Preface for the Special Issue on Resilience

Tokai University was founded in 1942 during World War II, and this year marks the 80th anniversary of its foundation. The Institute of Civilization Research, which publishes this journal Civilization, was established in 1959 as a place for basic research to realize the creation of a harmonious civilized society, which is the founding philosophy of the university. Initially, the institute had the dual role of a research and educational institution responsible for education across Tokai University. In 2001, the Institute of Social Behaviors and the Institute of Arts were integrated to form a new Institute of Civilization based on the creation of 21st century civilization. Since then, collaborative study extending across faculties has been promoted as a core project.

With regard to the theme of this special issue, this institute has been promoting joint research on the topic of resilience since the onset of the Great East Japan Earthquake of March 2011. A research project entitled “The Great East Japan Earthquake and Civilization” was launched in the academic year 2011. This project studies multiple defense measures against major tsunamis, methods of utilizing renewable energy, and measures to support the recovery of fisheries and fishing villages. In the academic year 2014, this research project evolved into a core project entitled “Earthquake Reconstruction and Civilization.” This project examined individual issues such as the formation of landscapes in reconstruction from a humanistic perspective, historical comparisons between the Great Edo Earthquake and the Great East Japan Earthquake from a historical perspective and hard and soft measures for disaster prevention and disaster reduction from an engineering perspective. In this way, the project has investigated a range of theoretical issues relating to civilization that have arisen within the reconstruction process. The Kumamoto Earthquake in April 2016 damaged the Kyushu campus of our university. The Mori-Sato-Kawa-Umi Research Project was established in 2017 to conduct environmental study with a view to reconstruction following the earthquake on the Kyushu Campus. The project leader is Professor Yoichi Hirano, the editor of this special issue. “Research on Mori-Sato-Kawa-Umi” is the name of an environmental education and research project conducted by the Ministry of the Environment[1]. An agreement was signed in January 2018 between the University, the Ministry of the Environment, and Kumamoto Prefecture entitled Agreement on the Construction of a Regional Circulation Symbiosis Zone for the Creative Reconstruction of the Aso Region. Under this agreement, the project has conducted hydrological research centered on the Aso grasslands and regional collaboration activities aimed at post-earthquake reconstruction of the Aso region. Another research project, “The Relationship between Human Activities and the Environment: From the Perspective of the Humanities and Sociology,” has been underway since 2019. This project seeks to examine approaches to a civilized society from the perspective of the relationship between human activities and environmental conservation, building on the theme of research on Mori-Sato-Kawa-Umi.

[1] In this context, this term refers to projects that maintain and utilize the cooperation and circulation of natural resources, namely mori (forests), sato (countryside), kawa (rivers), and umi (sea).

Professor Takuo Nakashima, the author of the Introductory Address, represents this project.

In addition to interdisciplinary research, this institute emphasizes international research collaboration. From 2015 to 2019, an international symposium was held at the Tokai University European Center in Denmark on the theme of Dialogue between Civilizations, and the next meeting had been scheduled to be held at the Tokai University Takanawa Campus in Tokyo in March 2020. However, at the end of February 2020, the novel coronavirus infection (COVID-19) became a serious issue in Japan, and the symposium was cancelled. Although the conference was to be held after the end of the pandemic, as the continuation of the pandemic has kept the international conferences from being held at a single venue. Therefore, in Issue 27 of this journal, we organized a special feature on "Remodeling Research under the Coronavirus from the 'Ordinary' to the 'New Ordinary'" to present new research in spite of the coronavirus. During the editing of this issue, the issue of human activities attempting to recover from disasters emerged as a key topic.

This issue, following the research directions of this institute, reconsiders human existence in terms of the ways in which human beings are attempting to recover from the COVID-19 pandemic and from the damage caused by natural disasters.

As a clinical response to the pandemic, vaccination measures to prevent and mitigate disease onset and death are indispensable. In addition, to recover from natural disasters such as earthquakes, it is necessary to take policy measures, such as that relating to reconstruction support and engineering technologies such as seawalls.

However, the pandemic has also taught us that the existence of viruses is indispensable for human survival, as indicated by cases in which viruses have protected mammalian fetuses. Human beings have historically fought against viruses (infectious diseases), but viruses are not something that humans should seek to eliminate or are able to eliminate but rather are something that humans should coexist with. This pandemic has led and will lead to changes in how we see the relationship of humans to nature, and it is necessary to ground this awareness in human resilience.

Regarding resilience to the damage caused by natural disasters such as earthquakes, it seems that we need to continue to think about the relationship between humans and nature. The process of reconstruction from earthquakes indicates that the histories of the people who live in each region, the nature (environment) that people are directly and indirectly involved with, and the historical changes in the way that they relate to that environment, and the awareness of people with regard to such relationships, are all deeply related to human resilience. Here, nature is not an object that humans exploit and control but an existence that includes human beings within itself.

These perceptions and sensations regarding human beings and nature are different from the modern anthropocentric view of nature, which considers that the natural environment exists to be utilized by humans. We hope to return to the essential nature of human existence and deepen our consideration of human resilience.

Kazushige YAMAMOTO
Director, Institute of Civilization Research

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Special Issue of Resilience

Remodeling the world - Research into after Coronavirus with resilience

Table of Contents

Preface
Kazushige YAMAMOTO (Director of Institute of Civilization Research)

Introductory Address for the Special Issue of Resilience
Takuo NAKASHIMA (STEM Education Center) 1- 2

Editorial Board 2

I. Bricolage and Resilience

Research Paper

Time Perspective and Resilience During COVID-19
Soji LEE and Takuo NAKASHIMA 5- 9

Structure of Bricolage Actions Using Tacit Knowledge during COVID-19
Soji LEE 10-14

A study of environment-related QOL from the perspectives of "placeness" and "bricolage"
Yoichi HIRANO, Takuo NAKASHIMA, Toru HATTORI, Mina ADACHI 15-24

Agency as Resilience in Traditional Festival ― The Case of the Niwaka Festival in Noto
Toru HATTORI 25-29

Research Note

Destruction of Daily Values: Recovery and Resilience
Sei WATANABE 30-33

Present conditions of leisure facilities and their efforts during the coronavirus disease 2019 pandemic
Masamitsu FUTAESAKU 34-40

II. History and Civilization

Research Paper

Correlation between Emotions and Society
Mina ADACHI 43-48

A Consideration of Mathematics in the Renaissance: In the Terms of Modern Science and Bricolage
Tomoko NAKAMURA and Yoichi HIRANO 49-58

Introductory Address for the Special Issue of Resilience:
Remodeling the world – Research into after Coronavirus with resilience

Upon Issuance of This Special Issue

Although much time has passed since the Anthropocene, environmental changes are not limited to those in the natural environment, including climate change. The spread of COVID-19 on a global scale has raised new issues regarding the sustainability of human existence. Traditionally, proposals for the sustainability of human society have been developed mainly on the basis of the "natural environment." Global efforts, such as COP24, to reduce CO2 emissions have led to ongoing efforts to minimize the impact of climate change on society. In addition, the merits and demerits of plastic are being discussed continuously with a view to reduction of its use. Today, however, we face not only the deterioration of the natural environment but also global political and economic conflicts. The end of the Cold War and the Arab Spring are nothing more than events of the past because new conflicts have occurred in various parts of the world. Nations, which are the main actors in those conflicts, exert great influence on the world. The impact will be immeasurable if a crisis becomes a reality. In the future, concerns will exist about social and economic impacts on a global scale, including war, human-rights violations, and the resulting economic sanctions and sanctions against companies. As such, there are many uncertainties now as to how the world might progress. Economic relations already have become globalize. The elements required for sustainability belong to multiple nations and are related in more complicated ways than previously.

The Institute of Civilization Research (Institute of Civilization Research) has published a special issue in a European journal to examine what kind of turning point the present age represents for civilization and culture, which create humanity's values. Last year, under the theme "Special Issue of Covid-19: Remodeling Researches under Coronavirus from 'Ordinary' to 'New Ordinary'," we summarized proposals for the development of human society during rapid "environmental changes." This year, based on experiencing more than one year of the COVID-19 pandemic and with the theme of "Special Issue of Resilience: Remodeling the World — Research into after Coronavirus with Resilience," we invited papers with the aim of realizing a sustainable society. As a result, we structured the entire issue to introduce new perspectives in the interdisciplinary humanities and social sciences. In this special issue, new research perspectives and new formalizations were established as elements to promote "Dialogue between Civilizations and Cultures" in the coronavirus pandemic era. The concept of bricolage, which is part of resilience, emphasizes the importance of proactive and responsive activities in the flow of time. Even if they are found to be wrong along the way, it is more important to move forward despite mistakes.

Today, international cooperation is required, along with changes in international perception to allow for a diversity of nations while ensuring national uniqueness. Even if approaches differ depending on the culture of each nation, it is necessary for each member of each nation to understand the uniqueness of each culture and lead this to social activities. Although many "mistakes" occur in practical activities, it is necessary to tolerate them while working toward goals and to not allow policy to be compromised. However, in Japan, in the midst of complex discussions on the coronavirus disaster, the evaluation of "mistakes" has led to discussions in the direction of denying policy. In this context, a lack of understanding existed regarding the original policy that should be adhered

to because of the importance placed on specific values in practice. Japan is one of the top countries in the world in terms of the number of Twitter accounts that have been deleted because of inappropriate tweets, clearly showing the inappropriateness of the discussion. Thus, it is thought that a developmental discussion using the bricolage approach should be developed.

The global development of computers and network technologies will continue to be a driving force for social change. In addition, the easier it becomes to accumulate data and extract the relationships therein, the easier it will be to express the essence of the data. Such development likely will proceed beyond expectations. The development of virtual currencies, such as virtual coins, and the development of virtual states developed from existing entities, such as tax havens, can be seen. Current currency is the result of circulation (in this case, a single numerical value), but virtual coins can contain a history by way of a blockchain. They will be used in the future as a medium with a larger amount of information. Historical information will be used in various social and economic situations, such as copyright infringement and the optimal arrangement of services.

In that sense, COVID-19 has accelerated the progress of the times. As a result, it has brought about a situation in which a new world can be realized, at least in part. As one of the editors of this special issue for a European journal, I strongly hope that the assertions in this paper will be recognized as a new perspective for the future.

Takuo NAKASHIMA
STEM Education Center, Tokai University

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Civilization No.29 (2021), Special Issue of Resilience

I. Bricolage and Resilience

Civilization No.29, Special Issus of Resilience, 5-9

Research Paper

Time Perspective and Resilience During COVID-19

Soji LEE[*1], Takuo NAKASHIMA[*2]

Abstract

Tourism can enhance individuals' sense of wellbeing, generating positive emotions and life satisfaction. These positive emotions come from novel experiences. From a time perspective, such impressions are generated from an individual's relationship with the past. The COVID-19 pandemic began hitting the tourism industry in late 2019, and even in 2022, tourism activities in the international arena remain severely restricted. In this research, we quantitatively analyze the positive emotions generated by the time perspective during COVID-19. We focus on the time perspective regarding the future (expectations) as influencing individuals' current behavior. To do so, we extract Japanese tweets regarding "tourism" on the Twitter app to parse sentences applying natural language analysis. Our investigation reveals the increasing occurrence of the word "expectation," representing a future-oriented time perspective, during the spread of COVID-19, implying continued social resilience for tourism activities during COVID-19. This research suggests that expressions related to time perspective are a valid element of study and support the sustainability of tourism post COVID.

Keywords: Time Perspective, COVID-19, Resilience, Twitter

1. Introduction

Tourism is a common activity for generating positive emotions through individual experiences of unfamiliar environments. Tourism activities evoke strong emotions for individuals through the exploration of unique experiences. In particular, the magnificence of the natural environment and the impression of diverse cultural and social environments substantially contribute to enhancing individuals' quality of life and wellbeing. Historically, tourism activities have contributed about 10% of GDP to both developed and developing countries in tourist destinations (UNWTO, 2021). Changes in tourism are not limited to positive outcomes, but there are many negative circumstances, such as natural disasters and the ongoing COVID-19 pandemic. It is important to analyze the positive opinions that individuals expressed in relation to tourism at the height of the COVID-19 pandemic.

The COVID-19 pandemic dramatically changed the entire world, including the tourism industry. Our society has previously experienced novel coronaviruses, such as SARS and MERS, and has considered tourism activities in such conditions; however, the COVID-19 pandemic presents new features. In general, a "crisis" is an event that occurs due to human factors, such as war or political and economic crises. Over tourism is one type of crisis. Our previous research (Lee, 2021) extracted positive actions under the over tourism. In contrast, a "disaster" occurs outside of organizational control, placing organizations in critical situations. It primarily corresponds to natural disasters, such as earthquakes, floods, and infectious diseases. COVID-19 has aspects of both a disaster and a crisis, creating difficulties in the establishment of new policies for tourism and other industries. Investigating this problem is beyond

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conventional research methods, necessitating a new approach. In this research, we focus on tourism as related to major environmental changes such as those generated by COVID-19 and quantitatively evaluate human expressions to uncover elements of hope for the future.

2. Time Perspective

2.1 Definition of Time Perspective

The evaluation of influence of the future individual's current behavior is called time perspective (Levin, 1939). People are increasingly concerned about health and tend to regularly exercise and get medical examinations. In addition, many choose to avoid behaviors that may be harmful to health, such as smoking, drinking alcohol, and dangerous sports. Such actions are considered to be taken employing a future time perspective. The time perspective is one of the new measures of individual differences (Zimbardo and Boyd, 1999) and represents an individual's cognitive way of relating to the psychological concepts of past, present and future (Boniwell et al., 2010). The construction of psychological time, referring to how individuals perceive time, affects physical and psychological wellbeing.

Despite the classical understanding of time perspective as "the totality of the individual's view on his psychological future and psychological past, existing at a given time" (Lewin, 1951, p. 75), the concept remains insufficiently appreciated and examined. Time perspective (Zimbardo and Boyd, 1999) has gained considerable acclaim in both scientific and popular psychological contexts. Zimbardo and Boyd (1999) distinguished five dimensions that can be used to describe individual time perspective, including past-negative, present hedonistic, future, past-positive, and present-fatalistic. Stolarski et al. (2011) explained each factor as follows.

The past-negative dimension is related to a generally negative, aversive view of the past, which may emerge as a result of actual experiences of unpleasant or traumatic events, a negative reconstruction of benign events, or a mixture of both. The results of the past-negative perspective are associated with depression, unhappiness, low self-esteem, and anxiety. The present hedonistic perspective relates to a hedonistic, risk-taking, and pleasure-oriented attitude toward life, with high impulsivity and little concern for the future consequences of one's actions. Significant correlations exist between the present hedonistic time orientation and lack of ego control, novelty seeking, and sensation seeking. The third, future, dimension relates to an overall future orientation, with behavior dominated by striving for future goals and rewards. This dimension correlates significantly with conscientiousness, consideration of future consequences, and negatively with novelty seeking and sensation seeking. On a more behavioral level, it is also related to the number of hours spent studying per week. The past-positive orientation reflects a warm, sentimental attitude toward the past that differs considerably from the past-negative perspective, which suggests trauma, regret, and pain. The past-positive dimension was found to correlate significantly and negatively with aggression, anxiety, and depression. The fifth and final orientation, called present-fatalistic, is a defeatist attitude regarding present and future life. It "reveals a belief that the future is predestined and uninfluenced by individual action, whereas the presence must be borne with resignation because humans are at the whimsical mercy of 'fate'" (Zimbardo and Boyd, 2008, p.1278).

In an ideal circumstance, individuals are able "to switch effectively among time perspectives depending on task features, situational considerations, and personal resources, rather than be biased

towards a specific Time Perspective that is not adaptive across situations" (Zimbardo and Boyd, 1999, p.1285). This "between-time zone flexibility," operationalized as Balanced Time Perspective (BTP), has proven to be a robust positive predictor of SWB (Subjective Wellbeing) (Boniwell, Osin, Linley and Ivanchenko, 2010).

According to McAdams (2006), "we begin to operate as both historians of the past and prophets for the future, seeking to cast our time-driven lives into narratives that work" (p.407). This BTP, defined here as a frequent and equal tendency to think about both the past and future in positive ways, enables individuals to reference both the past and the future as sources of insight, strength, and happiness (Webster, 2011). In addition, individuals' temporal perspective dictates their perspectives on the future, influencing present behavior. For example, exercising and undergoing medical examinations regularly are actions related to the future. Webster's (2011) study indicates that people who exceed the median value of evaluation in the past and future formed a balanced condition in relation to time extension, scoring higher values in both happiness and self-esteem. This suggests that temporal perspective can enhance individuals' sense of wellbeing. In this study, we examine whether positive feelings regarding the past and future result in individuals' feelings of wellbeing. With particular focus on sentiments during COVID-19, this study considers the relationship between tourism and positive feelings about the future.

2.2 Time Perspective During COVID-19

Figure 1 presents the effect of time perspective during COVID-19. Relating the future dimension of time perspective, people develop images and expectations regarding the future. Current behavior is related to future expectations and the images of a future new life are connected to individuals' actions; however, COVID-19 had an enormous impact on individuals' surrounding environments, requiring changes in the social environment image regarding the future. As a result, human actions also changed in a suitable way.

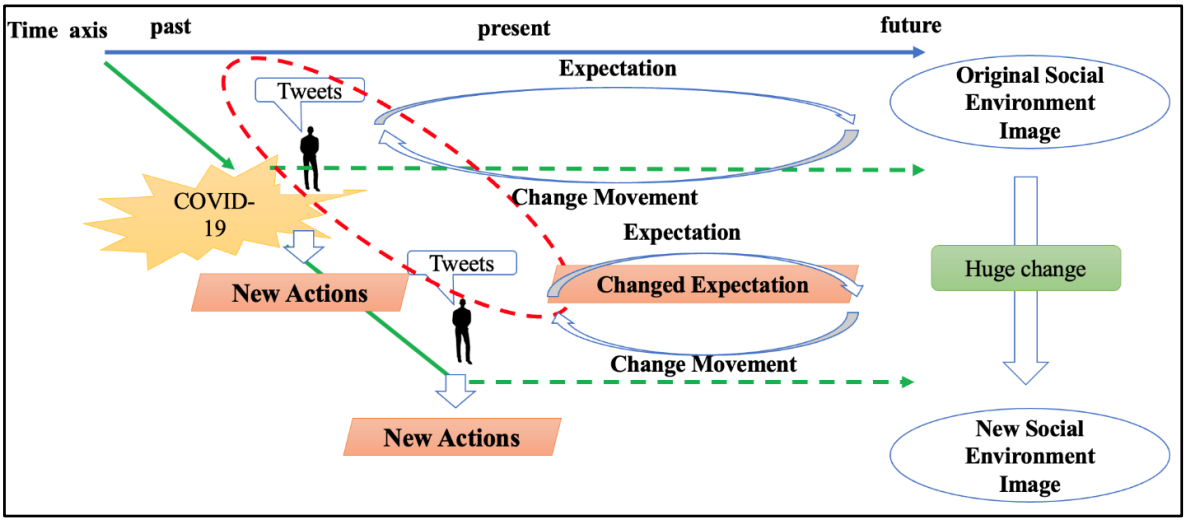

FIGURE 1. Future Image Changed by COVID-19

In an environment of minimal change, expectations and images for the future do not significantly change. However, the number of people infected with COVID-19 changes daily, and the social environment and consciousness regarding the future also significantly changes. People can engage current

circumstances by expressing their thoughts and feelings on social media, such as tweets on the Twitter app.

3. Extraction Experiments and Results.

We implemented a Python language-based system to collect and analyze tweet data. Tweet data are considered to be the expression that accompanies individuals' overall emotions, establishing a new perspective based on the emergence of various potential problems through general emotional expression. The dataset was collected using the Twitter API over a period of more than 10 months, from January 11 to November 21 in 2020. This system collected tweet data including the keyword "tourism" and duplicate data were removed from this dataset to extract only unique tweets. The total number of tweets collected amounted to 17,637. The number of people infected with COVID-19 in Japan increased rapidly in April 2020, and it was mitigated by the state of emergency after May 2020. Nevertheless, there have been as many as 15,000 infected people per month in Japan since July 2020. This period could be classified into two stages of the subsidence period and the expanding period.

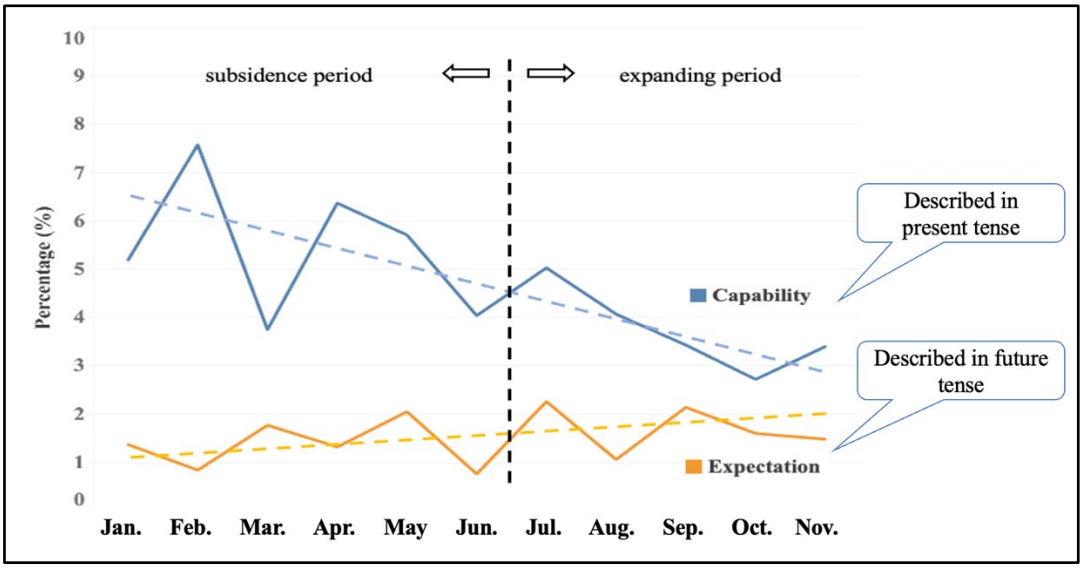

FIGURE 2. Percentage of the appearance of time perspective words

Figure 2 presents the proportion of the appearance of chosen time perspective words of "expectation" and "capability." This study focuses on the role of the temporal perspective; therefore, for tweet data, the percentage of monthly occurrences of words related to the temporal perspective was compared with those of other words. We extracted the word "expectation" related to the temporal perspective. "Expectation" was not used frequently in relation to tourism, but we were able to extract it as a characteristic word. Use of the word "expectation" representing a temporal perspective increased in frequency despite the spread of infection. The growing number of tweets seem to relate to a strong and rising consciousness of hope for the future. This phenomenon reveals social resilience as represented by individual members of society. In contrast, the keyword "capability" decreased in frequency as the number infections increased, and negative dimensions increased in the expression of present events in time perspective.

4. Conclusion.

In this study, we focused on words related to time perspectives enhancing individual wellbeing. We examined whether positive feelings regarding past, present, and future time are expressed in social media during COVID-19. The findings reveal that the occurrence of the time perspective word “expectation,” representing the future, increased in the expanding period during COVID-19. In contrast, the positive expression of “capability,” representing the present tense decreased as the number of infected people increased. The positive keyword for the future time perspective increased against increased COVID-19 infections. This finding indicates that social resilience for tourism activities continues to exist during COVID-19. In addition, expressions related to time perspective appear to be an element supporting the sustainability of tourism. In the future, we would like to investigate the factors of positive emotions toward the present and the future time more specifically by investigating the expression of words related to time perspective. In addition, we would like to investigate the factors of tourism generating hope for the future.

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Civilization No.29, Special Issus of Resilience, 10-14

Research Paper

Structure of Bricolage Actions Using Tacit Knowledge during COVID-19

Soji LEE*

Abstract

Discovered in 2019, COVID-19 continued to spread throughout 2020 to 2022, infected many people, and caused large social and economic impacts throughout the world. Resilience is required to establish a new society and economy against such major environmental changes, not only for individuals but also for organizations. The structure and necessary elements of resilience have been discussed and various types of resilience proposed. Bricolage is one resilience action studied, especially in entrepreneurship and organizational theory. This study focuses on bricolage actions in the COVID-19 era and both examines what elements can be extracted and analyzes the structure of tacit knowledge referred to for them.

Keywords: Bricolage, Resilience, COVID-19, Entrepreneurship

1. Introduction

COVID-19 spread throughout the world from the latter half of 2019 and repeatedly recurred in 2020 and 2021 thanks to mutant strains. It came to be a pandemic for social and economic activities, with even as vaccines have been developed. In the latter half of 2021, the inoculation rate of vaccines exceeds 70%. Conversely, the infection remains widespread due to the decrease in the effectiveness of the vaccine and the transmission of new mutant strains. COVID-19 spread rapidly all over the world because social and economic environments and the movement of people have become global. This study focuses on how humans are developing positive activities in response to sudden negative changes in the environment such as COVID-19. Human activity adapts to a new environment through resilience, the concept of which having been defined for not only human but also organizational activities and is attracting attention in today's changing world. This research focuses on the concept of bricolage activities as of resilience. It considers what type of activities correspond to bricolage activities and how they adversely affect changing society. Unexpected environmental changes may occur in the early stages of development in entrepreneurship and bricolage activities are considered guidelines in such cases.

This research first discusses the structure of resilience. Then, the concept of entrepreneurship and the significance of bricolage in organizational theory is discussed. Next, the concept of bricolage is defined and the content of tacit knowledge used in its actions discussed. Then examples of bricolage actions in COVID-19 are explained and, finally, the summary and conclusion shown.

2. Structure of Resilience

Environmental changes require resilience for people and organizations. The structure of resilience has been discussed, for example, in how seaweed adapted after disasters related to natural environment changes like typhoons and storms on the west coast of California (Carlson, Jr. et al. (2010)) and in how a

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town revived from floods that struck the Queen's Island region of Australia (Keogh et al. (2011)). These studies showed the process of regeneration from natural environment changes were modeled as resilience.

As an event related to the human environmental changes, the stress faced during the development and growth stages of children was analyzed and the activation of resilience against stress discussed (Phillips (2008)). As an example of a special environmental change, the process of resilience in the return to normal daily life has been discussed through an analysis military personnel and their families (Masten et al. (2013)), as was the resilience of families who experienced domestic violence (Martinez-Toeteya et al. (2009)). As a social environment changes, the resilience of an organization leader in terms of enhancing the adaptability and revitalization of a company and the resilience of an organization has been discussed. These discussions of resilience continue, especially in organizational theory and entrepreneurship.

3. Entrepreneurship

Entrepreneurship research has discussed multiple concepts related to an organization's resources and their use as to how an organization responds to a crisis. In contrast to causation, an approach to setting organizational goals, effectuation, proposed by Sarasvathy (2001), describes a decision-making method in situations where experience and knowledge cannot be utilized. Endowment is a crisis-response method that makes effective use of entrepreneurship's innate financial assets and the potential for problem solving as well as corporate activities (Gittell et al. (2006)). Bricolage is a corporate-activity process in entrepreneurship that connects the internal resources of an organization with external resources of relationships to create new value in response to environmental change. Resilience is an activity for the damage to organizations due to major environmental changes. It is a recovery process, such as how entrepreneurs and organizations anticipate, adjust, and respond to adversity (Masten et al. (1990)). Among resilience actions, bricolage activities attract particular attention as a process for recovery from a crisis.

4. Bricolage

4.1 Definition

Bricolage, derived from the French bricoleur (a dexterous person who builds something out of a jumble and makes repairs in time), is described in The Savage Mind (La Pensée sauvage) by French anthropologist C. Levi-Strauss (1966). Before he wrote his book, Levi-Strauss was in contact with several ethnic groups living on the tributaries of the Amazon River to study their cultural background. In the book, he positions himself as a “non-savage” and describes the new life of both “savage” and “nonsavage” people struggling to live within major environmental changes. Both combine various resources and put them into practice in the real world. He points out the importance of paying attention to such practices.

Bricolage is also a concept used to distinguish between the scientific thinking of the engineer and the wild thinking of the bricoleur. The engineer deliberately collects materials for a purpose, while the bricoleur works with a limited set of tools and materials, “things to bring together” at the time. The engineer uses structures to create events. The bricoleur uses events to create structures, paying attention to the relationship between current elements under critical conditions and other elements with similar relationships, and reconstructs them. Baker et al. (2005) defines bricolage as an activity of “recombining resources for a new purpose” with only “resources at hand” and “making ends meet” and solving a problem by making do.

In traditional organizational theory, bricolage is regarded as organizational dysfunction, the free use of resources carried out in its activities bringing risks to the organization. Weick (1993) assumes bricolage and improvisation as equivalent terms and states that the presence of bricolage is necessary for an organization's long-term existence. Organizations without it are overly procedural and pointed to as vulnerable to short-term environmental changes. The long-term survival of an organization requires the organization's own knowledge, some degree of discretion, and redundancy. By acknowledging the bricolage activities of the members of an organization in the face of environmental change, innovative solutions may emerge in situations where standard operating procedures are not available.

4.2 Bricolage Actions during COVID-19

Batat (2020) defines the luxury foodservice response strategies during a crisis as having three levels—individual, sector, and societal—and finds that Michelin-starred restaurants have implemented multilevel response strategies by developing dynamic capabilities while playing a social role through the development of new forms of business practice during COVID-19. Michelin-starred chefs adopted social bricolage entrepreneurial thinking to deal with the extreme situation and used diverse resources and response strategies to tackle social issues and improve collective and individual well-being. The author identified three major response strategies implemented by luxury restaurants: philanthropic activities targeting the well-being of the community, socially responsible business practices to support the foodservice actors, and initiatives centered on consumers' food well-being.

In the first stage of COVID-19, vaccines were in short supply and only people of specific developed countries could be vaccinated. The "vaccine tour" was proposed as a tourism product and attracted attention. This tour can be regarded as a bricolage activity and is the subject of this study. Bricolage resources like vaccine and tour are used in ways not related each other before this finding. Bricolage activities apply the characteristics of resources in the face of environmental changes.

During COVID-19 pandemic, transportation was the most economically affected industry due to the suspension of the movement of people, and new bricolage actions were proposed. For example, since air travel was no longer possible, first-class meals were served on the aircraft. In addition, since the number of Japan Railway Shinkansen users decreased sharply and the seats almost all vacant, expensive fruits have been placed on the passenger seats of the Shinkansen to transport as a bricolage activity.

4.3 Bricolage Actions and Tacit Knowledge

Tacit knowledge can be defined as knowledge used empirically but that cannot be easily explained in words. Knowledge of individual words is aggregated from daily experience, and bricolage actions can connect multiple knowledges not linked by conventional experience and sublimate them as new action. Regarding the "vaccine tour," this study proposes a structure of tacit knowledge, assuming that knowledge is described in natural language, and examines how bricolage actions were applied.

A "tour" is a travel product planned by a tourism agency that the consumer decides to purchase. This travel product is composed of a set of various activities, and an activity's elements are its subject, action, means for intervention, and specific place. During the COVID-19 era, this product was not used due to the absence of a subject, i.e., the consumer. The existence of "people" is indispensable and the "place" needs to be changed. "Vaccines" were distributed, but the time when people could be vaccinated differed greatly depending on the country, even of several months in developed countries. Israel has had

the fastest vaccination, and the United States, which has developed vaccines itself, was also fast. However, in Japan vaccination progressed several months later, though people have strongly requested it. The subject of "vaccine" was humans, its purpose to develop resistance, and its location restricted to national hospitals. This bricolage action has two elements. One is to realize the act of vaccination required by the Japanese people, and the other is to change the "place" from the location of the tour to an overseas hospital. As a result, "vaccine tour" has been realized as a bricolage action. A new attempt could be realized by substituting activities with different frameworks in response to the demands of a crisis.

5. Conclusion

This research focused on bricolage, an activity of resilience and one of attraction in entrepreneurship and organizational theory. The definition of bricolage and bricolage actions by the behavior of the bricoleur were explained. This study proposed the "vaccine tour" is an example of bricolage actions during COVID-19 and the meaning structures of two words, "vaccine" and "tour," were analyzed. Each word could be considered as having the grammatical elements and cases necessary for its meaning to be realized. On the other hand, some specific elements were lacking due to a significant change in the environment from COVID-19. These analyses derived the structure of tacit knowledge relating two words and showed that "place" has the important role of connecting the two words. This research has shown that it is possible to create new bricolage activities by discovering such deficiencies and connecting them with some other word element.

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Research Paper

A study of environment-related QOL from the perspectives of "placeness" and "bricolage"

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Abstract

Of today's numerous global crises, environmental issues are among those that require the most attention. The root of these problems lies in the challenge of sustainable coexistence between humans and the natural environment. Thus, the concept of environment-related quality of life (e-QOL) has been at the center of current discussions from the dual perspective of abundant human life and maintenance of the natural environment. Indeed, e-QOL denotes the satisfaction of humans with the conservation of nature to promote sustainable coexistence. Additionally, e-QOL is considered deeply related to the identity of particular regions of residence. Therefore, this study aims to elucidate how awareness of e-QOL can be cultivated as an individual's regional identity by highlighting the concept of "placeness" and combining it with e-QOL. Since the "placeness" of a geographic region is supported by people's regional knowledge derived from traditions, it is also important to discuss how such knowledge is formed and accumulated. This study elucidates that people, by coexisting with nature in a particular region, vitalize their knowledge of bricolage compared with their knowledge of modern science.[*]

Keywords: e-QOL (environment-related-QOL), locality (placeness), regional identity, bricolage

1. Prologue–problématique

Modern civilization is faced with two crises: global warming and the COVID-19 pandemic. Global warming is regarded as one of the types of climate change brought about by science and technology-based civilization. On August 9, 2021, "The 6th Assessment Report of ICPP" (Intergovernmental Panel on Climate Change) officially recognized global warming and identified its causes as anthropogenic, although there is still debate among researchers about its true nature. Given the stagnation of the Atlantic Meridional Overturning Circulation (AMOC), which has been a concern since approximately 2019 (Business Insider, US, September 29, 2019, Aylin Woodward), and the first recorded rainfall in the Greenland Highlands in 2021 (CNN, August 19), the seriousness of global warming must be acknowledged, whether it is an anthropogenic phenomenon or not. It could be argued that the "comforts" (conveniences) developed by humans through the application of science and technology are

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Hattori, T., Hirano, Y., "Importance of local identity for concept expansion of environment-related quality of life (e-QOL)," 15th International Conference on Innovative Computing, Information and Control (ICICIC2021), Shimane University (online), Sept 15–16, 2021.
Hirano, Y., Nakashima, T., Takatori, Y., Adachi, M., Introduction of e-QOL (environment-related-QOL) – Relation between the environment and local identity," The 39th Conference of The Japan Society for the Comparative Study of Civilizations, Nov. 14, 2021 (in Japanese).

“achievements” made at the expense of nature. These achievements, however, appear to be making irreversible changes to the environment, for which humans will eventually pay the price.

The global COVID-19 pandemic is the second crisis challenging modern civilization. This can be seen, on the one hand, as a case in which humans have encountered an unknown virus; however, conversely, the pandemic can be viewed as the result of humans interfering too much with nature. Although some facets of nature are beyond the reach of people, human activities have encroached on many parts of nature. The virus is forcing humans to choose between the two extremes of protecting human life and continuing economic and social activities. Other threats have emerged in the past. For instance, in Russia in 2016, it was reported that anthrax had spread from reindeer carcasses exposed from permafrost that had thawed due to global warming, and there were other concerns about an unknown virus (Sptunic, 2020). Similar problems may also occur in the future, and it is evident that global warming is at the root of this situation. It is still unclear whether science and technology can solve these problems and exert control.

The root of these problems lies in the challenges of sustainable coexistence between humans and the natural environment. Therefore, it is necessary to discuss whether humans can have rich and comfortable lives while still maintaining the natural environment. To address this issue, the concept of environment-related quality of life (e-QOL) was introduced by Hirano and Nakashima (2017, 2018, 2019) . The concept is derived from a dual perspective of abundant human life and the maintenance of the natural environment. Although QOL pertains to the quality of living of humans, such as satisfaction with and comfort in life, e-QOL refers to the satisfaction of humans with the maintenance and conservation of nature to promote sustainable coexistence.

What can e-QOL signify for people, especially for an individual? First of all, it is necessary to understand what humans recognize as their own environment. Since e-QOL is based on human awareness of the environment where they develop their activities, it is closely related not only to the natural environment but also to social and cultural environments. Given this context, e-QOL is considered closely related to the identity of one’s region of residence, which comprises both individual self-identities and the local identity of a particular region (Hattori (2020)).

This article discusses the problem of how humans can personalize the concept of e-QOL by proposing the following hypotheses:

Hypothesis 1: The region where people live is defined on the basis of traditions and memories, in terms of “placeness,” which is composed of the environment that includes nature, society, and culture.

Hypothesis 2: “Placeness” forms the sphere, which is the object of e-QOL.

Hypothesis 3: People’s awareness of e-QOL can be encouraged by their indigenous knowledge of bricolage cultivated traditionally in their region.

To verify the hypotheses, the study first discusses some preliminary factors and then applies them to a discussion of the relationship between e-QOL, “placeness,” and people’s local knowledge. It concludes by suggesting a future perspective.

2. Preliminary Discussion

2.1. e-QOL

This study first provides a theoretical discussion of e-QOL as the principal concept in the paper. As mentioned above, e-QOL is a composite concept that comprises two notions: human QOL and environmental protection. The constituent concepts of e-QOL are as follows: 1) the physical value of the state of nature; 2) the mental and emotional values of the state of nature; 3) the reduction of natural hazards; and 4) the social value of the state of nature. These four factors form the theoretical framework of e-QOL. The sphere forming the human environment will be identified by the following three premises:

1) E-QOL is based essentially on people's awareness of the natural environment (a substantial nature).
2) E-QOL is related to the social and cultural environments in which people develop their activities.
3) Human activity enables people to feel and understand the nature around them.

Naturally, e-QOL is related to nature as well as to society and culture. It is notable that e-QOL is intended not only for natural environments but also for social and cultural environments (as shown in Figure 1). As shown in the fourth section below, people's recognition of the place (region) where they live forms their own environment. At the same time, e-QOL is considered deeply related to the identity of one's region of residence, and reciprocally, the local identity of an individual relates to the formation of e-QOL. Moreover, since the awareness of e-QOL is fostered through local identity, it is shared with people outside a particular region. Therefore, the concept of local identity should be considered for further development of this discussion.

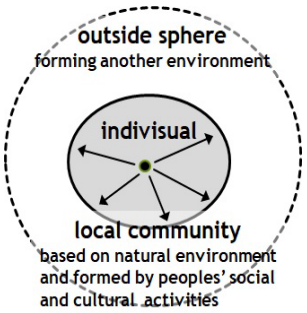


Fig.1

2.2. Local identity and "Placeness"

Generally speaking, people's existence depends on the place where they live and where they feel their own existence through a connection with that location. Therefore, such a place forms their environment; namely, it is composed of the abovementioned sphere. The same is true concerning the case of an individual; that is, an individual's place of residence must be linked to his or her identity.

Concerning this issue, Relph introduced the concept of "placeness" (Relph (1976)), which refers to the connection between a given space and oneself. Before discussing Relph's "placeness," the study first summarizes some previous literature on the concept of identity. The following dimensions of identity can be extracted from the research: "place identity" (Proshansky et al. (1983)), "regional identity" (Raagmaa (2002)), "community identity" (Smith et al. (2011)), and "local identity" (Shao et al. (2017). Proshansky et al. define the concept of "place identity" as a substructure of an individual's self-identity, consisting of cognition about the physical world. Identity is formed not only in relation to social processes but also in

relation to the physical environment where the individual is living. Raagmaa's "regional identity" is used mainly in geography and sociology. While "place identity" emphasizes the relationship with the physical world as space, "regional identity" emphasizes the relationship with a region, including the sociocultural environment. Concerning the third type of identity, Smith et al. define "community identity" as the belief about the extent to which landscapes contribute to local culture, character, and identity. This concept considers that the environment and events are connected to the personality of the individual. Lastly, Shao et al. considered "local identity" as a concept that has a broader meaning than regional identity; local identity used comprehensively is also an important factor that connects people to particular places.

Relph's concept of "placeness" signifies the meaning of a place (existential place) based on people's memories and history, giving a "raison d'être" to the people there. Reciprocally, the place is characterized by people's historical and traditional memories that form their own "placeness." Thus, the "placeness" forms an imaginary space that characterizes the relationship between place (space) and people (self); therefore, it is considered the sphere forming different kinds of environments for people. In other words, people feel "placeness," which assumes they (self) have a direct connection with the place (space). It, therefore, becomes a natural, social, and cultural environment. Furthermore, the maintenance of placeness enables people to cultivate their own identity through their direct experience with that particular place and, finally, to develop an awareness of their own environment.

2.3. Science and Bricolage

Science and technology are often a problem in the relationship between humans and nature. More precisely, the problem relates to the question of how humans wield the power of scientific knowledge and technology. Modern scientific knowledge, represented by Newton and Descartes, was eventually applied to develop technology, which brought about the Industrial Revolution and bestowed extraordinary new abilities on humans. Such modern scientific knowledge is based on the principle of causality. The laws of cause and effect led to positivism, which eventually established logical scientific procedures and today has developed into technology. In the 20th century, modern science and technology were criticized on various fronts, but recent progress in the field of information technology has resulted in growing optimism that, once again, science and technology will lead to the solution of many problems. However, such confidence can easily become overconfidence—for instance, the Fukushima Daiichi nuclear power plant accident shows us that human endeavors can quickly crumble before the power of nature. The positivism of modern science, based on the law of cause and effect, has made people think that we can explain nature. However, it is clear that we really only understand a small part of the bigger picture; we can observe only that part of nature that nature shows us.

In 1962, Claude Lévi-Strauss (1908-2009) introduced the concept of "bricolage" in his work "The Savaged Mind" (La pansée sauvage) (Lévi-Strauss (1962)). The concept signifies the behavior of people of primitive cultures who applied the materials in their immediate surroundings to meet their purposes. Here the savage mind of Lévi-Strauss is contrasted with the cultivated mind, which refers to the civilized mind defined according to scientific knowledge. Today, the concept of bricolage is applied to diverse societal phenomena, including disaster restoration and institutional management.

According to Lévi-Strauss, people of primitive cultures should be considered as "bricoleur" (a kind

of skillful man), who did not always conduct their work by the principle of causality but accomplished what they intended to by adapting and applying the things around them (Lévi-Strauss (1962), p. 30). For example, they gathered several mythical elements together from everywhere in nature to create the kingdom of their gods and myths. The process was not carried out in a haphazard approach but rather through a procedure that was quite reasonable according to their logic. Thus, Lévi-Strauss proposes that their thinking through the observation of nature is not a primitive science but rather should be called "initiative science."

In consequence, Lévi-Strauss' concept of bricolage can be considered antagonistic to the causality of modern science. Comparing a scientist and a "bricoleur," he suggests that "the former creates events (the world) by means of structures, and the latter creates structures by means of events"(Lévi-Strauss (1962), p. 37). Considering that humans depend excessively on positivistic thinking under the paradigm of modern science, the bricolage proposed by Lévi-Strauss contains his reflections and warnings about what human existence should be.

3. First Verification: The Relation Between e-QOL and "Placeness"

3.1. Local identity and e-QOL

Applying the factors mentioned above, the study intends to verify the hypotheses. For the first two hypotheses, it is important to elucidate that an individual's understanding of e-QOL is strongly related to local identity because the human mentality about coexistence with nature always reflects the existence of a substantial nature.

As discussed above, local identity plays an important role to locate (position) people into a given place, enabling them to develop their awareness of the region (place), to maintain the meaning of the "placeness," and finally, to lead them to vitalize and then maintain their understanding of the concept of e-QOL from a personal standpoint. Here, what is notable is the fact that "placeness" forms people's environment. Since "placeness" consists of people's traditions, historical memories, societal conventions, and even their values and mentalities, it can be considered as an index to estimate the existence of their environment.

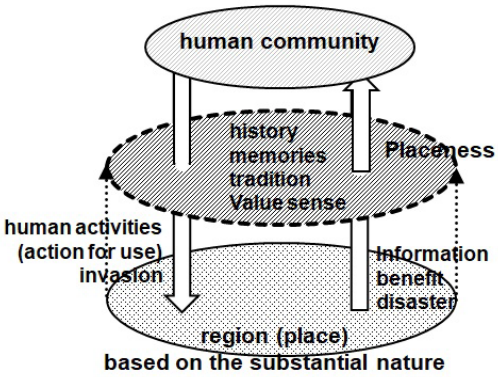
Think of a traditional taboo of some region, for example. If accessing a mountain area is taboo in a particular region, this taboo is considered to have developed traditionally for mythological or religious reasons. Naturally, it might be possible for the people of the region. However, it is also possible to identify other realistic reasons; for example, it may be dangerous to enter the area, or some rare and valuable plants may be found there. For the people of the area, this taboo is embedded in the meaning of the place and becomes one of the factors that form its "placeness." Thus, keeping the value of "placeness" corresponds to maintaining the environment and results in cultivating people's awareness of e-QOL. This leads to the verification of the first hypothesis.

3.2. The relation between "placeness" and e-QOL

Based on the above discussion, by recognizing the placeness of their living place, people can enhance their "local identity," which leads them to cultivate their awareness of e-QOL. The figures below show the relationship between placeness, "local identity," and e-QOL.

In Figure 2, the place becomes characterized as placeness by people's feelings and activities; such

placeness also forms relationships with people. Additionally, Figure 3 demonstrates that people's awareness of e-QOL, as well as their local identity, arises through the correlation between people and placeness. Thus, Figure 3 signifies how an individual's local identity is related to the formation of e-QOL, confirming the second hypothesis.



Fig,2 Placeness

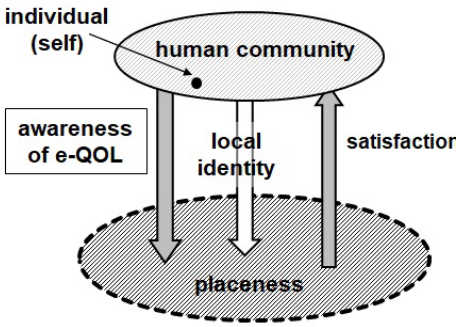


Fig.3 Placeness and e-QOL

4. Second Verification - Regional Knowledge and Bricolage

4.1. Reconsideration of the concept of environment

To discuss the third hypothesis, the concept of environment, which has become increasingly complicated in the modern sense, must be reconsidered. We must return to some kind of prototype to comprehend a simpler, less complex structure.

The French physiologist Claude Bernard (1813–1878) introduced the concept of an "internal environment" (milieu intérieur) of the body (Bernard (1885 (1878))) and proposed that certain organs are protected from the outside by this internal environment, which includes, for example, the bodily fluids surrounding them. This concept was later developed into "homeostasis" (the steady internal physiological states of living organisms in response to influences from outside) by W. B. Cannon (1871–1945). Bernard's idea suggests that within one living organism, there is an interrelationship between the organs in a living body and its internal environment, and as a result, it is understood that the "surrounding" living organism constitutes an organic whole.

Jakob Johann Baron von Uexküll (1864–1944), a German biologist from Estonia, introduced the concept of Umwelt into descriptions of the animal world (cf. Uexküll (1934)). Each animal has a world it perceives and acts in as its environment, called the Umwelt. Therefore, for each species of animal, only the external world that the species itself recognizes as its subject constitutes the environment, i.e., the Umwelt. In other words, there is no pregiven objective reality that exists outside of the perceptions of species. This idea is interesting in the sense that the physiological tissues, senses, and motor organs that each animal possesses for living create that animal's own Umwelt. Furthermore, from a somewhat broader perspective, it promotes an understanding beyond natural science that, for a particular organism, the environment is composed not only of the physical world but also of its will to live.

Although these concepts emerge from the field of biology, I will try with some force to consider

them in the relationship between humans and the natural environment. For humans, the environment consists of those aspects of nature that humans confront in their own lives, that is, what humans see with their eyes, hear with their ears, and touch with their skin. In this way, primordial nature becomes an environment solely in relation to humans. Conversely, nature as an environment for human beings originally existed in relation to human life, has sustained human life, and has established human livelihood. Human activities have guaranteed such an environment—the internal environment of Bernard. The environment is based on the perceptions of humans themselves, forming Uexküll's Umwelt for humans, which reflects their awareness of and desire for life. It is an environment that includes the will and culture of a society that humans have created as a community. Thus, humans and nature can be considered to have coexisted in equilibrium between such an environment and human activities.

4.2. Indigenous knowledge and Bricolage

As mentioned in the second section of this paper (2.3.), humans understand only a small part of the totality of nature. It is also true that modern science and technology elucidate only a part of nature. The same is true concerning our view of environmental problems. By bringing together human knowledge in the fields of science and technology, we measure the degree of global warming, anticipate natural disasters, and develop vaccines and therapeutic drugs to combat coronaviruses. In this respect, humans boast of our "progress." For example, the extent to which CO2 emissions can be reduced and how much that would reverse the rise in global air temperature is a result of scientific advancements. However, environmental problems are not to be dealt with only by scientifically engaging with physical nature. In places where humans live and create communities, our activities to stay alive are assured, and society and culture are formed. Therefore, the entire space of nature, society, and culture is the environment for individuals or communities. In this context, it is necessary to re-recognize human knowledge—that is, the experiential knowledge of individuals and groups—as if it were indigenous human knowledge. This is because humans have encountered nature from within their communities, and the knowledge that exists has been nurtured in relation to nature.

Such indigenous knowledge is experimental—traditional or tacit knowledge that has been cultivated and preserved in the region. It is through such human local knowledge that the balance between the environment and human activities has been achieved. Such knowledge is seldom scientific. Sometimes, modern scientific and technological knowledge produces effective outcomes, but in most cases, it forces modern standards in a heavy-handed way, separating humans from nature and spoiling the relationship between humans and nature. In contrast, people's regional knowledge has been acquired and accumulated little and little over time through people's activities in the region. Therefore, people from a particular region are very familiar with how they can ascertain the capacity of nature, keep nature vital, and revitalize their own lives through sustainable coexistence with nature. Such wisdom lies in people's regional knowledge and through the "bricolage" of Lévi-Strauss. Because people's regional knowledge forms and maintains the meaning of the "placeness" of a region, regional knowledge cultivates people's awareness of e-QOL, providing support for the third hypothesis.

5. Epilogue–A perspective for the future

This paper discusses the importance of e-QOL and the "placeness" in some regions. To maintain people's

relationship with the environment in regions, it is also significant to respect people's knowledge of bricolage. However, e-QOL and "placeness" play important roles not only in the case of regions but also on a global scale.

In advancing science and technology, humans have developed the overconfident expectation that we can expand our own environment in nature. This also expands human awareness of "original" life. At this time, the excessive expansion will result in a loss of the balance between humans and nature, the internal environment will not fulfill its protective role, and the Umwelt will experience a backlash from the outside world. This is not only a matter of science and technology; rather, it is a problem of how we wield knowledge, which is one of the causes of modern environmental problems.

How will humans recover their lives in the current situation of global environmental challenges? Or to paraphrase, "how can humans find a new way to coexist with nature?" To discuss these questions, we should share the concept of e-QOL in a global sense. Regarding "placeness" and people's regional knowledge, the situation may be more complicated, as both essentially depend on the unique features of localities of each region. Therefore, it is necessary to develop a procedure to collect the (local) knowledge of each region and to reach a consensus on a global scale.

"Placeness" and people's regional knowledge depend closely on the relationship between people's activities and the nature of the region. In a sense, residents of a region form a local society that is mainly decentralized and self-reliant. People live with a consciousness of their coexistence with nature, and, thus, their knowledge depends upon nature. In consequence, their knowledge belongs to "nature-based solutions" (NBS). Generally speaking, NBSs refer to the "actions for societal challenges that are inspired by process and functioning of nature" ([10]). Such actions supported by nature increase human resilience, or the human ability to recover from negative effects and, simultaneously, to prepare beforehand for recovery. The notion of resilience is considered one of the most important factors to confront today's environmental issues. Since resilience is supported by "placeness" and people's regional knowledge derived from NBS, then sharing their awareness of resilience leads people to mutual respect and understanding of all manifestations of "placeness" and regional knowledge, and finally, to share the awareness of e-QOL in a global sense. Today, the whole world has proclaimed the importance of diversity, and it is hoped that this paradigm will continue to expand more widely.

Thus, the study proposes the following perspectives as future objectives:

Perspective 1: Humans should promote spreading awareness of e-QOL on a global scale by collecting local knowledge with mutual respect,

Perspective 2: Humans should share the awareness of e-QOL supported in "placeness" to vitalize their own resilience.

Lastly, instead of discussing the perspectives, the paper shares a suggestion about these perspectives by a passage from Yujiro Nakamura (1992), the Japanese philosopher of human knowledge.

Yujiro Nakamura refers to the knowledge of modern civilization as "scientific knowledge," that is, knowledge defined by the spirit of modern science, which was introduced by the Scientific Revolution in Western Europe. He warned that such knowledge, based on universalism, logic, and objectivism, has its

limits; he believes that such limits are now being reached. He argued that scientific knowledge objectifies nature to the extent that the interactions between humans as subjects and nature as an object have been lost. Nakamura adds that in today's world, humans require "knowledge of Pathos" (i.e., "clinical knowledge"). In cosmology, wherein humans and nature are organically related, Nakamura positioned "knowledge of Pathos" as knowledge existing in conjunction with the awareness that one's actions are always subject to others' criticism. Scientific knowledge that induces "arrogance" in the sense that through such knowledge, humans actively observe nature, decompose nature through reductionism, and understand it uniformly. In contrast, passive knowledge—wherein humans are viewed as objects being perceived from nature's perspective and can only understand nature seen from nature—is required

Here, the "knowledge of Pathos" introduced by Nakamura is the pathway through which indigenous knowledge has been achieved. Humans have enjoyed material richness and mental comforts facilitated by modern science and technology. However, we are made to see only what is permissible by nature as opposed to what is forcibly accomplished as a result of a limitless expansion of our desires. Humans have been naturally predisposed to taking for granted the facilitation of their sustenance from nature. Such human activity operates in the context of the knowledge that we have acquired in our given natural environments as well as the experiential and tacit knowledge rooted in our local communities. In such contexts lies the scope for the recognition of human existence. Furthermore, mankind can share collective knowledge about the environment wherein such regional knowledge is associated with mutual respect. Such knowledge can contribute to the sustainable coexistence of humans and nature; likewise, science and technology must be wielded to this end. Here, it is hoped that various forms of modern wisdom may integrate.

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Research Paper

Agency as Resilience in Traditional Festival — The Case of the Niwaka Festival in Noto

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Abstract

The decline of rural areas has been pointed out in Japan since long ago. Economic measures such as tourism promotion have been implemented against this problem, but new problems, such as environmental problems, have arisen in terms of sustainability. Today, a new type of well-being is required, which is not necessarily dependent on the economy. The basis for the well-being of local residents is local identity, which positions them in the community, and agency, which is the power of the individual to act responsibly toward the community while dealing with and adapting to problems. As a concrete example, I analyzed the Ukawa district in Noto Town, Ishikawa Prefecture, Japan. In the Ukawa district, the traditional Niwaka Festival was found to be a cultural mechanism that encouraged agency in local residents who kept the festival going despite various problems caused by population decline. It was also found that the element of agency created psychological resilience in individual community members and resilience throughout the region as part of a sustainable development model. One aspect of the well-being of residents can be seen in the local identity formed recursively through traditional festivals.

Keywords: Agency, Resilience, Local identity, Well-being, Niwaka festival

1. Introduction

In an increasingly globalized world, society is constantly changing. Due to these rapid changes, we face a wide variety of social problems. In Japan in particular, the decline of rural areas has been pointed out for a long time as a result of the concentration of people, goods, and money in urban areas. The development of the tourism industry has been proposed as one solution. In Japan, which is rich in natural and cultural resources, measures to revitalize rural areas have been implemented through the strategic movement of people, goods, and money, and certain results have been achieved. On the other hand, tourism is an economic activity, so its sustainability is a problem. In addition to the economic benefits created by the movement of people, new environmental problems caused by tourism have also arisen. Further, the spread of COVID-19, which began at the end of 2019, has posed an even greater challenge to the flow of people through tourism, and a blow to the tourism industry means a blow to the local economy.

There is therefore a limit to solving local problems through tourism as an economic activity. In rural areas, well-being must be cultivated in sustainable and creative ways rather than by relying on the rise of industry. What abilities does a local community need to acquire this well-being?

2. Possibilities for agency

The basis for the well-being of local residents in their own local community is local identity. This is because local identity connects an individual to the place and community in which he/she lives. The concept of local identity is characterized by the fact that we distinguish the residents of one place from

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the people of other places, creating an image of the place itself. Therefore, residents share an image as a community by positioning themselves in the community through various elements of their daily life and culture, and by being proactively involved in the community.

It is important to have agency to tackle the social problems faced by local communities, such as their ongoing decline (Hattori, 2021). "Agency" is one of the social theories that deals with the extent to which human beings can actively control social conditions as "creative actors" (Fujieda, 2020). It is understood as a unique and non-substitutable thing within the time-axis of each individual's life course, based on the relationship with the other, because of interactions between personal efforts, mobilizable resources, and contextual and structural factors (Biesta & Tedder, 2007). We find agency as a unique and non-substitutable element of our own life course and live a sociocultural life.

In this way, agency came to be explained as the power of the individual to act responsibly for well-being that spreads in a concentric circle from the individual to the community and society. Agency is a force that involves self-growth, adaptability, and self-renewal that is nurtured by individuals through interactions with the eco-system in an era of rapid change (Bandura, 2006). It is an essential ability for individual actors to realize well-being in a society and the world in a diverse manner (Schoon, 2017). The concept of agency is also positioned as a learning element of the Learning Compass in the OECD Future of Education and Skills Education 2030 Project, which the OECD has been working on since 2015. The OECD defines agency as a competency to take on social change and solve issues.

So, in what kind of setting can agency be demonstrated? In terms of agency's interaction with the eco-system as a natural environment, a place where the connection between the natural environment and daily life can be experienced is assumed. In the next section, the case of a traditional festival's role in the local community is discussed, including how it functions as a place to demonstrate agency.

3. The Case of the Niwaka Festival in Noto

The Noto area in Ishikawa Prefecture, Japan, has a diverse nature and culture that utilizes the characteristics of the peninsula. In the World Agricultural Heritage Site by the Food and Agriculture Organization of the United Nations, the nearby areas have been registered as "Noto-no-Satoyama-Satoumi." In terms of land use, agriculture, forestry and fisheries, food culture, festivals, crafts, biodiversity, etc., mountainous and coastal areas are closely connected and inseparable. On the other hand, "Oku-noto no Aenokoto," registered as an intangible cultural heritage, has unique cultures in each of its subdivided areas. It is said that each cape has a different culture due to the complicated coastline.

One of the characteristic festivals in the Noto area is the Noto Kiriko Festival, involving giant lantern floats called "Kiriko" carried through the region day and night. Large Kiriko are about 15 meters high, and some are carried by as many as 100 people (fig.1). There are about 200 Kiriko Festivals on the Noto Peninsula. It is said that the Kiriko Festival has continued for 400 years since the Edo period, but as society changes, it is gradually changing in form. For example, due to safety issues, the permitted height of the lanterns has been lowered.

One of the Kiriko Festivals is the Niwaka Festival in the Ukawa district of Noto-cho, which used to flourish as a port town. The festival dedicates the Kiriko to Kaise Shrine, enshrining the goddess of the sea, to pray for good catches and safety at sea. To attract the attention of the goddess, pictures of a man

called “Musha-e” are drawn on the giant lantern floats (fig.2).

Through two years of interviews with residents in the Ukawa area, it was found that festivals function as cultural mechanisms beyond their basic function as festivals. For example, one of the phrases that residents often use is “I may not go home for the Bon Festival, but I will go home for the [Niwaka] Festival.” The last weekend of August, when the festival is held, is considered the most important time of the year to return home, rather than the typical times of the Bon Festival (mid-August) or the end of the year (December). During the festival, relatives and colleagues gather for banquets are held at each household, and the year’s stress is released. This time is seen to play a role in forming and maintaining relationships among community members.

Fig.1 Kiriko

Fig.2 Niwaka (Musha-e)

However, as times have changed, the festival has begun to face a number of problems (Table 1). And more, there are also costs and benefits to using the Niwaka Festival as a tourism resource as a regular means of solving regional problems. For example, labor shortages as a result of regional decline are causing difficulties in managing the festival in its current state. To respond to these difficulties while balancing preserving tradition with implementing new initiatives, residents have been actively discussing and managing festivals flexibly within the capacity of the community while (1) accepting participants from outside the district, (2) starting to accept tourists, (3) changing the generation, and (4) adjusting the number of Kiriko used in each festival.

1	Lack of painters
2	Difficulties securing time for activities due to diversification of labor
3	Lack of bearers
4	Weakening of the meaning of the festival due to the decline of the fishing industry
5	Lack of formality and rules (a female character from a Disney animation was drawn in a picture)
6	ecrease in the number of participating Kiriko (7 out of 9 original Kiriko in 2019)

Table 1 Challenges for the Niwaka Festival

This is an example of regional agency demonstrated through self-growth, adaptability, and self-renewal, which are nurtured through interaction with the eco-system through festivals. Therefore, in the Ukawa district, the traditional festival of the region works as a cultural mechanism, and regional agency

was seen as greatly involved in the maintenance of local identity. This is one example of the well-being of a community.

4. Agency as resilience in local community

By demonstrating agency through traditional festivals in the region, residents in the Ukawa district have dealt with difficulties and maintained their attachment to the community as an expression of local identity. In psychology, the concept of resilience is used to explain the ability and adaptation capacity of individuals to cope with various problems while also experiencing intermittent stress. Of course, there are differences in individuals' abilities to deal with problems and the adaptation process, and such differences are referred to as resilience. For example, resilience is defined in the American Psychological Association (2020) as "the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress." In the case of the Niwaka Festival, it plays a role in the formation and maintenance of relationships among community members as well as the processing of stress. The process by which stress is relieved can be regarded as an aspect of psychological resilience.

In recent years, the concept of resilience has attracted interest in the development paradigm in tourism as an alternative development model that complements sustainable development (Iwahara, 2020). In other words, it is necessary to build the resilience of society and communities as the ability to adapt to change. Disaster recovery in local communities can also be explained by the concept of resilience. In comparing two hurricane-affected areas of Honduras, Barrios (2014) argues that resilience in the local community is a product that emerges in relation to external actors such as government agencies and aid agencies that shape the reconstruction process. For example, in Bari, a resort area in Indonesia, tourism development accompanied by an increase in tourists led to a rapid decline in paddy fields and, as a result, a decline in agriculture generally. To increase the value of agriculture again, community members, mainly farmers, registered the traditional irrigation system, "Subak," as a piece of cultural heritage, and re-evaluated the agriculture of Bari, including its cultural landscape. In this case, it can be said that the government organization involved in registration and UNESCO became external actors.

In response, UNESCO launched a heritage management strategy, "Power of Culture," in Southeast Asia in 2015. The main axis of the project is the construction of heritage areas that have the ability to overcome the threat of tourism development (UNESCO 2016). In this way, community members in Bari demonstrated agency in response to regional problems, and "Subak" functions as a cultural mechanism, creating community resilience.

In the case of the Niwaka Festival, as with "Subak", community members demonstrated agency in response to local problems, and traditional festivals are seen to function as a cultural mechanism, creating community resilience. More specifically, traditional festivals contribute to psychological resilience for individual members, and regional resilience as a sustainable development model. In other words, the use of agency in the local community is an opportunity to create resilience for individuals and the entire region, and local identity is formed recursively. In this way, an aspect of well-being can be seen in the local identity that is formed recursively through traditional festivals.

5. Conclusion

Through the analysis of the Niwaka Festival among the Noto Kiriko Festivals, it was found that traditional

festivals in the region function as a cultural mechanism that plays three roles. The first is the recursive formation and maintenance of local identity. The second is the emergence of agency in the local community. The Niwaka Festival itself has problems associated with the decline of the region, and agency was exhibited in response to this problem. Third, the Niwaka Festival creates resilience for individual community members and the region as a whole through the establishment of agency. From these three points, it can be seen that in response to the decline of community, it is important to recognize not only economic activities centered on tourism but also the value of cultural events based on what UNESCO calls the "Power of Culture." This is because cultural events based on tradition form the very basis of local identity for community members, giving them the opportunity to demonstrate agency and the ability to respond to and adapt to problems. Further, to value and reevaluate cultural events, the relationship to external actors outside the community is also important, as with the significance of tourism. In other words, tourists can function as external actors rather than as inhibitors of the sustainable development of local communities. Only when external actors function in support of the local community cultivating agency that leads to resilience can the community members form local identity. This local identity forms the basis of meaning in their relationships with people in other regions, and a sustainable and creative well-being can be found there in a definite form.

Although this paper focused on theoretical research, empirical research on agency and resilience in the local community is hoped for in the future.

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Research Note

Destruction of Daily Values: Recovery and Resilience

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Abstract

The destruction of daily life due to the COVID-19 pandemic has caused feelings of uneasiness and fear among people. These feelings often encourage the exclusion of strangers and others who disagree with our perspective. Therefore, in recent years, we have faced both a virus crisis and crisis of social division. This damage to society cannot be restored immediately, even if the virus is waning. However, we have the ability to control our emotions and actions to mitigate this damage. This ability is demonstrated by understanding our individual differences. In this paper, I examine these problems from the perspective of the relations between an individual and the community.

Keywords: resilience, social division, excluding others, understanding others

1. Prologue

The COVID-19 pandemic has sparked a medical and economic crisis and irrevocably altered daily life. Governments globally have restricted their citizens from commuting to work, going to school, going shopping, visiting hometowns, and eating out with their friends. We belong to the last generation that has realized that its lifestyles, previously taken for granted, could collapse overnight. Consequently, we must consider how to utilize this experience in the future. Perhaps one of the most important roles that our generation has been tasked with is transferring this knowledge to the next generation.

In addition, governmental measures to restrict people's movements have also affected their emotions, although these restrictions are inevitable in order to preserve the social order. For example, many people were concerned about their access to proper medical care, their job certainty, the ability to procure necessities, and their restricted ability to meet family and friends. Simultaneously, we have experienced a strong desire to become free of these anxieties, cravings, and frustrations and to restore our daily lives.

This paper seeks to discuss the direction that society should take regarding post-COVID-19 recovery. It concerns the resilience of humans and their society. This discussion is necessary because the road to recovery is multifaceted. Additionally, each individual has their own particular form of resilience. Therefore, which method is the most appropriate choice?

2. Excluding Others

The desire to remove anxiety and fear can lead to excluding others. This connection is due to the desire to belong to a community, because belonging to a community provides the motivation for our survival. Human beings are born in a state of immaturity, and the protection provided by older community members is essential for our survival.

The first step toward joining one's community is to learn one's mother tongue to enable the communication with others. The scholarship of the humanities and social sciences in the 20th century has

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found that language influences the way people perceive others. In other words, one gains not only a means of communication by learning a language but also the worldview expressed by that language. Therefore, it seems clear that we learn a worldview early in life, perhaps subconsciously. In addition, members of a community also act in similar ways and follow various social norms. It is difficult to imagine communal life that does not feature taboos and manners. As noted above, one characteristic of a community, even if each member behaves differently, is that it is sustained by the mutual similitude of its members and their shared direction. This type of homogenization seems to be an indispensable condition for forming and maintaining a community.

If homogenization influences the formation and preservation of a community, it is possible that the elimination of heterogeneity, which is opposed to homogenization, can play a similar role. Heterogeneity transcends differences in language, physical characteristics, religions, and ideologies. Many examples can be found in history. For example, those excluded from a community usually receive particular labels, such as "sacred" or "impure," when they are judged by that community, just as midwives and female healers were once tried as witches in medieval Christian society. R. Girard emphasized this point, stating that "[t]he purpose of the sacrifice is to restore harmony to the community, to reinforce the social fabric." [1] Therefore, it seems likely that people have traditionally excluded others as a way to restore social order.

3. Understanding our Differences from the Other

Understanding the other is another way of removing anxiety and fear, which we experience when we face the unknown. In daily life, we can predict the future to a certain extent. However, when daily life has been destroyed, the future becomes an unknown and causes anxiety. Similarly, we feel different depending on whether those around us are familiar or foreign to us. The philosopher Washida Kiyokazu wrote, "Understanding the other is not about sharing an idea with the other or feeling the same way as the other" [2]. In other words, to understand the other is to learn about our differences.

Therefore, in order to understand the other in this way, we must distance ourselves from the worldview and social norms of our community. Furthermore, it is difficult to accept these differences if we believe that our own perspectives and criteria for judgment are correct. Here, it will be important to adopt an attitude of trying to understand and judge others solely from one's perspective. Consequently, it then follows that to adopt this attitude is to deliberately live an "alien existence" (i.e., the other) within one's community.

Modern academic disciplines take this stance, and modern literature has played a significant role in promoting this attitude. Various literary works have satirized traditional customs and pre-existing ideas, and they have portrayed literary characters that challenge them. It seems that their role in stories has been to embody and manifest this attitude. These works were often banned for disturbing social order, and several authors (e.g., Diderot) were even imprisoned. The same was true for early modern philosophers and scientists such as Descartes and Galileo.

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[1] René Girard. *Violence and the Sacred.* Translated by Patrick Gregory. Johns Hopkins University Press, 1977, p.8.

[2] Kiyokazu Washida (2010), p.130.
(in Japanese) 鷲田清一『わかりやすいはわかりにくい？ ――臨床哲学講義』、ちくま新書、2010 年、130 頁。

The attitude of these people can be understood as an innovative trend, and the examples of banning certain books and arresting their authors supports this. This conflicts with the conservative tendency to protect the existing social order through homogenization. Ernst Cassirer describes this tendency: "Man is torn between these two tendencies, one of which seeks to preserve old forms whereas the other strives to produce a new one." [3] The attempt to understand the other increases the risk of social exclusion from a community, but simultaneously, it leads to an awareness that one can be free from the existing social order and create a new life.

4. A Resilience by Understanding the Differences from the Other

Currently, tensions between those with liberal ideas and those with conservative ones seem to be sharpening, as seen in the 2020 US Presidential Election, among other examples. Neither of these groups can escape from the possibility that there are those among them who uncritically believe that their ideas are correct and that they should exclude opposing ideas. That is because all groups tend to seek similarity in their individual members.

These divisions indicate that the world is leaning toward a trend where freedom from anxiety and fear is achieved through the exclusion of others. This trend can lead to a situation where actions that would impose mutual assimilation and homogenization within a community are tolerated. In this situation, it becomes more difficult to express opinions and ideas that differ from that of the majority in a society. Therefore, excluding the other, or forcing them to assimilate, may restore society, but this is not an ideal goal. Therefore, the resilience required must be achieved through the opposite means, i.e., understanding our individual differences.

5. Epilogue

Therefore, what defines resilience during the COVID-19 pandemic? Is it the same as indicated in the previous section? In this case, the situation is rather complicated. In fact, even during the coronavirus pandemic, divisions have appeared among people, such as a division between the infected and the uninfected, between those with and without a mask, and between those for or against the vaccines. It seems that modern civilization is at a crossroads, facing the danger of dividing under the virus. On the other hand, governmental measures to preserve the social order of the community have restricted people's freedom of movement. Thus, the virus forces the division of our world and presses our inevitable choice.

Therefore, restoring our society by understanding our individual differences appears to be the opposite of the various judgments and measures to overcome the pandemic. In addition, this direction may encounter strong opposition because of the restriction of individual rights, subsequently increasing the social division. Therefore, it should be emphasized that this direction aims at the coexistence with others. Understanding our individual differences means coexisting with each other. The attitude of coexisting with those who are different from ourselves in thought and values enables us to prioritize public benefit, which means "not only for ourselves but also themselves," and "not only for themselves but also ourselves," reciprocally.

There is a great difference between that people's emotion and behavior are restricted passively by

[3] Ernst Cassirer. An Essay on Man. Yale University Press, 1944. p. 281.

the exclude or the compulsion and that they accept positively the social restriction; the latter is expected. Therefore, it is essential to pursue coexistence with others while understanding our differences. The same is true concerning the Sustainable Development Goals, which are considered as an indispensable subject for our collective human future. Here, we should never forget the slogan “Leave no one behind.” There are many different people living in diverse regions. Therefore, we should seek to balance our existence with each other and understand our differences.

Thus, even during the COVID-19 pandemic, social communities should seek their own resilience, at first, and round up each of them in the “new ordinary” order to find a new ideal society.

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Research Note

Present conditions of leisure facilities and their efforts during the coronavirus disease 2019 pandemic

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Abstract

This study focuses on three leisure facilities in Japan, namely, Tokyo Dome City Attractions, Ikebukuro Sunshine City, and Tokyo Disney Resort, to elucidate the conditions of leisure facilities that manage animation and tokusatsu (special effects) films during the coronavirus disease 2019 (COVID-19) pandemic. Each leisure facility implemented a unique approach. Tokyo Dome City Attractions introduced the regulations "Stopping shake hands service" and "Recommend using the penlight. "Ikebukuro Sunshine City introduced three steps : "Watching display area," "Watching live stage," and "Going goods sales." Meanwhile, Tokyo Disney Resort adopted "Stand by pass," "Entry reception," "Priority seating," and "Tokyo Disney Resort shopping." The worldwide COVID-19 pandemic continues to rage. This study presents the current conditions of the three facilities and outlines a program to monitor the facilities' management and future infection-control measures.

Keywords: Contents tourism, Leisure facilities, Typification of infection-control measures, COVID-19 Pandemic, Event management,

1. Introduction

In the early months of 2020, the coronavirus disease 2019(COVID-19) began to spread in Japan. In response, an experts' conference was called on March 9, 2020, to seek ways to reduce the effects of the three Cs (closed spaces, crowded places, and close-contact settings). At this time, the prime minister also declared a state of emergency for seven prefectures, including Tokyo, and this declaration was later expanded to the whole of Japan.

This led to the closure of many leisure facilities. The theme park Tokyo Disney Resort[1)], including Tokyo Disneyland[2)] and Tokyo Disney Sea[3)], was closed from March to June 2020. The facility of the amusement park Tokyo Dome City Attraction[4)] called Theatre G-Rosso[5)] which hosts performances of the Super Hero stage show, was also closed from March to July 2020 because of the pandemic.

During the summer; however, many leisure facilities reopened under infection-control regimes, such as disinfecting hands and measuring temperatures. Thus, new rules to prevent infectious diseases were introduced at each leisure facility.

In this study, focusing on the three leisure facilities in Japan, I analyze the different efforts of each facility toward preventing infection and report on the present state of affairs with respect to COVID-19 as well as to prospects of a post-COVID-19 period.

2. Research Purpose and Methodology

This study discusses the conditions of leisure facilities that create animation and tokusatsu (special effects) films during the COVID-19 pandemic. For this purpose, the study focuses on a range of leisure facilities: (1) amusement parks, (2) large commercial facilities, and (3) theme parks. To identify the features of these

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types of facilities, the following three examples are selected: Tokyo Dome City Attractions, Ikebukuro Sunshine City, and Tokyo Disney Resort. Each of them is a well-known tourism destination in Japan. Tokyo Dome City is an amusement park, Ikebukuro Sunshine City[6] is a large commercial facility, and Tokyo Disney Resort is a theme park.

Although there are many and diverse leisure facilities in Japan, I have two reasons for selecting these in particular. First, these three facilities have a long history of hosting events concerning animation and Japanese tokusatsu characters. For example, Tokyo Dome City Attractions has hosted the Super Sentai (Power Rangers) series shows at the Theatre G- Rosso for more than a half of century. Ikebukuro Sunshine City has also hosted the Ultraman Festival[7], which has a more than 30 years history. These are representative tokusatsu films in Japan; the Ultraman (1966) series is produced by Tsuburaya Productions and the Super Sentai series is produced by Toei Company. The two events have become regular over the long term.

This study focuses on facilities that present animation films created in foreign countries. Tokyo Disney Resort is a typical example of this facility, which represents Disney Animation films produced by The Walt Disney Company in USA. This resort type facility is composed of two theme parks: Tokyo Disney Land and Tokyo Disney Sea, and it incorporates five official Disney hotels[8]. The two parks have a long history of holding seasonal events for Disney characters and anniversary events over the course of almost 40 years.

Second, the three facilities are quite large and complex to manage. They have developed their business in various directions, especially growing their attractions across an extensive site. Moreover, these facilities partner with lots of film companies, including Tsuburaya Productions and The Walt Disney Company, as noted.

At present, little research has been conducted on the efforts that leisure facilities have taken to reduce COVID-19, as the pandemic is exhibiting constant change into newer phenomena. In addition, there are even fewer studies of tourism related to animation and tokusatsu films. Thus, it is important and necessary to investigate the initiatives to prevent infection taken by the three abovementioned leisure facilities.

Event title (English)	Event title (Japanese)	Venue	Event dates	Genre of facilities
①MASHIN SENTAI KIRAMEIGER SHOW No.2	魔進戦隊キラメイジャーショーシリーズ第2弾　今こそ、みんなでキラメこうぜ！奇跡を起こすキラメンタル！	THEATRE G-ROSSO in Tokyo Dome City Attractions	August 1 ～October 4, 2020	Amusement Park
②MASHIN SENTAI KIRAMEIGER SHOW No.3	魔進戦隊キラメイジャーショーシリーズ第3弾　空前のひらめきバトル！取り戻せ！キラメイストーン！		October 31, 2020 ～January 4, 2021	
③MASHIN SENTAI KIRAMEIGER SHOW No.4	魔進戦隊キラメイジャーショーシリーズ第4弾　Gロッソ最終決戦　輝け！キラメキの光！		February 6 ～March21, 2021	
④KIKAI SENTAI ZENKAIGER SHOW No.1	機界戦隊ゼンカイジャーショーシリーズ第1弾　シアターGロッソに現る！！		March 27 ～June 27, 2021	
⑤KIKAI SENTAI ZENKAIGER SHOW No.2	機界戦隊ゼンカイジャーショーシリーズ第2弾　ゼンカイジャーVSゴーカイジャー		July 17 ～September 26, 2021	
⑥ULTRA HEROES EXPO 2021 SUMMER FESTIVAL IN IKEBUKURO SUNSHINE CITY	ウルトラヒーローズEXPO2021 サマーフェスティバル　IN　池袋サンシャインシティ	IKEBUKURO SUNSHINE CITY Introducing Exhibition Halls B on the Bunka Kaikan Building's 4th floor	July 22 ～August 29, 2021	Large commercial facility
⑦KIKAI SENTAI ZENKAIGER SHOW No.3	機界戦隊ゼンカイジャーショーシリーズ第3弾　伝説パワー全力全開！聖地を揺るがす大激闘！	THEATRE G-ROSSO in Tokyo Dome City Attractions	October 30 ～January 30, 2021	Amusement Park

Table 1. Field work conducted at seven events at an amusement park and a large commercial facility from January 1, 2020 to January 31, 2022

Field work was carried out from January 1, 2020 to January 31, 2022 as the research period. I personally visited the three leisure facilities to participate in their events and to gather materials for the research.

First, after surveying the amusement park and the large commercial facility, I took part in the seven events show in Table1.

I visited the two theme parks, Tokyo Disneyland, and Tokyo Disney Sea, both at Tokyo Disney Resort. Table 2 shows the facilities and the dates of my visits.

The name of theme park	Dates
①Tokyo Disney Sea	August 18, 2020
②Tokyo Disney Land	August 25, 2020
③Tokyo Disney Land	September 8, 2020
④Tokyo Disney Land	September 28, 2020
⑤Tokyo Disney Land	October 22, 2020
⑥Tokyo Disney Sea	December 10, 2020
⑦Tokyo Disney Sea	July 28, 2021

Table 2. Field work at theme parks from July 1, 2020 to January 31, 2022

3. Results of Field Work

In this section, I summarize research on changes in each leisure facility during the period from closure because of the COVID-19 pandemic to the present. This study describes what infection-control measure have been introduced and the changes that were made during the period from 2020 to 2022. All these facilities have a long history, as noted above, but they all fell into a critical condition, being closed from the beginning of 2020 until the summer of that year because of the COVID-19 outbreak. However, in the summer of 2020, all the facilities began to show signs of reopening, but in ways that differed from facility to facility.

For instance, the amusement parks at Tokyo Dome City Attractions and the theme parks at Tokyo Disney Resort host large numbers of tourists in one vast enclosure, taking measures such as disinfecting, keeping social distance, and setting up a time-specific system to avoid tourists crowding into a single attraction.

The large commercial facility Ikebukuro Sunshine City, to maintain a particular event at a venue in the facility, canceled other local events and replaced them with online versions. This was done to prevent crowding in the small facility.

However, in 2021, these three facilities retuned to operating in a common way, including avoiding the three Cs, hand disinfection, and maintaining social distance. In addition, each facility began to implement its own unique infection-control measures. In the three leisure facilities, countermeasures against infectious disease were not the same as those in place when the facilities had reopened in summer 2020. However, although each facility established unique countermeasures to the infectious disease according to their characteristics, they gradually became unified from 2021 onward, and have been

maintained through 2022.

The following sections show how each of the three leisure facilities closed down, reopened, and developed their own infection-control measures as COVID-19 spread.

4. Tokyo Dome City Attractions as Amusement Parks

This study first examines changes in the infection-control measures at Tokyo Dome City Attractions. This is an amusement park located in Koraku, Bunkyo-ku, Tokyo, which opened in 1955 under the name of Korakuen Amusement Park. In 1971, this facility introduced its Super Hero show, launched by Toei Company as an amusement program for the television show Kamen Rider (Masked Rider). The Tokyo Dome Corporation set up an exclusive stage called the open air theater to hold the Kamen Rider Show, which was presented from 1971 to 1975. After the event, Tokyo Dome City Attractions began to hold the series Super Sentai Show, the first number of which was Himitsu Sentai Gorenger (1975). As Super Sentai was a TV series whose hero was replaced every year, according to the TV program, the hero show at Tokyo Dome City Attractions was also continued from 1976 to 2021. The show continues to be held even today at the Theatre G-Rosso in the park; as a result, it has been in place as an attraction for over 50years.

In 2020, at the beginning of the COVID-19 pandemic, the Tokyo Dome City Attraction had closed according to the declaration of a state of emergency. Naturally, Theatre G-Rosso was closed as well. The Kishiryu Sentai Ryusoulger show that was scheduled for March 2020 was canceled. In August 2020, the Super Sentai series show was reopened with the renewal program, the Mashin Sentai Kirameiger show (Table 1). To reopen Theatre G-Rosso, in addition to avoiding the three Cs, implementing hand disinfection, and maintaining social distance, two infection-control measures were introduced at the resumption of its operations, as follows.

The first measure was “Stopping shake hands service” In 1983, Tokyo Dome City Attractions introduced the shaking hands service for visitors before entering the show theater. To prevent infection by this means, this service was halted in August 2020, and it has not been recommenced. Furthermore, the facility recommends “Using the penlight” to cheer the heroes (rangers). Ordinarily, before the pandemic, children cheered using loud voices. To prevent airborne infection, the show now recommends that they find another way to cheer by using the penlight. This resulted in creating a new benefit for the organizer e in being able to sell souvenir penlights, with images of the rangers on them to visitors at the goods shops.

These infection-control measures are the Tokyo Dome City Attraction’s first experience of anything similar in the more than 50-year history of the Super Hero show. To recall the previous periods, older performances have been made available on DVD. A mail-order service was first set up on the website for tourists who were unable to see the shows because of restrictions on going out or traveling across prefectural borders. Finally, the stay-home service was introduced to allow them to enjoy the shows at home.

5. Ikebukuro Sunshine City as Large Commercial Facilities

Ikebukuro Sunshine City is a large commercial facility located in Higashi-Ikebukuro, Toshima-ku, Tokyo. It includes a shopping center and an aquarium, an observatory, a planetarium, and other leisure services. Since 1989, this facility has held the Ultraman Festival as a summer event. This event is related to the Ultraman (1966) television series featuring the tokusatsu hero program created by Tsuburaya Productions,

and it was held inside Introducing Exhibition Halls B the Bunka Kaikan Building from 1989 to 2021. The event consisted of three elements and continues until the present: a live stage show, a display, and a market[9]. From 1989 to 2019, there were more than 5 million visitors to the Ultraman Festival[10]. In 2020, the scheduled festival was canceled by the pandemic of COVID-19. However, the event was then held online on the organization's website from August 1 to August 23, 2020[11]. The contents of this online event are limited to free streaming of live shows held in the past and a posting of photos of past events.

In 2021, Ikebukuro Sunshine City renewed the festival by introducing a new event, held from July 22 to August 26, titled "Ultra Heroes Expo 2021 Summer Festival In Ikebukuro Sunshine City" (Ultra Expo). This new Ultra Expo has three factors, similar to the previous event, as follows: a live stage show, a display, and sale of merchandize. To reduce the three Cs, visitors are asked to follow these three following steps.

First, a display area is provided, where visitors can view displayed items (e.g., costumes from and miniatures related to the Ultraman series). This is provided for visitors' appreciation and enjoyment. The next step is the program of watching the live stage. After the display, visitors can go to the live stage area and enjoy the show named Ultraman New Generation Live. One remarkable difference of the show from the previous shows is no vocalization. Previously, children would cheer on Ultraman in a loud voice when he was in a crisis. However, to prevent the spread of airborne infection, this cheering is now prohibited. Instead, the event management asks visitors to do what they call Ultra Charge, in which visitors put their hands over their breasts and express themselves in this way toward Ultraman. The final step is going to the gift shop. Before they enter the area, visitors are requested to register themselves at the admissions registration area on the Ultra Expo official website[12]. At the site, visitors choose their arrival time from a list of options. At this time the visitors can enter the area of goods sales and purchase many limited items (toys, clothes, DVD, food, and so on).

What changes can be seen in the new Ultra Expo? Although this event was held as an online event during the pandemic last year, not only the rules for infection control but also the system as a whole has changed. Visitors (tourists) can enjoy the event, but only if they follow certain procedures. Then, it is expected that the event will continue to follow the procedures described above, even in 2022.

6. Tokyo Disney Resort as Theme parks

Tokyo Disney Resort is located in Maihama, Urayasu City, Chiba Prefecture, and features the two large theme parks, Tokyo Disneyland and Tokyo Disney Sea; the Ikspiari shopping center; and five official Disney hotels. Tokyo Disneyland opened on April 15, 1983, followed by the opening of the hotel and Ikspiari in 2000. On September 4 the following year, Tokyo Disney Sea opened, and it has been in operation ever since.

However, Tokyo Disney Resort was affected by COVID-19 and was forced to close between March and July 2020. In August, Tokyo Disneyland and Tokyo Disney Sea reopened with new rules, including avoidance of the three Cs, hand disinfection, and maintaining social distancing. The guests were asked to maintain social distance in the waiting line for the attractions, not to speak on the rides, and to watch the parade only from designated areas.

Tokyo Disney Resort also has unique features targeting the pandemic. The official Tokyo Disney

Resort App[13] has enabled a significant difference in the above-described leisure facilities. This app has many functions for the enjoyment of Tokyo Disney Resort services; these can be categorized into four main functions: the standby pass, the entry reception, priority seating, and Tokyo Disney Resort shopping.

The standby pass service enables guests to see popular attractions (such as the Enchanted Tale of Beauty and the Beast in Tokyo Disneyland) at a designated time. This enables guests to make reservations to experience an attraction at a specific time. Second, entry reception allows the guest to go to a theater showing a Disney characters' stage show (Mickey's Magical Music World in Tokyo Disneyland) at a designated time. Third, priority seating is what the guests can make use of in a few restaurants (e.g., La Taverne de Gaston in Tokyo Disneyland) at a designated time. The three abovementioned services can together prevent infection clusters in a given area. This function can be limited only to two theme parks. Tokyo Disney Resort shopping is usable outside the parks. This function is a service by which the guest can buy merchandize related to Disney characters (e.g., confectioneries, toys, and other items) sold in both parks. This service allows users who cannot go to parks to buy many items, and as a consequence, management is able to continue economical business. Nevertheless, this system has encountered some problems. For example, the time allotted for shopping is quite short (from 7:00 to 7:30 a.m. every morning).

The Tokyo Disney Resort App was introduced in the park before the spread of COVID-19. The main functions of the system are to issue fast passes and to draw tickets for shows, but the functions were changed in 2020 because of the spread of COVID-19. These four functions did not change significantly until 2022, and they are expected to continue in the future.

7. Summary and Future Prospects

In this study, I focused on the transition of several leisure facilities from closure due to the COVID-19 pandemic to the present, including their infection-control measures and what kind of changes had been made from 2020 to 2022.

The three leisure facilities examined were closed in early 2020 because of the spread of the disease, and they reopened in the summer of the same year. After their reopening, COVID-19 infection-control measures adopted by the three facilities differed from each other. After 2021, each facility began to practice its own unique infection-control measures, with common rules set for all three facilities, such as avoiding the three Cs and requiring hand disinfection. Tokyo Dome City Attractions introduced "Stopping shake hands service" and "Recommend using the penlight," Ikebukuro Sunshine City introduced three steps, to enjoy the Ultra Expo, and Tokyo Disney Resort recommended that guests use the Tokyo Disney Resort App to ensure smooth service against three Cs.

In 2020, following the spread of COVID-19 infection, all facilities were still practicing trial-and-error, but after 2021, they all began to converge on the same set of rules, such as avoiding three Cs and requiring disinfection, and each facility began to implement its own infection-control measures. However, it is likely that the above three facilities will be aligned again in the future as COVID-19 comes to an end. Specifically, there will be a gradual easing of the number of visitors, extension of business hours, and revival of services that had been suspended. Therefore, it is necessary to keep a close eye on the future trends of these facilities.

As of 2022, the end of the COVID-19 pandemic is still not in sight. This means that if the infection

persists, different institutions may continue to rely on their own infectioncontrol measures, as revealed in this study, or switch to completely different measures. Therefore, it is necessary to continue to monitor changes in infection-control measures of the three leisure facilities. This survey lets us clarify what measures are effective for event tourism in the future.

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9）Satoshi Murai, ULTRAMAN DNA Vol.1, 2004（村井聡、てれびくん 9 月号増刊　ウルトラマン DNA Vol.1、東京：96-97pp、2004）

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II. History and Civilization

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Research Paper

Correlation between Emotions and Society

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Abstract

Although, in the historical transition of human culture and civilization, human emotions rarely appear on the stage of historical descriptions, in this paper, the author examines how emotions have been treated in the historical transition, and in particular, how emotions that tend to be thought to depend solely on individuals influence trends in society and groups. After the theoretical discussion of emotions and reason, the study demonstrates the recent works on the history of emotions as well as Febvre's treatise of human emotions. As a historical case study, the author also examines how fluctuations are observed in people's emotions and in society using French national symbols. Through the discussion, the study finds changes in people's emotions and consciousness and changes in the social components that affect emotional decision-making. Finally, "cyclical changes in emotions and society" can be found. Thus, an individual's emotional desire affects society, from which new emotions—developmental emotions—are reproduced.

Keywords: Emotion, history of emotions, cyclical change and reproduction of emotion

1. Introduction

In an increasingly globalized world, society is constantly changing. Due to these rapid changes, we face a What are "emotions"? Emotions sometimes fill people with joy and inspire them, and sometimes cause them to feel anxious or scared. As such, emotions affect human reason and behavior. The term "emotion" conveys many meanings in a single word, but humans have a variety of similar words, such as passion, affect, affection, and sentiment, which are concepts directly related to emotion, and motion and movement can also be considered to be caused by emotions.

Emotions are thought to be a counterpart to reason. In fact, in the historical transition of human culture and civilization, human emotions rarely appear on the stage of historical descriptions. In historical studies as well, based on a type of positivism that sees historical materials as supreme, emotions depend exclusively on the individual, and it seems that they have been largely neglected in historical discussions. Incidentally, in the current global environmental crisis, people are inevitably forced to deal with them. In this way, we can see that people are concerned about the Earth's survival and thus human survival. In the current coronavirus pandemic, people's behavior is influenced by fear of disease and death on the one hand, and by poverty associated with economic inactivity on the other. Even with the coronavirus, should history looking back on the present from decades or centuries later just tell the story of the spread of infection and measures taken by the government? The discussion of emotions clarifies such situations. In this way, we find individual emotions and social emotions that underlie people's thoughts and actions in the present age, and this is also felt as the will of society in this age.

The issue in this paper is the way emotions are treated. This paper examines how emotions have been treated in the historical transition of human culture and civilization, and in particular, how emotions

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that tend to be thought to depend solely on individuals influence trends in society and groups. Here, we aim to examine the effects and functions of emotions in history, and to present a direction for considering the significance and importance of dealing with emotions.

2. Discussion of emotions and reason

Humans have been thinking about emotions throughout their long history. For example, Aristotle, philosophers of ancient Greece, dealt with emotions (Pathos) as one form of cognition in The Art of Rhetoric (Rhetoric, Chapter 2). He discusses consent in argumentation and hatred and anger in refutation in relation to "arete" (moral virtue). This argument is also discussed in Nicomachean Ethics (Nicomachean Ethics, Volume 10, Chapters 8–9). There, too, pathos refers to human emotions which accompany pleasure and pain, such as anger, fear, joy, hatred, and sadness. In explaining the importance of arete, it is pointed out that true arete is established where the action of the temporary mind (i.e., pathos) accompanied by pleasure and pain is determined by the judgment of logos. Furthermore, eudaimonia (true happiness) is a permanent "better life" (virtue) guided by reason, and temporary excessive emotional pathos accompanied by desire, pleasure, and pain is something to be suppressed.

This view of emotions can also be found in the medieval Christian world. This implies the theorization of emotions by the doctrine of the church, in which emotions as will toward God are valued. For example, in Umberto Eco's famous work The Name of the Rose (Il Nome della Rosa, 1980), Aristotle's Poetics on the virtues of laughter is banned. Here, too, is seen a form of restriction of emotions in Christian doctrine. In other words, it is thought that human emotions should be controlled by reason, and humans have been considered as operating in this way.

In fact, the superiority of reason over emotion is seen. Even in the 17th century, under the modern spirit represented by René Descartes, the father of early modern philosophy, learning was empirically developed under a mechanistic worldview centered on reason. It can be said that under mind-body dualism, problems of human sensibility were, in a sense, left behind. In today's historiography, it seems that the issue of emotions has not been dealt with so much in empirical research based on historical materials. This tendency can also be found in the study on the history of emotions. Emotional research, particularly that which developed after the mid-19th century, has led to the emergence of positivistic research such as brain science and cognitive science.

3. Development of emotional research

Lucien Febvre is one of the pioneers who brought a new flow of the history of emotion into historiography. Febvre, together with Marc Bloch, founded *Annales d'histoire économique et sociale* in 1929, and attempted to reconsider history from the perspective of society and the people who live there, in a way that was not restricted to the methods and academic fields of history until then. The people of the "Annales School" (l'école des Annales), who supported them, asked questions about history from various aspects. One of these is the history of emotions.

Febvre wrote *La sensibilité et l'histoire* in 1941, in which he described his unique perception of emotions. He was aware of the chronological changes in morality and sensitivity, as well as the changes in evaluation of the same, and the complex interplay of emotions in the individual's mind. Most importantly, Febvre understood emotions as an important factor influencing social change. In other words,

emotions were no longer treated within a specific individual's mind, but were treated as a major driving force that could incite the group[1]. In other words, “emotions are contagious.”[2]

In his view, emotions are no longer temporary. Emotions cause chain reactions through people’s interactions, sometimes intensifying. Within a group, individual emotions (passion) and affect form the emotions of the group, and if those emotions become one idea and are put into action, they can also change society.

Later, with regard to the study of the history of emotions, Jan Plamper introduced the works of B. H. Rosenwein and W. M. Reddy. B. H. Rosenwein, a medieval historian, raised the concept of “emotional communities.” This concept is “a group of people who share the same norms related to emotional expression and place (or do not place) the same value on the same emotion.” This concept clarifies the formation and reproduction of a community in which emotions are linked, and clarifies that individual emotions are directed toward the emotions of the group. However, in that emotions are not sustained, these “emotional communities” are not permanently established. Rather, the boundaries of multiple communities are ambiguous, and changes are also found over time.

On the other hand, Reddy examined whether emotions depend on cultural universality or social constructionism. Reddy introduces the concept of an “emotional regime.” This means “the sum total of a defined emotion,” which consist of speech, its associated instances, and symbolic practices. Here, emotion refers to speech acts that depict and change emotions. This means that emotions are not always universal, but are influenced and sometimes regulated by the thoughts of society at that time. The expression of patriotism can be said to be the result of a national emotional system based on the belief in the state as an emotion. In other words, according to him, “the political system is supported by the national emotional system.” This means that emotions shared within a group become a single force that influences it. However, the emotions of individuals in a group do not necessarily depend on this regime.

Common to Rosenwein’s and Reddy’s arguments is that when individuals’ emotions are brought together as a group, or conversely, when the will of a group is distributed to the individuals, something arises. This is the problem of emotions, which figure prominently in history.

4. French national symbols and “cyclical” emotional change

4.1. National symbols and “Emotional Communities”

In this section, I will examine how fluctuations are observed in people’s emotions and in society using French national symbols as a case study. Here, national symbols refer to the symbols that were utilized with the intention of directing the state and the people by the government and the political system in particular, and they played a major role in the political dimension and the conscious dimension of the people.

The significance of symbols for humans can be seen in the discourse by the German philosopher

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[1] Jan Plamper, *Geschichte und Gefühl. Grundlagen der Emotionsgeschichte*, München: Siedler, 2012.
Cf. Japanese translation (MORITA Naoko, 2020), 森田直子訳『感情史の始まり』みすず書房、2020 年（p. 56）.

[2] “Les émotions sont contagieuses.”
Fevre, Lucien,“La sensibilité et l'histoire: Comment reconstituer la vie affective d'autrefois?”, *Annales d'histoire sociale (1939-1941)*, Jan.-Jun., 1941, T. 3, No. 1/2 (Jan.-Jun., 1941), pp. 5-20. p. 7.

Ernst Cassirer that humans are “animal symbolicum.” Indeed, humans have manipulated all kinds of symbols and created civilizations by doing so.

There are two major patterns of national symbols. One is the “transmission type symbol” used by politicians especially after the period of absolute monarchy. This was created by layering ancient Roman symbols on themselves in order to show the politicians’ prestige and authority. The other is the “acceptance and penetration type symbol” that newly appeared under the second empire during the period of the formation of the nation-state. This type of symbol was created by politicians with the intention of directing the people to show a spirit of patriotism and exemplary national character appropriate to the state. The former has the characteristic that the content of a fixed meaning is shown unilaterally by the presenter, and the latter is accepted actively by the interpreter.

These national symbols are connected with Rosenwein's concept of “emotional communities.” The symbols promote the formation of “emotional communities” that are connected through media and text. Emotional communities, which are formed on the basis of social communities, are connected by basic thoughts and values. In other words, the two patterns of national symbols are consciously presented to people through visual media such as sculptures and paintings, and the interpretations that arise from them includes emotions directed to some extent by the presenter of the symbols. In other words, these symbols can influence the common cognitive base and cultural forms in “emotional communities” and bring about transformation. In other words, the consciousness of people affected by symbols changes the social components that they rely on, and the society in turn changes people’s consciousness, creating a “cyclical change in emotions and society.” Therefore, a commonality with Febvre’s “emotional contagion” is found herein. This “cyclical change in emotions and society” can particularly be seen in the “acceptance and penetration type symbol.”

4.2. Attempts to manipulate emotions in “acceptance/penetration symbols”

During the second empire, when national symbols shifted to “acceptance/penetration symbols” in France, Vercingetorix was chosen as a symbol. Previously, Vercingetorix was regarded as the supreme commander of the Gallic tribes who were defeated by Caesar as described in *Commentarii de Bello Gallico*. In fact, French national symbols included Caesar and the Roman emperor, invincible military strategists. However, during the second empire, the appraisal and recognition of the Gaul, who were Caesar’s enemies, changed. For example, *La Petite presse*, a Parisian newspaper in 1866, reported on a statue of Vercingetorix that was built in 1865 in Alise-Sainte-Reine. It tells us that Vercingetorix's heroic behavior garnered praise from the enemy Romans, while praise for Caesar is not mentioned. Furthermore, regarding the significance of the

Fig. 1 STATUE ÉQUESTRE DE VERCINGÉTORIX (equestrian statue of Vercingetorix) by Bartholdi.

statue's construction, it states that it was for the purpose of benefiting the "excellent people" and restoring his honor.

The recognition of Vercingetorix as a national symbol was intensified by the diplomatic unrest at the end of the second empire. In May 1870, as the Franco-Prussian War approached, a horse statue of Vercingetorix was displayed on the Champs-Elysées in Paris (Fig. 1), and the exhibition was reported on the front page of a periodical on art[3].

This new appreciation of Vercingetorix seems to have been recognized in no small measure by the people of Paris. It was during the Third Republic that the reputation of Vercingetorix was firmly established as a national symbol. In 1877, France's first elementary school textbook, "*Le Tour de la France par deux enfants*," depicted the dichotomy of a young Gallic hero and the ambitious and ruthless Roman conqueror Caesar. Furthermore, in A. Chalamet's textbook, it is written, "We can find 'emotions' similar to ours in Vercingetorix." Here, there is a superimposition of the growing national sentiment after the defeat in the Franco-Prussian War and the courageous heroic spirit that fought for the freedom of all Gaul. Furthermore, the intention to make the national community aware of this emotion can be seen. At that time, as Vercingetorix's reevaluation in the political realm increased, it appears that there was a synergistic role for nationalism in the formation of emotions seen above.

5. Conclusion

In this paper, I have examined how emotions have been treated in history. In particular, in the previous section, as a typical example, the national symbol of the "acceptance and penetration type" in 19th-century France was discussed. This is a shift from a "transmission type symbol" to an "acceptance/penetration" symbol, and before and after this shift, there is a marked change in people's emotions. The two patterns of national symbols influence the consciousness of the people and the nation. However, in the "transmission type symbol," the interpreter reduces the information obtained from it to an interpretation of the world, but in the "acceptance and penetration symbol," the interpreter accepts the information as something related to himself, and tries to find homogeneity there.

In particular, "acceptance/penetration type symbols" cause changes in people's emotions because the interpreters themselves actively internalize information (meaning content) from them. This symbol can be a device of Reddy's "emotional regime." That is, because it can also encourage the formation of inward patriotic feelings. For example, France's concept of freedom and equality is one of Reddy's emotional regimes and one of the devices for what ethnohistorian Monique Scheer calls "emotional practices." In other words, through this medium, people can strongly link their thoughts and actions to the concept while overriding other emotions by repeating slogans in their minds. In this way, it can be said that the "emotional regime" is created by various symbolic concepts and monuments, and that it supports the political system.

The development of the Vercingetorix symbol began with the initial government initiative, and before long it was voluntarily accepted by the general public. There we find changes in people's emotions and consciousness and changes in the social components that affect emotional decision-making. In other

[3] *L'Art pour tous : encyclopédie de l'art industriel et décoratif*, published on May15, 1870.
The founder and the director of this newspaper is Émile Reiber. The Fig. 1 is also cited from the newspaper.

words, “cyclical changes in emotions and society” can be found. In this way, the emotional desire for a homeland affects society, from which new emotions—developmental emotions—are reproduced.

This situation is the same in the present day. With the spread of COVID-19, people have felt the emotions of disgust, anxiety, and fear. And these emotions sometimes divide nations and groups. The vicissitudes of vaccine development have made people both happy and sad, and they have also created a vaccine gap between developed and developing countries. In addition, whether to get vaccinated or not and whether to wear a mask or not vary from society to society. Furthermore, the tightening of the economy due to regulations has created rich and poor. And people's emotions sometimes have a major impact on national policies.

That said, the human desire to beat the coronavirus is universal. Hope for one measure in one region is conveyed to another, which forms some relief mixed with anxiety. In other words, emotions are reproduced and circulated. We need to remember the emotions that people have in the present situation. It seems like it is our duty to record and communicate them to future generations. This is because emotions are a major factor that can move a group or even the world. I am convinced that the memory of such emotions will become the resilience of humans in the next crisis.

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Research Paper

A Consideration of Mathematics in the Renaissance: In the Terms of Modern Science and Bricolage

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Abstract

In the history of mathematics, the period from the Renaissance to the modern era can be seen as a time of transformation. This paper examines the Renaissance as a turning point of it. At that time, on the one hand, the formation of theoretical mathematics was prepared, and on the other, practical mathematics was developed as if blossoming among artists and merchants. The Renaissance that exhibited a dichotomy—a kind of complexity—in mathematics. While the abstract and logical structure of mathematics was established in various human activities, the Renaissance can be seen as a transitional stage for this discipline. Considering the concept of "bricolage" introduced by Lévi-Strauss, a kind of bricolage is found in mathematics in this period. The purpose of this study is to clarify how the bricolage-like aspect of Renaissance mathematics contributed to the formation of the mathematical discipline, based on the essential meaning of the concept of bricolage. During the Renaissance, it was artists who played a crucial role. This calls for a change in our view of science and mathematics. In other words, it is a new recognition of the fact that various human consciousnesses have been involved in the formation process of their theoretical system. This in turn will lead to a new understanding of science and mathematics.

Keywords: Renaissance mathematics, practical mathematics, bricolage, Alberti's proportion theory

1. Introduction

In an increasingly globalized world, society is constantly changing. Due to these rapid changes, we face a In recent years, the word bricolage has become increasingly commonly used. The concept of bricolage was proposed by Claude Lévi-Strauss (1908-2009) in his 1962 book *The Savage Mind* (*La pensée sauvage*). It refers to the use of familiar materials by people of primitive cultures to achieve a certain purpose. Recently, the word has come to be used in the context of resilience in emergencies or chaotic conditions such as natural disasters or in reference to organizational reforms in society. In its original definition, this concept can be considered to be opposed to scientific thought based on causality. Here, the "savage mind" has a dichotomous relationship with the "cultivated mind." In other words, this dichotomous relationship is a contrast between "savage knowledge" and "cultivated knowledge," i.e., "civilized knowledge," as a form of human knowledge. From the 19th century to the 20th century, humans were overly dependent on positivist thought centered on science. Bricolage, however, can also be interpreted as Lévi-Strauss's reflection on the state of humanity and accompanying warning.

The Scientific Revolution of the 17th century constituted a vast opportunity for humans to acquire scientific knowledge. The establishment of modern science promoted human logical thought, and was subsequently applied to various technologies. This reform exhibited many factors: the necessity of education itself, in terms of the accumulation and development of knowledge, the ideas and proposals of

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scientists, and the demands of society. However, other factors that differ in character from these are also found. In each region, people's culture and value consciousness are rooted in their own historical background. In the knowledge of each time and region, there is something that can be called the "will of the era." The relationship between this "will of the era" also appears in mathematics, which is originally rooted in the innermost part of the human mind.

In the history of mathematics, the period from the Renaissance to the modern era can be seen as a turning point. In his book *The Measure of Reality: Quantification and Western Society, 1250–1600*, A. W. Crosby argues that this period marked a turning point in the perception of the world, from quality to quantity. In fact, in the tradition that has prevailed since the classical period, the understanding of the world was advanced through the discussion of the properties that are studied by geometry. From the 16th century, however, this was transformed into a quantitative understanding represented by calculus. This paper examines the Renaissance as a turning point of that transformation. At that time, on the one hand, the formation of theoretical mathematics was prepared, and on the other, practical mathematics was developed as if blossoming among artists and merchants. The momentum of the latter is particularly remarkable, and some artists, such as Alberti (1404-1472) and Piero della Francesca (c.1416-1492), also delve into mathematicians. The Renaissance that exhibited a dichotomy—a kind of complexity—in mathematics. The "will of the era" certainly seems to be present there.

This paper examines an aspect of the formation of mathematics as an academic discipline, focusing on the Renaissance. The fundamental question of what mathematics is always stimulates people's minds. The answer to this question includes the internal implications of mathematics and the way in which it is used as representation. Mathematics did not come to be the discipline it is today at the beginning of human intellectual history. While the abstract and logical structure of mathematics was established in various human activities, the Renaissance can be seen as a transitional stage for this discipline. A kind of bricolage is found in mathematics in this period. The purpose of this study is to clarify how the bricolage-like aspect of Renaissance mathematics contributed to the formation of the mathematical discipline, based on the essential meaning of the concept of bricolage. This direction is proposed in the present paper.

2. Mathematics from the perspective of civilization

2.1. What is mathematics?

"What kind of discipline is mathematics?" One answer to this question is that mathematics has the ultimate abstraction on the one hand and a high degree of applicability on the other.[1]

In this sense, mathematics is first viewed as a discipline that treats abstract objects logically. Mathematics seeks thoughts rooted in the innermost part of the human mind. For example, in geometry, we imagine a line with no width as drawn by the motion of a point which does not have a size. The drawn line is recognized as the object of thought rather than the object of vision. On the other hand, mathematics can be applied to various objects. Circles and parabolic lines can be seen in concrete objects such as circular coins and water spouting from fountains. We see concrete events, concrete forms, and experience mathematics. In addition, mathematics has two interrelated properties. It interprets concrete phenomena

[1] Hiroshi Nagai, "The reality of mathematics – a problem of mathematical philosophy," *Shiso* (*Thought*), March 1967, pp. 297-310 (in Japanese).

that appear in front of us as abstract mathematical objects and clarifies those objects' properties. In other words, mathematical thinking sublimates a concrete image into an abstract and contains the power and possibility of developing this into another, more concrete image.

Is mathematics an internal construct of the human mind? Or does it exist outside of the human mind?

Mathematics exists within the human mind. This makes it possible for humans to clarify the order of the natural world when confronted with mathematics. Mathematics helps remove the veil of nature and expose the relationships hidden within it. However, the question arises as to what the mathematical order that is covered by the veil of nature depends on. In response to this order, it feels like our sensibility itself took on a "mathematical" nature from the beginning. Then, the question arises as to whether mathematics is actually inherent in nature outside the human mind.

The 19th-century German mathematician Kronecker (1823-1891) reportedly said that "Natural numbers were created by God. Everything else is the work of men." Because humans are individual beings, they themselves are natural numbers. Natural numbers can thus be considered to exist before human perception. Then, if extraction is performed on natural numbers through the four arithmetic operations, square roots, and so on, numbers as a whole are expanded. This is an expansion of the concept of number through human knowledge. In addition, if a circle is drawn, the ratio of diameter to circumference is π. The circumference ratio π is called a transcendental number, but even if humans recognize this number, its quantity exists beyond human wisdom in nature.

What can be seen from these examples is that mathematics affects human abstract thinking and enables its application to single concrete events. How do humans understand the abstraction of mathematics? Do concrete cases precede such abstraction? Although demonstrative geometry was introduced as early as ancient Greece, the mathematics that appears in transitional periods, such as the practical mathematics of the Renaissance, raises interesting questions in itself.

2.2. Human activities and mathematics

How does mathematics relate to human activities? Humans have used their wisdom to build culture and civilization. Humans have built customs and lifestyles by forming communities, and the intellectual activity that supports them is understood as culture. In addition, the emergence of mechanisms and systems accompanied by knowledge and technology to maintain the community can be considered to be the origin of civilization. Therefore, the development of human activities supported by the intellectual foundation of culture corresponds to the formation of civilization itself. Mathematics is one of the elements that have supported the formation of civilization.

In fact, today's mathematics is characterized as a universal system with abstraction and logic, applied to various fields. However, considering its historical background, it may not be correct to infer that mathematics was originally universal. Universal mathematics developed within Eurocentrism. However, it is also true that today's universal mathematics lost, at some point, its original character connected to human life and culture[2].

[2] Hirano, Y. : Notes on Ethnomathematics from the viewpoints of the History of Mathematics, *Proceedings of The International Conference on Mathematics Education, History of mathematics, Cultural History of Mathematics, Informatics, and Learning Disabilities*, Beijing Academy of Educational Sciences, 2000, pp.127-132.

M. Kline points out that the relationship between mathematics and culture is reciprocal[3]. In other words, while mathematics plays an important role in civilization, the formation of mathematics itself was promoted by various human activities. Mathematics provides a direct means of dealing with problems that arise in society. This means that the demands of society fostered mathematics. Here, we can see that mathematics developed while interacting with human culture and civilization. The activities of human beings create "mathematical objects," whether graphic or quantitative, in the human senses. These "mathematical objects" promoted the formation of mathematics in the innermost part of the human mind through the abstraction and synthesis of concepts. At the end of the journey, human beings may discover the form of metaphysical mathematics beyond their own minds. This shows that various human activities have led to the formation of mathematics.

Ultimately, mathematics leads humans to new steps while influencing and being influenced by human civilization. There is a consciousness that people living in each era and region felt—the consciousness of mathematics. In this way, mathematics generated from human activities eventually formed one discipline. The formation process did not exist independently of humans, but shared a set of values with human society. Therefore, it is necessary to understand the formation of mathematics within the "total value" of society, which is the basis of human activities.

3. Causality and bricolage

3.1. Modern science and causality

A major foundation for the establishment of modern science as scientific knowledge was obviously the Scientific Revolution of the 17th century. This revolution elevated various fields of science related to nature from natural philosophy to natural science.

Scientific knowledge is objective and empirical knowledge. Aristotle was probably the first to introduce the basic structure of demonstrative science. According to him, this science consists of three stages: what we now call definitions, axioms, and propositions. This argument structure was inherited directly from Euclid's mathematical work *Elements*, ca. 300 BC.

However, apart from this structure, the teleological worldview was the basis of philosophers at the time, represented by Aristotle. For example, for them, the world (the world on earth) consisted of four fundamental elements: earth, water, air, and fire. All these elements have their respective places in this order from the lower layer. For instance, when earth is lifted into the air, it moves down linearly to return to its place in the lower layer. Furthermore, in the celestial sphere, uniform circular motion is the basis rather than falling. Although this example is a simplified model, it constitutes a teleological worldview in that this world is composed by the will of the creator and moves under that intention.

In contrast, G. Galilei (1564-1642), known for his experiments on falling objects, anticipated the equivalence of falling in a vacuum, and with the subsequent discoveries of R. Descartes (1596-1650) and I. Newton (1643-1727), scientists came to believe that the world is governed by a single law, with the introduction of a mechanist view of nature. That is, in a vacuum, all objects fall uniformly. Newton grasped this movement, derived the law of motion as its change, and positioned it as the fundamental principle of his own motion dynamics. This structure followed that of Euclid's *Elements*. What is important here is the

[3] Kline, M: *Mathematics in Western Culture*, Oxford University Press, 1953.

law of causality, i.e., that every effect is derived from a cause. This law would set the course for the structure of empirical science thereafter.

In fact, positivist science based on causality contributes objectively to the elucidation of nature away from human will. Because it is objective, science relentlessly exposes the properties of nature and opens the way for human beings to develop and utilize it. Humanity followed the path of the complementary development of science and technology from the 19th century to the 20th century. This is the same in mathematics, and mathematical formation as a logical and abstract discipline is prepared through symbolization and abstraction.

However, science and mathematics did not have characteristics of abstraction and universality from the beginning. Science and mathematics were originally linked to concrete human activities. Particularly in the case of mathematics, the "extra" parts were removed at some point, and the discipline was arranged in a compact form, becoming the theoretical mathematics we know today. Nevertheless, both science and mathematics, which appeared in the process of civilization, were characterized by being part of more concrete human activities. These could perhaps be called "scientific or mathematical activities."

3.2. Introduction of the concept of "bricolage" in Lévi-Strauss

In 1962, Claude Lévi–Strauss published *The Savage Mind*. As noted in Section 1, this book compares the "savage mind" and the "cultivated mind." The former corresponds to the knowledge of uncivilized people and the latter to the knowledge of engineers and scientists. Lévi-Strauss advocates calling the thought acquired by uncivilized people through observation of nature "initiative science" rather than "primitive science," and he calls the bearer of this thought the "bricoleur."[4] This term designates someone trying to achieve a certain purpose by using the tools and materials at hand at the time. That action is called "bricolage," and it is an image of the science of uncivilized people. Lévi-Strauss also compares scientists to bricoleurs and identifies the difference between them as "the scientist creating events (changing the world) by means of structures, and the 'bricoleur' creating structures by means of events."[5] Therefore, "bricolage" as proposed by Lévi-Strauss can be considered in opposition to scientific thought based on causality. Even in the myths of uncivilized people, when the discuss the creation of their own world of gods, they did so by gathering various elements of their own time—the mythical elements of that era. However, this was not a haphazard method, but a rational one to their minds.

This mythical thought is the work of the bricoleur, in the sense of creating a structure by combining the remains of events. In contrast, scientists hypothesize and demonstrate based on causality from one discovered fact, resulting in the achievement of an event—a new image of the world. According to Lévi-Strauss, modern science was founded on the thought of such scientists. Furthermore, modern science imposes a strict system on human beings. This system was selected by Westerners since the 17th century rather than by humans as a whole. However, modern science established in this way is, in a sense, merciless. This is because, once a problem is raised, the conclusions that can be recognized by human reason are drawn from the premise.

Since modern times, when examining or creating something, people consider the materials necessary to discuss the object of interest. This creation is supported by scientific thought, that is, by the

[4] Lévi-Strauss, *La Pensée sauvage*, Paris, Plon, 1993, p. 30.
[5] Ibid., p,37.

logic of causality. By contrast, bricolage uses existing materials to achieve a goal, without considering their causal relationship or necessity. It is not a question of whether a goal can be achieved from existing materials but of giving meaning to the material to achieve the purpose. This bricolage can also be considered a primitive form of human activity, regardless of whether it is civilized in a modern sense or not. The "savage knowledge" of Lévi–Strauss is distinguished from "cultivated knowledge," that is, "civilized knowledge." However, the process of formation of both science and mathematics involves human knowledge wandering to finally reach its goal—that is, consciousness driving scientific or mathematical activities. This is also thought to be the knowledge of bricolage.

4. Tentative theory of mathematical activities in the Renaissance

4.1. Renaissance artists and mathematics

In *The Savage Mind*, Lévi-Strauss presents the interesting consideration that artists are positioned between bricoleurs and scientists. He points out that art starts with a certain thing or event and leads to the discovery of its structure (bricolage thought). At the same time, art combines external knowledge (e.g., object form) with internal knowledge (e.g., object anatomical knowledge) to create a new existence (world) (scientific thought). Ultimately, art is "a nicely balanced synthesis of one or more artificial and natural structures and one or more natural and social events."[6] Therefore, art includes both of these aspects.

What, then, supports the activities of such artists? One element related to this question is mathematical knowledge, the subject of this paper.

Mathematics was established as an independent discipline in the 19th century after the Scientific Revolution of the 17th century. However, mathematics has gone through more undifferentiated and chaotic stages in its historical development while interacting with various other human activities. The same is true of its practical applications. For example, in the Renaissance, mathematics had a very close relationship with the arts as mathematical knowledge and mathematical action. It is well known that many masters of Renaissance art, such as Leonardo da Vinci, were interested in mathematics or science, and actually studied these disciplines. In addition, the flourishing of research on art theory in this period, such as linear perspective and theory of human proportion, clearly demonstrates the orientation of such artists.

In fact, Renaissance artists needed mathematical knowledge. In addition to figures such as circles, it was important for them to know how to draw curves including ellipses, cycloids, and epicycloids. For example, they needed these skills to draw patterns or to draw letters from the top to the bottom of a high tower. Merchants also had to learn practical mathematics, such as calculations of quantity and calculations of length and weight. For this, practical mathematics, rather than theoretical mathematics, was required.

Practical mathematics is based on empirical knowledge, and in this sense, mathematics in the Renaissance took on the character of bricolage. It is certain that theoretical study of pure mathematics existed in the late Renaissance. However, it is also true that artists from the Renaissance period engaged in trial and error based on their knowledge of mathematics, which was transmitted directly from ancient Greece or through contemporary Arab thought. In this context, the development of mathematics had the character of bricolage before ultimately leading to theoretical mathematics.

[6] Ibid., p, 40.

4.2. Alberti's study of theory of human proportion

In preparation for future research, this paper examines the state of mathematics in the Renaissance, introducing the example of the theory of human proportion by Leon Battista Alberti, a leading humanist in the early Renaissance.

The theory of human proportion formulates the ideal beauty of the human body by mathematical proportion. This issue was particularly studied during the Renaissance, and Alberti discussed it in his book *De Statua,*[7] developing an original theory of human proportion. Here, he presented the standard (Canon) of human body proportion, or ideal beauty, and at the same time explained the method used to obtain it.

Alberti's method was to actually measure the human body. He first created a ruler called "exempeda." This had the same length as the height of the human body to be measured. He then divided this length and introduced smaller units in order. The first units were "pedes," which were 1/6 of the original length (height). These were divided into 10 units called "unceola," which were 1/60 of the original length. These were further divided by 10, resulting in units called "minuta" (1/600 of the height). Therefore:

1 exempeda = 6 pedes = 60 unceolae = 600 minuta

This system of measurement was called the "Exempeda System," and every part of the body was measured using it. Examples include "height from the ground to the navel," "height from the ground to the jaw," and "maximum width of the chest under the armpits." Alberti finally determined the proportion of the most beautiful human body by measuring and quantifying several bodies using this system.

Alberti's system is not found in the work of other theorists of the time. It should be noted that the smallest unit of Alberti's system is extremely small (3 mm relative to a height of 180 cm), so that measurement can be performed in considerable detail. Thus, Alberti developed fairly precise measurement. Alberti's method of representation was groundbreaking at the time, in that it anticipated the current idea of decimal representation. In addition, he adopted the method of averaging multiple measured values, reflecting the change in the times from Greek geometric considerations to quantitative and statistical analysis. However, it is not reasonable to believe that Alberti himself was consciously or deliberately pursuing quantitative methods and decimal representation. He merely devised a system of physical measurement, and mathematical concepts and methods were only included implicitly.

This kind of analysis must observe the actual intention of Renaissance art theorists in developing mathematical methodologies. The Renaissance period was a time when artisan techniques flourished, in a sense, while ancient Greek knowledge, including mathematics, was restored. In such a time, if Alberti's thought required quantitative methods including decimal representation, these methods were most likely derived from Alberti's own artistic mind. In other words, his work gives a glimpse of the bricolage approach.

5. Conclusion

This paper examines the development of science and mathematics in relation to the existence of bricolage-

[7] The study refers to the German translation, as follows: Battista Alberti, *Das Standbild (De Statua). Die Malkunst (De Pictura). Grundlagen der Malerei (Elementa Picturae)*, Herausgegeben von Oskar Bätschmann, Darmstadt, 2000, pp.142–181.
(Cf. Japanese translation: Masahiko Mori ed., *Leon Battista Alberti's Theory of Art,* Chuo Koron Art Publishing, 1992, pp. 5–38.)

like aspects of modern scientific thought based on causality, with particular reference to mathematics during the Renaissance. Mathematics, which is rooted in logic and abstraction, can also be seen to blend with various disciplines and relate to human activities in specific times and regions in the process of its formation. During the Renaissance, it was artists who played a crucial role. This calls for a change in our view of science and mathematics. In other words, it is a new recognition of the fact that various human consciousnesses have been involved in the formation process of their theoretical system. This in turn will lead to a new understanding of science and mathematics. A hint of this is already found in the idea of bricolage proposed by Lévi-Strauss.

This paper presents the possibility of taking up Renaissance mathematics – particularly the relationship between mathematics and art – as a remarkable example of this problem.

In conclusion, with a view to future research, other major examples related to Renaissance mathematics and art are given below:

(1) Leon Battista Alberti (1404-1472)

・*Ludi rerum Matematicarum* (Mathematical Entertainment)

This book discusses practical mathematics at the time, addressing not only geometry but measurement as well. In addition to mathematics, it discusses contemporary technical problems, such as Heron's hydraulics.

・*De Pictura* (On Painting)

This book discusses the principles of linear perspective with reference to Euclid's Optics.

(2) Piero della Francesca (c.1416-1492)

・*Trattato d'Abaco* (Abacus Treatise)

Although it is ostensibly on the subject of arithmetic, this work explains the relationship between Renaissance mathematical research and artistic theory and practice. At the time, practical mathematics, such as arithmetic calculation, measurement of quantities, etc., was considered necessary for merchants and members of other professions. It is known that there were schools to teach these skills.

・*De quinque corporibus regularibus* (On the Five Regular Solids)

Piero's book on polyhedron theory. It is said that the content of this book was later included in Pacioli's as *De divina proportione* (which is also suspected of plagiarism).

・*De Prospectiva pingendi* (On Perspective in Painting)

At the time, Filippo Brunelleschi's experimental study and Alberti's theoretical study on perspective had already been conducted. This was a theoretical work on linear perspective following in their footsteps.

(3) Luca Pacioli (1446/7-1517)

・*Tractatus mathematicus ad discipulos perusinos*

This is a textbook that Pacioli used to teach at university. It describes arithmetic calculation and algebra used by merchants.

・*De viribus quantitates*

In addition to mathematical problems, this book discusses mathematical puzzles and tricks. It also mentions that Leonardo da Vinci was left-handed.

・*Summa de Arithmetica, Geometria, Proportioni et Proportionalita*

This book was used by Pacioli to teach mathematics. In particular, it describes the first bookkeeping method used by merchants during the Renaissance. The section on geometry introduces Euclid's elements and describes some practical problems with illustrations.

・*De divina proportione* (Divine Proportion)

This is a research treatise on the five regular polyhedra (platonic solids). In particular, it examines the golden ratio in relation to the study of the dodecahedron, which was said to be connected to the universe. The title of the book refers to a divine ratio. It includes some three-dimensional figures drawn by Leonardo da Vinci.

(4) Leonardo da Vinci (1452-1519)

Although not in book form, Leonardo's manuscripts discuss perspective, various drawing methods, and impossible drawings from ancient Greece, and include a description of how Leonardo studied Euclid's *Elements*.

(5) Albrecht Dürer (1471-1528)

・*Underweysung der Messung* (Instructions for Measuring)

This is a book teaching geometrical drawing using a compass and ruler. It also includes a diagram that explains the principles of perspective using strings and pinholes. Dürer states that the purpose of the book is to teach young painters how to draw.

・*Vier Bücher von Menschlicher Proportion* (Four Books on Human Proportion)

This book discusses the theory of human proportion. There is some geometrical content, but basically, like Alberti, Dürer measures the actual body in detail and attempts to express it numerically.

These five people, excluding Pacioli, were fundamentally artists. Pacioli was also close to Leonardo da Vinci. On the one hand, they studied techniques for drawing figures and geometric methods such as linear perspective in painting. On the other hand, they also worked on methods such as arithmetic and the mathematics derived from them. This shows their consciousness of acquiring mathematical knowledge from their practice.

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