2018	2018
Definiton of information	p.6 Information is the notice about events and the knowledge about the world, and that is useful to judge appropriately. The mere recodes of temperature is not information, but if those data was arranged by the certain purpose, then it becomes information like weather reports. Thus, information should be arranged for the sender and the receiver to understand clearly.	p.6 Information is the fact or the things that become the evidence to judge the behaviors or intention. The data is the one that were expressed in number, letters or signs.	p.6 There are two kinds of 'information'. One is data that is expressed by signs, and does not have a special meaning, the other is 'information' that is interpreted and has a meaning.	p.4 Information is knowledege about some target such as persons, things, and events, etc.
Definition of communication	none	p.106 Communication is to exchange information expressed with the letters, sounds, still pictures and movies, through media such as telephone and e-mail, and to interact each other.	p.26. The definiton is not stated, but, the process of the communication is explained with a diagram and one example.(refer to Figure 5.)	none
examples of the usage of 'communication'	means of communication	variation of communication	means of communication	means of communication
	characteristics of communication	interpersonal communication	characteristics of communication	communication tool
	communication on the network	comminication on the network	effective communication	communication on the network
number of sentences that iinclude the word 'communication'	11	30	41	39

Table 2
Analysis of textbooks (2)

textbook	Information Study for participating community, NEXT	NEW Information Study for participating community	Information Study by Scientific Approach	Latest/Information Study by Scientific Approach
the Publisher	Suken Shuppan	Nihon bunkyo	Tokyo Shoseki	Jikkyou Shuppan
Total number of pages	175	159+Documnts 22	171	175
Publication year	2018	2018	2018	2018
Definiton of information	p.6 Information is knowledege or facts that become the resouces for decision making, when some actions need to be taken.	p.6 Gernellary, information is data, a messageor knowledege that is valuable or meaningful for a person.	none	p.6 Information is what the data, that consists of number and letters, is purposefully collected and arranged.
Definition of communication	p.106 Exchanging information is called communication. Note:The word 'communication' is used for transmitting people's feeling or intention between people.	p.16 Communication is the exchange of intention, feeling, and thought among people.	p.90 not a definition but a titile	none
examples of the usage of 'communication'	means of communication	means of communication	p.90 a variety of communication	communication tools
	communication tool	characteristics of communication	characteristics of communication etc	lack of communication
	a variety of communication	types of communication		means of communication
number of sentences that iinclude the word	8	27	20	22

Figure 5 shows the process of communication that appeared in the textbook (Kairyudo, 2018, p.27). It clearly shows the key components of communication: a sender, receiver, information (a message) encode, and decode. The communication process is diagrammed as exchanging information, thought, and feeling between a sender and a receiver.

However, do you encode your feeling before uttering? Don't you shake your hand before saying "ouch" when you felt pain? Let's see the daily conversations in the next section.
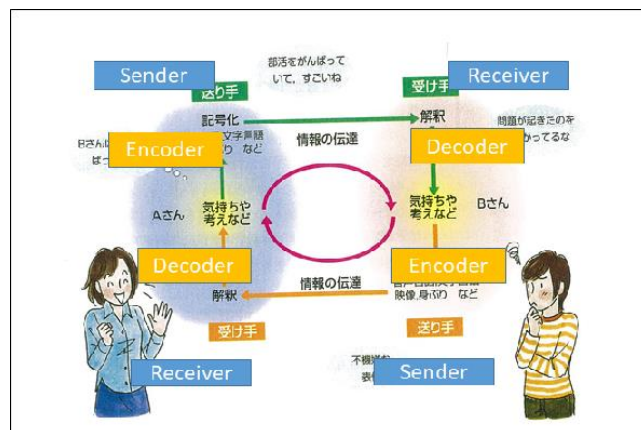

Figure 5. The process of communication written in the textbook (Kairyudo, 2018 p.27)

Daily conversation

Case 1

In the information study textbooks called 'NEW Edition/Information Study for Participating Community' (Tokyo Shoseki), there is one manga (Figure 6. p.8) that indicates the difficulty of "communication". The title is "let's start!- my feeling, wishing to communicate." This manga appears in the section of 'mechanism of transmission' where analog data and digital data were explained as information transmission through a computer.

Figure 6. One example of daily conversation (Tokyo Shoseki, 2018, p.8)

In this manga, the girl receives the message "I like you" from the boy, through a smartphone. However, the girl 's first impression of the boy is that he is looking down at the smart phone only, and that makes her irritated. Finally, she gets angry and says "Talk to me, since I am next to you!" in the second frame. His reply is "Sorry, I am shy…"

The boy did not send any message verbally to her at the beginning, but the girl interpreted a message from his behavior, thus she uttered. The physical distance between the girl and the boy is very close and that helps her to interpret the situation. Hall (1970) classified the personal space into four distances, and defines that the close distance is from 0 to 0.46 meter where the two persons will talk about private topics at that distance. Thus, the girl and the boy can talk about a private topic in this situation. The boy might avoid eyes contact with the girl because of shyness, thus he looks down the smartphone. Sitting on the bench might afford two persons not to look at each other. Silence might tell the girl about his shyness, however, he was busy typing something with his smartphone in this situation. This behavior irritated the girl and said, "Talk to me, since I am next to you!" indicating her assumption that at this close distance two people can talk directly instead of using any other media.

This shows the contradiction of assumptions held by the boy and the girl. The boy insisted on using symbols (typing a word=rigid code), while the girl interpreted symptom and/or semblance (not code) to communicate. Although the girl did not receive any verbal messages from him, she felt uneasy because of the situation of such as close distance, silence, and no-eye contact. This kind of communication process cannot be analyzed with the Shannon and Weaver Model, since nonverbal message is multichannel and the receiver can interpret many meanings depending on the relationship with him and/or the situation. Thus, context is vital to interpret the communication process.

Case 2

Another example of daily conversation is from TV drama called "Hanbun aoi".

The story occurred about 1990s. Nire's daughter, Suzume (the heroine) was eager to get a job, and needed to talk to Mr. Akikaze in Tokyo who was planning to offer her a job.

The scene is at a coffee shop where the Nire family, her father, her grandfather and her brother were sitting at the table. The owner of the coffee shop explained to the Nire family about Suzume's situation, after she saw Suzume the previous evening using a phone in the corner of her coffee shop.

The owner: "The last evening, I just wondered what she was doing, and found that she took out the name card of Mr. Akikaze,"

Father: "Name card?"

The owner: "Yeah, it seems like she always carries it in her pocket, and she called him (with the public phone). Unfortunately for her, it seems that no one answered, so, she called every ten minutes. Poor Suzume, her hands were shaking, maybe she was so nervous, I think."

This scene shows the owner's interpretation of Szume's situation from her shaking hands. She knows Akikaze to whom Suzume was talking on the phone and how important the phone call to Mr.Akikaze was for her. However, without talking to Suzume, she interpreted the situation, from Suzume's shaking hands, as causing her to be nervous.

The characteristics of the nonverbal message is multichannel and analog while the verbal message is digital information. Thus, nonverbal message can be sent without any sender's intention. Nonverbal message of the partner will be interpreted depending on the receiver's careful observation. Like the situation between infant and a caregiver, the boy and the girl in Case 1 as well as Suzume and the owner in Case 2 are close relationships and the girl and the owner care for the other. Thus, they could receive many nonverbal messages from their partner. Thus caring for others is an important factor to recognize any signs from others. Even not a symbol but a symptom such as shaking hand or semblance such as silence have meaning for a psychologically close person.

Discussion

The analysis of the information study textbooks reveals the concept of communication. First, the definition of communication is not as numerous as the definition of information. However, the term communication is used in a variety of ways such as communication tools, and lack of communication. Therefore "communication" is a useful term in an information society. However, it is often used without special consideration. From the definition of communication and its way of usage, the assumption of the concept of communication is based on cybernetic tradition, that emphasized the element of a sender, a receiver, message (information), encode, decode, and the process of communication means to exchange a message. To exchange the message, effectiveness, efficiency correctness are valued highly. According to some textbooks (cf. Figure 5.), not only the message (information) but also feeling can be exchanged among the people. This is the characteristics of cybernetic tradition where communication is defined as "information processing" (Craig, 1999). Information is transmitted according to the code system in cybernetic tradition. Thus, the sender and receiver need to share the common code to understand each other. As far as the common code system is shared rigidly, two persons who are physically apart can exchange message without any mistakes through media. That occurs mainly in the upper right area in the Figure 7. In this area, in regard to psychological distance two persons rely on the rigid code system, in other words, symbol, their communication with or without a media is accomplished without any mistakes (errors). However, coding means segmenting the phenomena into several parts intentionally, thus, differing between cultures and creating misunderstanding easily in intercultural communication.

Cases 1 and 2 are evidence of semiotic tradition. In semiotic tradition, communication is defined as "intersubjective mediation by signs" (Craig, 1999). In this study, signs include not only symbol but also semblance and symptoms, because the receiver can initiate a conversation by responding to semblance or even symptom as shown in Cases 1 and 2. However, as in the case of an infant and a caregiver, a person has to care for others, otherwise, s/he cannot notice any signs from the other. In other words, the sender does not send any message intentionally, but the receiver can notice some signs from the other if only s/he cares for others. That situation occurs in the lower left area in the Figure 7. Facial expression, posture, eye-contact, touch, voice and movement etc. are the media for communication between psychologically very close persons.

According to Kujiraoka (1997), the media of communication develops further, the more prelingual affective communication is disregarded in Figure 7. However, social communication occurs to the extent that an organism responds to nonarbitrary signs, that is 'symptoms' (Liska, 1994). Therefore, the development of communication media given by Kujiraoka (1997) from semiotic tradition was presented by adding the continuum of symptom, semblance and symbol on the right vertical axis in Figure 7. In addition, the area of the symbolic communication and social communication was drawn in the diagram to show the importance of social communication that support symbolic communication. Thus, communication from the semiotic tradition encompasses both symbolic communication and social communication.

On the other hand, in cybernetic tradition, information is transmitted according to a code system, and communication is defined as "information processing". Thus, the direction of development of communication media will be viewed based on the code system and that is from the left side in Figure 7.

The benefit of dialogical-dialectical approach between cybernetic tradition and semiotic tradition of communication theories is the different perspective provided from each tradition and enhance the discussion. In the semiotic tradition,

that "code and media of communication are not merely neutral structures or channels for the transmission of meanings, but have sign-like properties of their own" (Craig & Muller, 2007, p.137). Thus, the code shapes the content, and the medium itself becomes a message. McLuhan (1964) stated that the medium is the message. Therefore, the medium used to deliver the message has a significant effect on how the content is received. The useful terms for discussion will be sign, symbol, semblance, symptom, icon, index, meaning, referent, code, language, medium, and (mis) understanding (Craig, 1999, Yashima & Kubota, 2001). Because the signs are displayed on the continuum of symbol, semblance, and symptom, not only cognitive level but also affective level are covered. In addition, the relationship of two or more than two persons are the unit to analyze the communication phenomena in terms of "intersubjective mediation by signs" (Craig, 1999). Some of the focus for the research will be collectivity of a group, commitment, and engagement.

In the cybernetic tradition, the useful terms for discussion will be "source, receiver, signal, information, noise, feedback, redundancy, network, function" (Craig, 1999, p.133). In Society 5.0 (Cabinet Office), not only the communication among people in the network, but also the communication among people and machine will become the most interesting area to investigate.

The common views in cybernetic tradition such as "that idea exists in people's minds, that words have correct meanings, that meaning can be made explicit, that communication is a voluntary act, and that we use signs and media of communication as tools to represent and share our thoughts" (Craig, 1999, p.137) will be challenged to reconstruct from the semiotic tradition.

In the cybernetic tradition, a sender and a receiver of the message are different entities as seen in the Shannon and Weaver Model. In other words, they are the relation of "I" and "the other." On the other hand, in the semiotic tradition, the relation between two persons are "I" and "we" like the infant and a caregiver in the communication process. The assumption is that they care each other, thus it become the unity of the analysis.
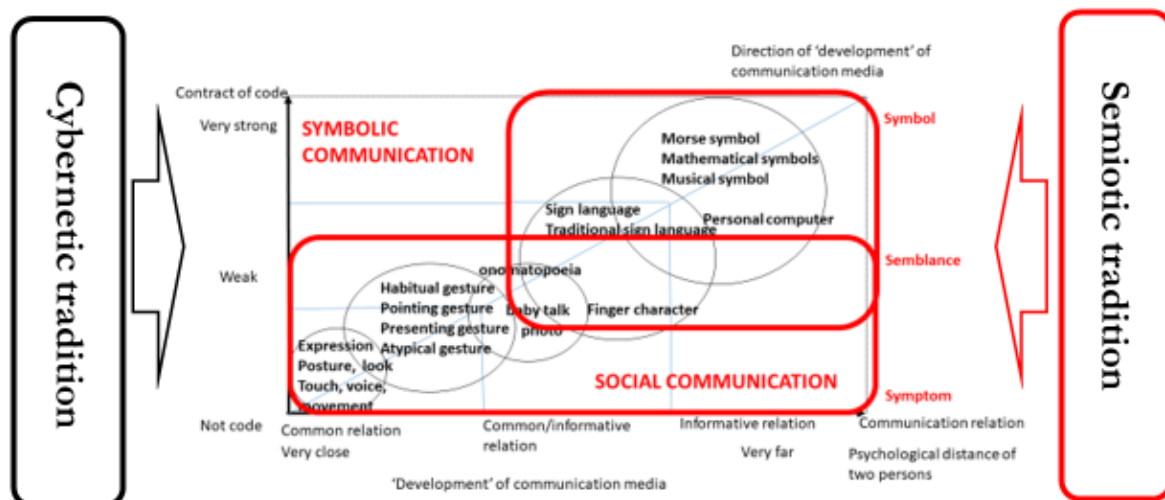

Figure 7. Symbolic communication and social communication

Conclusion

The purpose of this study is to point out that the concept of communication prevalent in Japan is overemphasized from the perspective of cybernetic tradition and propose to view the communication phenomena by using the dialogical-dialectical approach between the cybernetic tradition and semiotic tradition of communication theories. Based on analysis of the textbooks of Information Study, it was evident that communication was defined as "information processing" of cybernetic tradition. The assumption of this definition is that there are two independent entities like two persons, or a person and a machine, that will be able to exchange information efficiently, effectively and smoothly without any errors.

However, from semiotic tradition it can be argued that a medium itself is not neutral and has a symbolic meaning for certain persons. Since the definition of communication in semiotic tradition is "intersubjective mediation by signs," three signs such as symbol, semblance and symptom were introduced. By focusing on semblance and symptom, it was shown that communication occurred even without a word, if two communicators care for each other.

Thus, the dialogical-dialectical approach between the cybernetic tradition and semiotic tradition will be beneficial to discuss social issues such as fake news. Presenting an argument using dialogical-dialectical approach will be the next study.

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