Nature Oriented Metrics of Wellbeing Based on Environment-Related QOL

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1. Introduction

The contemporary civilization developed by the science and technology has generated environmental problems such as global warning, which has led to climate change producing droughts or floods due to heavy rain. The earth has changed to the Anthropocene epoch, which refers to human influence on the planet's geology and ecosystem. The Anthropocene epoch was widely popularized in 2000 by atmospheric chemist Paul J. Crutzen (Crutzen and Stoermer, 2000), who regards the influence of human behavior on the earth's atmosphere in recent centuries so significant that it constitutes a new geological epoch. These results mentioned that global sustainability is tied to both human activity and the natural environment. We should consider the coexistence between human life and earth's environment. In these condition, the following two points should be considered. 1) Humans seek to maintain their livelihoods (i.e. civilization) and seek satisfaction in their lives. 2) Humans need to conserve and maintain the natural environment. In addition, humans need to understand the current condition on Earth and environment on land or sea. The continuation of today's society should overcome a crisis arising from the destruction of the natural environment. We must incorporate the maintenance of the environment as part of human life and tie this into satisfaction.

Denmark has been focused on resolving environmental problems for a long time and is the top country for happiness in different measurements. "Hygge" is the word for representing happiness in Denmark and is associated with the following keywords: atmosphere, presence, pleasure, equality, gratitude, harmony, comfort, truce, togetherness, and shelter. We proposed that space-oriented e-QOL (environment-related QOL) should be classified into four levels; the individual level, the local community level, the national level, and the global level (Nakashima and Hirano 2018). In this paper, we focused on the environmental elements of Hygge and different feeling in the national levels of e-QOLs.

Our goal of this research is to establish the concrete definition of e-QOL. The relation between the metrics of e-QOL and other metrics of global organizations would be examined. In addition, we would compare the evaluation values of e-QOL in different countries leading we could evaluate the features of cultural and social circumstances. These results could extract and indicate the lack of concept of human life in terms of well-being in different countries. If we could extract nature-oriented metrics of wellbeing based on e-QOL, we could propose the new concept for each country to maintain the sustainable society.

2. Works and Researches on the International Organization

2.1 The definition of WHO

QOL (Quality of Life) is known to express one's life satisfaction meaning that the quality of human existence and life with wellbeing. The Constitution of the World Health Organization (WHO) defines health as "A state of complete physical, mental, and social well-being not merely the absence of disease . . .". It follows that the measurement of health and the effects of health care must include not only an indication of changes in the frequency and severity of diseases but also an estimation of wellbeing and this can be assessed by measuring the improvement in the quality of life related to health care. WHO has developed two instruments for measuring quality of life, the WHOQOL-100 and

WHOQOL-BREF. In the document (WHOQOL, 1997), the WHO has determined six domains for the evaluation of QOL, such as 1) Physical health, 2) Psychological health, 3) Level of Independence, 4) Social relationship, 5) Environment and 6) Spirituality/Religion/Personal beliefs. The domain of "Environment" is explained that the environment surrounding the personal life influences personal physical and mental conditions. The facets incorporated within "Environment" domain include "participation in and opportunities for recreation" and "physical environment, such as pollution/noise/traffic/climate". These elements show that QOL should be described with relation of natural environment and human activates over the natural environment.

2.2 Quality of life indicators in Eurostat

The conference Beyond GDP: Measuring progress, true wealth and the well-being of nations was held in November 2007 (Cassiers 2007). Pierre le Roy (2017) indicated that limits of GDP (Gross Domestic Product) as an indicator to assess the world or a country situation are widely acknowledged. GDP is not a satisfactory index because it ignores important things of daily life: when a tree is cut down, GDP grows; traffic accidents increase GDP, and so do wars potentially. The only significant progress to go beyond GDP has been the creation, in 1990, of the human development index (HDI), calculated and published yearly by the United Nations Development Program (UNDP). On the other hand, QOL and happiness indicator are payed attention to enhance the personal wellness. Eurostat (2015) published "Quality of life indicators", providing recent statistics on the quality of life in the European Union (EU). The publication presents a detailed analysis of many different dimensions of quality of life, complementing the indicator traditionally used as the measure of economic and social development: GDP. This article is a general introduction to the set of the following '8+1' statistical articles, sketching the conceptual, policy and methodological background. The '8+1' dimensions of quality of life consists of 1) Material living conditions (income, consumption and material conditions), 2) Productive or main activity, 3) Health, 4) Education, 5) Leisure and social interactions, 6) Economic and physical safety, 7) Governance and basic rights, 8) Natural and living environment, +1) Overall experience of life. Most of elements has the meaning of QOL or wellbeing.

3. Proposed New Approach for Wellbeing

3.1 Wellbeing Manifesto of Denmark: Hygge

Denmark has the history to conscious about environment. In 1971, Denmark firstly established the Ministry of the Environment in the world. On the same period, United Nations established the Environmental Protection Agency (EPA) in 1970. The mission is to properly protect the atmosphere, water and the earth (natural environment), and to maintain and promote human health, and has an organization and system for that. The operation was carried out in accordance with the five goals shown in the 2006 Five-Year Plan on Air Quality Improvement, Water Quality Improvement, Land Recovery, Ecology Recovery, and Regulatory Compliance. Denmark has the EPA in the Ministry of Environment and Food of Denmark (EPA 2019). WWF (World Wildlife of Fund) has recognized as a Gift to the Earth the inspiring leadership and example set by Denmark to address climate change with its highly ambitious commitments to reduce carbon emissions, phase out fossil fuels, and switch to renewable energy (WWF 2013). In addition, Denmark has been evaluated the most kind country for climate change by the CCPI (Climate Change Performance Indexes) in these years (CCPI 2019). The turnout at general elections is high in Denmark compared to other countries, with 80-90 per cent of the electorate casting their vote (Danish Parliament, 2019). These results show that the social and natural environment generate the feeling of wellness and enhance these feelings. The U.N.'s happiness rankings use one data point from a massive survey known as the Gallup World Poll. That data point comes

from a question that asks people in more than 150 countries to rate their lives on a scale of zero to 10 -- with zero being the worst possible life and 10 being the best possible life (Clifton 2017). In this report, Denmark was position on top level, second rank, for happiness. As these real evaluations, we will extract the concept of wellbeing in Denmark as a example of happiness country.

Linnet (2011) showed that the style of social interaction known as hygge is analyzed as being related to cultural values that idealize the notion of 'inner space' and to other egalitarian norms of everyday life in Scandinavian societies. In addition, Linnet (2011) also described that hygge acts as a vehicle for social control, establishes its own hierarchy of attitudes as the egalitarian features. These concept reveals hygge acts as the important role of social activity and reveals the safe habitat; the experience of comfort and joy, especially in one's home and family; a caring orientation, for example, toward children; a civilized mode of behavior that other people find easy to get along with, one that soothes them and builds their trust (Linnet 2011). In addition, hygge is known as the manifesto in Denmark and consist of the concept of happiness. Dawson (2016) defined the metrics to present the wellbeing as follows, 1) Atmosphere, 2) Presence, 3) Pleasure, 4) Equality, 5) Gratitude, 6) Harmony, 7) Comfort, 8) Truce, 9) Togetherness, 10) Shelter. Bille (2015) focused on the Atmosphere and explored the use of light to stage atmospheres in a residential area of Copenhagen, Denmark. This research investigates how light is about more than individual perception and plays a crucial role in orchestrating a sense of community, solitude and 'secureness' at home. Such staging of atmospheres, it is argued, importantly relies on cultural premises and notions of intimacy, informality and relaxation, encompassed in the Danish term hygge (Bille 2015).

3.2. Our Approach: Environment-related QOL

We presented a new concept of Environment-related QOL (e-QOL) (Nakashima and Hirano 2018). This concept is based on dual perspectives of "a rich human life" and "the maintenance of the natural environment". In addition, the concept of e-QOL is based on global sustainability supporting today's civilization and human life. Human life is always vulnerable and exposed to nature. It is therefore closely tied to environmental problems and natural disaster. E-QOL is the two different concepts collaboration. QOL expresses one's health and life satisfaction meaning "the quality of human existence and life". In addition, we added the new approach from environment including living and natural environment.

One of e-QOL Constituent Concepts is "nature" which is a resource for humans and an object of cultivation and can become a threat to the continuance of human life. On the other hand "nature" can be a psychological support, such as the ocean which is a source of healing for humans and may be the target of tourism or recreation.
On the contrary, e-QOL has two different viewpoints: (1) e-QOL for the natural environment including the ecosystem. (II): e-QOL for humans confronting the environment. These viewpoints has the means considering nature amidst its connections to humanity, both in physical and psychological terms.

We expand the concept of e-QOL based on the area from the individual area to the world. The following four steps are defined. (Step 1): the individual level. Satisfaction from and consciousness of the value of the local natural environment in which one lives. (Step 2): the local community (area) level. Insider's and Outsiders' satisfaction from and consciousness of the value of maintaining the natural environment in a region. (Step 3): the country level. Sharing among a wider area of satisfaction from and consciousness of the value of the natural environment. (Step 4): the global level. Sharing several models of satisfaction at the global level.

4. Concrete approach to establish e-QOL

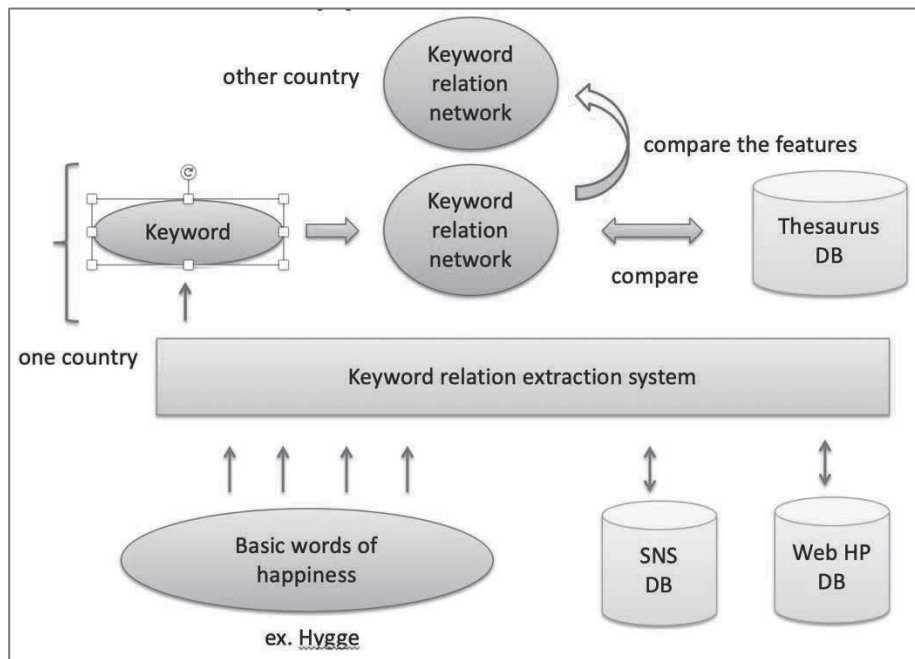### 4.1 Proposed Model and System

Figure 1. Proposed Keyword Data Selection System

We conducted experiments to gather e-QOL information using Twitter API, and analyzed the feeling indicated by certain keywords. The results of these experiments revealed the word "atmosphere" is associated with the words "like," "good," "feeling," "photograph," "photo," "hall," "everybody," "myself," "happy," and "nice." Our data, the Japanese feeling-based e-QOLs, are compared to the description of Hygge.

Atmosphere: like, good, feeling, photograph, photo, hall, everybody, myself, happy, nice
Presence: myself, good, feeling, me, human, Japan, society, god, world, value
Pleasure: futon, me, earth, cotton, gratitude, mother, peace, sadness, lyrics, problem
Equality: human, men-and-women, woman, everybody, freedom, country, man, Japan, society, discrimination
Gratitude: anniversary, early, everybody, campaign, festival, futon, hold, character, max, win
Harmony: human, tomorrow, schedule, delicious, limit, marvelous, sweet, Kyoto, max, win
Comfort: car, Chinese character, space, comfortable, crown, room, life, train, vehicle, video
Truce: once, agreement, war, South Korea, consideration, Korea, army, me, self-defense force, necessity
Togetherness: hall, maximum, tour, precedent, performance, Yokohama, emotion, live, great, stage
Shelter: flight, America, school, army, sky, human, Futenma, place, children, government

Figure2. Frequently appearing tweets with Hygge's keywords in Japan

4.2 Comparison of Key Concept between Denmark and Japan

We assume the Hygge reveals the features in Denmark and Tweets in Japanese reveals the features in Japan and compare features represented by keywords in the both countries: Denmark and Japan shown in Figure 2. The following comparison reveals features in different countries for each keyword.

1) "Atmosphere"

Hygge: "Atmosphere" is expressed by the "Turn down the lights". The atmosphere in night with surrounding "Light" is important for wellbeing in Denmark.

SNS-Japanese: The keyword "Atmosphere" represent following words: like, good, feeling, photograph, photo, hall, everybody, myself, happy, nice. The results means that the atmosphere is more related to the environment surrounding people and relation between people.

2) "Presence"

Hygge: "Presence" is expressed by the "Be here now" or "Turn off the phones", meaning that short term self-conscious words have the important role of wellbeing.

SNS-Japanese: The keyword "Presence" represent following words: myself, good, feeling, me, human, Japan, society, god, world, value. The results means that "Presence" is important for self-conscious keywords especially in short time.

3) "Pleasure"

Hygge: "Pleasure" is expressed by the "Coffee", "Chocolate", "Cookies", "Cakes" and "Candy" meaning that "Pleasure" is represented by keywords related to meal.

SNS-Japanese: The keyword "Pleasure" represent following words: futon, me, earth, cotton, gratitude, mother, peace, sadness, lyrics, problem. "Futon", cushioned mattresses to sleep in Japan, appears in "Pleasure" and "Gratitude" meaning that sleeping and rest is the big element in Japan. In addition, "Pleasure" seems to cover a long term wellbeing.

4) "Equality"

Hygge: "Equality" is expressed by the "'We' over 'me'". Sharing tasks and the time are important role to establish wellbeing. The concept of "share" is meaningful for the definition of "Equality"

SNS-Japanese: The keyword "Equality" represent following words: human, men-and-women, woman, everybody, freedom, country, man, Japan, society, discrimination. "Equality" is mainly described in objects and in social life in Japan.

5) "Gratitude"

Hygge: "Gratitude" is expressed by the "Take it in". This might be as good as it gets.

SNS-Japanese: The keyword "Gratitude" represent following words: anniversary, early, everybody, campaign, festival, futon, hold, character, max, win. The elements of "Gratitude" come from the event or festival. We suppose that people in Japan have no close gratitude such as for family or community.

6) "Harmony"

Hygge: "Harmony" is expressed by the "It's not a competition" and "We already like you" meaning that there is no need to brag about your achievements.

SNS-Japanese: The keyword "Harmony" represent following words: human, tomorrow, schedule, delicious, limit, marvelous, sweet, Kyoto, max, win. "Harmony" is very restricted scene such as feeling of taste in Japan. In this sample, the different taste sweet generates the taste of harmony. This concept of "Harmony" is rear human relation

in Japanese society.

7) "Comfort"

Hygge: "Comfort" is expressed by the "Get comfy" and "Take a break". These words represent about relaxation.

SNS-Japanese: The keyword "Comfort" represent following words: car, Chinese character, space, comfortable, crown, room, life, train, vehicle, video. Both description for "Comfort" are likely same concept.

8) "Truce"

Hygge: "Truce" is expressed by the "No drama" and "Let's discuss politics another day".

SNS-Japanese: The keyword "Truce" represent following words: once, agreement, war, South Korea, consideration, Korea, army, me, self-defense force, necessity. Co-occurring words of "Truce" and "Shelter" are related to the war in Japanese. These words are rare to use in normal communication. This concept of "Truce" have huge difference for two countries meaning that "Truce" are not described in normal and real life.

9) "Togetherness"

Hygge: "Togetherness" is expressed by the "Build relationships and narratives" and "Do you remember the time we ..?".

SNS-Japanese: The keyword "Togetherness" represent following words: hall, maximum, tour, precedent, performance, Yokohama, emotion, live, great, stage. "Togetherness" is commented in the field of music live. In Japan, people do not think about the advantage of togetherness such as the chance to join other person.

10) "Shelter"

Hygge: "Shelter" is expressed by "This is your tribe" and "This is a place of peace and security"

SNS-Japanese: The keyword "Shelter" represent following words: flight, America, school, army, sky, human, Futenma, place, children, government. In Japan, these words are rare to use in normal communication and social shelter or truce is merely commented in communication. People have no such comfortable official space in Japan with one exception of "Temple" in previous days.

5. Conclusion

In this paper, we discussed the concept of Hygge based on the proposed a new concept of e-QOL to find the key concept of wellbeing in different countries. In addition, we conducted experiments to get the keyworks of Hygge base on the Twitter data meaning that we could compare the "Word of Mouth" information and the description of Hygge. As the results of experiments, we could capture the nature and nation oriented metrics of wellbeing. We will re-organize our approach and expand the concept of relation between "nature" and "environment". Current Japanese lift is tent to apart from the nature, and social relation is not deeply described in Japanese society. We should consider the relation between social life and sustainable nature. In the future, we will examine the experiments using artificial intelligent based on diverse keyword set in multiple social network system.

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