Design and Evaluation of Place Oriented Radio by
the Measurement of Cross-Cultural Understandings

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Abstract— **The number of foreigners who visit Japan is increasing and it is important to build mutual understanding with people of different cultural backgrounds. In order to enhance foreigner's visits to Japan, we propose a place oriented Internet radio called Cross-Cultural Radio (CCR). Subsequently, a Cross-Cultural Understanding Scale (CCUS) was proposed and an evaluation experiment was conducted in Tokyo to measure the effectiveness of CCR. Our experimental results illustrate that CCR can be effective in certain aspects of cross-cultural understanding. This paper intends to explore the acculturation process amongst foreign visitors to Japan by analyzing the behavior of participants in the experiment.**

Keywords— place orientation; Internet radio; cross-cultural understanding; measurement; evaluation.

I. INTRODUCTION

Because of the great diversity in the modern world and its continuous change, defining the term "culture" is an extremely tough activity. However, like Damasio [1], who claimed that "culture is a regulator of human life and identity", many scholars have attempted to conceptualize their understanding of culture. Nonetheless, several aspects of culture such as goods, feelings, actions and words can be very specific to a particular region. They are difficult to grasp from guidebooks or from just browsing the Internet, because, in many cases, these contents are provided based on visible (and generally superficial) information. It is quite easy to gain stereotypical ideas about Japan in front of the laptop but there will never be a better experience than direct interaction with local people. This is because they give foreigners real cultural ideas, and thus having a channel to boost this kind of communication is highly important.

For instance, a keyword which seems to be distinctive for the culture of Japan is "Kodawari", which is difficult to translate literally in English; yet "to be particular about a manner" would be the closest. Its meaning is not just to be particular, but to have a strong belief, or an excessive target on the action. Many craftsmen in Japan have "Kodawari" in what they create or how they are getting involved in the industry, and having strong pride in what they do and would never compromise their work is regarded as a virtue.

Another example of a keyword is "Omotenashi", a word that became slightly famous after the presentation to host the Olympics in 2020. "Omotenashi" means to treat anyone sincerely and warmheartedly, whether or not that person is a customer, a guest, a family member, or an acquaintance. The core of this concept is to express consideration and respect to others. This act would also require the person to understand the atmosphere, feel the mood and the invisible energy, which is wrapped around the occasion or person. Ultimately, it does not mean to entertain the person and achieve any kind of self-satisfaction, but to quickly perceive the person's needs, desires, overall mood, and entertain the person accordingly with a warm heart.

As the mobility of people has been rapidly improved and the number of foreigners who visit Japan is increasing [2], recognizing diversity to build cross-cultural understanding is becoming a crucial interest in the country. We have to be aware that all foreigners are unique individuals, and we should not generalize them by nationality, ethnic groups, and religion. Foreigners are visiting Japan for several purposes such as sightseeing, studying abroad or working. Likewise, depending on the length of time in Japan or their cultural background, the problem they encounter greatly varies, and there will never be a solution applicable for everyone. Especially, the problems which foreign visitors face are derived from not knowing Japanese cultural keywords exemplified previously (and there are countless of other words, not only "Kodawari" or "Omotenashi"), or it occurs when the meaning of keywords conflict with their cultural beliefs in various communicative settings. To propose a way to solve their problems individually, thus creating new media to provide foreigners opportunities to know Japanese culture at a deeper level is meaningful from a cross-cultural viewpoint. In other words, foreign visitors further understanding of Japanese culture will be achieved when they listen to local people's story in a particular place, or other foreigners opinion about the place they are visiting.

In terms of tourists revisiting places, previous literature has shown the effect of motivation and satisfaction is prominent according to Yoon [3] and Bramwell [4]. Alegre [5] and Ekinci et al. [6] also pointed out, the eagerness of tourists' visiting in relation to the characteristics of places.

In terms of information system, Masuda [7] and Takagi [8] suggested a recommender system for tourists, which provides customized tour information, depending on user's needs, including using smartphone applications. However, there is almost no research on using Internet radio specifically as a tool for building cross-cultural understanding in Japan.

In this paper, we propose a place-oriented Internet radio called CCR, which helps foreigners to recognize Japan from a cross-cultural perspective by providing place oriented content. In addition, we created an original criteria CCUS and conducted an evaluation experiment in Tokyo to measure the actual effectiveness of content and CCR itself.

The paper structure is explained as follows: first, Section II describes the design phase of CCR including its concept and system configuration. Secondly, detailed explanation of measurement CCUS is offered in Section III, including background research. Section IV gives a complete set of evaluation experiments conducted in Tokyo, and Section V digs the result into a further behavioral analysis. Lastly, the conclusion and future works are mentioned in Section VI.

II. DESIGN OF CROSS-CULTURAL RADIO

A. Concept

Previously referred related research, especially Masuda and Takagi's recommender system for tourists, are designed for the usage in a specific place. However, the information they provide to listeners only focuses on tourist's preference and does not include cultural perspectives of the host country, which promotes cross-cultural understandings amongst international listeners.

As for the type of information available, visual material such as detailed information on smartphone contributes to get a general idea about a place to a certain extent. Nevertheless, sound information is far superior to visual information in giving listeners flexibility, by allowing them to stretch their imagination about what they have heard. Furthermore, sound information can provide direct interaction connected to the place including local people's story or comments from other tourists. This also might be a trigger for international listeners to understand Japanese culture more.

For these reasons, this paper intends to propose a place oriented Internet radio called CCR as a new sound-focused media, by providing international listeners several types of content. The detailed concept is shown in Figure 1.

CCR works in three steps. First is content design for personalities. Second is listening process by various listeners such as international tourists, studying abroad students and multinational corporations employees who are not familiar with Japanese culture. Third is getting feedback plus revision of the content. To maximize the influence of contents, the preferred target of CCR is international visitors who are staying in Japan for a relatively long period of time,

from a few months to years rather than just a couple of days, because, in general, understanding a certain culture often takes time and the experience they have in the host country is enriched in daily life settings.
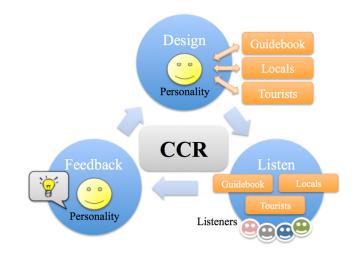

Figure 1. Concept of Cross-Cultural Radio "CCR"

Three types of content are available for international visitors: the guidebook (audio clips from the famous Lonely Planet guidebook), the locals (stories or tips from local people), and tourists (feedback from the listener to be shared with other tourists). As a first step of the cycle, this paper explicitly deals with the content Guidebook and Locals.

B. System

Previous research [9]~[12] shows that the acceptable duration of content should be around 1 minute to 1 and half minutes. Several companies deal with the production of audio guide players supporting the delivery of content as described above.

1) Selecting Location

As CCR is designed for international visitors for Japan. The selection of a place where the content is mapped is also important. In this research, Asakusa, one of the most famous and popular tourist spots in Tokyo, was chosen. The reason is that Asakusa has a rich cultural heritage such as Japanese traditional temples or shrines, as well as dining venues and souvenir shops that attract many international tourists. Besides, Asakusa is located in the heart of Tokyo and has great accessibility, which enables us to conduct fieldwork effortlessly.

2) Content "Guidebook"

For guidebook content, several tips of accommodation, introduction of restaurants and explanation of famous architecture were picked from Lonely Planet Tokyo [13] and recorded using voice synthesis software (Figure 2).

"Asakusa Engei-hall"
Have you ever seen standup comedy in your country? If you want to experience Japanese traditional comedy performance, here is the place. This is called Asakusa Engei-hall, provides humorous talking by classic rakugo speakers. The audience also enjoys stage arts unique to the theater, including the paper cutout and funny music played by carpenters tool.

Figure 2.   Example of content Guidebook

3)   Content "Locals"

For locals content, a couple of interviews with locals were conducted in Japanese and stories related to their daily lives in Asakusa were selected. Each story was translated into English and supplementary explanation about cultural activity was added if needed (Figure 3).

"Future of Asakusa"
(After the local's interview in Japanese) Before World War 2, Asakusa has been one of the most energetic, cutting edge cities in Japan. But unfortunately nowadays it's taken over by other big cities like Roppongi or Shinjuku. She feels to revitalize Asakusa as a vivid city, collaboration with local community is important, not only bringing lots of tourists from outside. Using social networking service can be one of them; so young generation helps older shop owners to introduce these up-to-date technologies into traditional Japanese shops.

Figure 3.   Example of content Locals

4)   Mapping content into CCR

Figure 4.   CCR can be accessed through a QR code

The audio clips are stored in the website, and linked to icons using JavaScript code. When the user clicks on an icon, the associated audio clip is played. The website can be accessed here [14] or by using the QR code shown in Figure 4.

III.   MEASUREMENT CCUS

To validate the credibility of CCR, an evaluation process with appropriate criteria is essential. Since CCR has a unique concept, inventing a new and suitable measurement tool is more realistic rather than using conventional criteria without localization. Related literature about measurement design and cross-cultural adjustment are demonstrated by Benson [15], Cui & Awa [16] and Yellen [17]. Ten dimensions of cross-cultural understandings have been determined, which are:

A. Mobility

An individual's ability to find his/her way around in the foreign place is one of the most important dimensions of cross-cultural understandings. Knowing local geography and usage of public transportation systems are two potential items for this dimension. Ability to ask staff around in the face of uncertainty for directions, or usage of appropriate tools such as map application on smartphone is included.

B. Food/Diet

Although food allergy is not the case, this dimension involves being open-minded to try new food, and how he/she can be adaptable for the change of diet. Accepting foreign food and culinary manners cannot be omitted when understanding certain culture, and for many people eating food is a big aspect of cultural exchange.

C. Flexibility

As Hofstede defined "uncertainty avoidance" in his prominent work [18], more or less people from any cultural background may face culture shock and attempt to escape from that anxiety. Being flexible, patient, and tolerant for such uncertain activity or unexpected cultural norm is one dimension.

D. Knowledge

Whether he/she accepts it or not, acknowledgment of host culture is an essential aspect of cross-cultural understandings. In terms of socially appropriate behaviors, host country nationals have certain expectations as to how foreigners in their country should behave includes avoiding offensive actions. Webb et al.'s unobtrusive measure [19] could be useful in this regard.

E. Language Skills

This dimension appears consistently as a core criterion of mutual understanding as former literatures are reviewed. However, we should be aware that when cultural adaptation or acculturation occurs, an adapted individual will learn the language, but individual who learn the language may or may not adapt.

F. Interaction

The nature and frequency of interactions with host country individuals is an indication of individual's level of cross-cultural understandings. This involves one's ability to

initiate interaction, as well as the extent of his/her eagerness to communicate with Japanese people, regardless of language ability.

G. Awareness of Cultural Differnce

A question such as "to what extent are you aware of Japanese culture/society is different from yours?" is asked in this dimension. Recognition of cultural difference between their own is a starting point to build mutual understanding in any circumstances.

H. Nonverbal Communication

In addition to language, there are a variety of ways to communicate nonverbally. Understanding visible gestures and appreciating personal space are some of them. Also having a reasonable repertoire of "communicative currency" may be useful as a criterion dimension.

I. Respect

Being interested in the host country citizens and casual friendliness towards them should be relevant as cross-cultural understandings. For instance, willingness to participate in activities distinctive to the host country will raise a fundamental respect for others and might lead to an appreciation of his/her current state.

J. Relationship

Inclination to establish and maintain relationships regardless of the skills is one crucial dimension. Even though this can be influenced by an individual's personal character such as being extroverted or introverted, we should be aware that every individual has his/her own pace for building it. For instance, not all introverts are weak in relationship building than extroverts; they will establish deeper and more stable relationship with others.

After the relevant literature was reviewed and dimensions mentioned above were rationalized, these new criteria were named CCUS. In the evaluation phase, measurement users score each dimensions from 1 to 10 (Figure 5), using the self-evaluation method.

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 |------|------|------|------|------|------|------|------|------|

 1     2     3     4     5     6     7     8     9     10

Low ---------------------------------------------→ High
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Figure 5.   Scoring system of CCUS

This evaluation is conducted twice, before and after any related experiments such as fieldwork or interview. Afterwards, two score results are compared and discussed.

IV.   EVALUATION EXPERIMENT

A. Method

Fieldwork was conducted for twelve international tourists as CCR listeners, using the same scheme to explore how the cycle of CCR works as an evaluation experiment. In order to observe various cultural exchanges, we tried to select tourists who have diverse cultural backgrounds, as well as their length of stay in Japan. Fieldwork details and participants' attributes are below (Table 1).

TABLE I.   FIELDWORK DETAILS AND PARTICIPANTS' ATTRIBUTES

Nationality / Code (xx)	Participants' Attributes		
	Age	*Sex*	*Date / Time*
China (CH1)	28	F	October 31st, 2015 / 11:00 – 13:00
Malaysia (ML)	23	F	October 31st, 2015 / 14:00 – 16:00
Taiwan (TW)	20	F	November 1st, 2015 / 11:00 – 13:00
Japan/Korea (JP)	22	F	November 1st, 2015 / 14:00 – 16:00
England (UK)	22	M	November 1st, 2015 / 14:00 – 16:00
Korea (KR)	18	F	November 7th, 2015 / 11:15 – 13:00
India (IN)	19	M	November 7th, 2015 / 15:00 – 16:30
Uzbekistan (UZ)	22	M	November 16th, 2015 / 11:00 – 13:00
China (CH2)	24	F	November 18th, 2015 / 10:00 – 12:00
China (CH3)	25	F	November 18th, 2015 / 10:00 – 12:00
Vietnam (VN)	24	F	November 18th, 2015 / 15:30 – 17:30
Russia (RU)	28	M	November 28th, 2015 / 15:00 – 16:30

B. Instruction

First, a sheet of paper was distributed to the participants as an experiment instruction. Route of fieldwork is printed and they were asked to walk and listen to the content mapped into the route in the numeric order. Before they started walking, they filled in the CCUS form. We observed and took pictures of participants while they are walking (Figure 11), and asked questions to participants for each content such as "what did you think about the place or object, which is explained in the content?" or "do you have any implication or comments compared to your home culture?"

Fieldwork was done either in English or Japanese, depending on participant's language ability. Conversation was recorded and after they listened to all content, they answered the CCUS form again.

C. Result

Figure 6 shows the average score for each dimension, the blue line shows the results prior to the test, the red line shows the results after the test was finished.
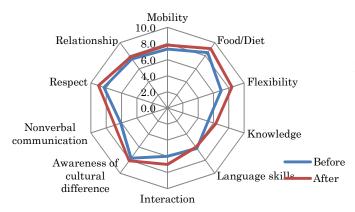
Figure 6. 12 participants' average CCUS score

Most of the dimensions are slightly improved after the fieldwork. Specifically, according to Figure 6, "Flexibility" (+1.4pt), "Knowledge" (+1.0pt) and "Interaction" (+1.0pt) have improved more than other dimensions, and "Language skills" has declined a bit (-0.2pt).

V.   BEHAVIORAL ANALYSIS OF PARTICIPANTS

As shown in the result, CCR has enriched most aspects of dimensions. We will have a closer look at specific participant's score based on arbitrary choices, which recorded notable difference for "Flexibility", "Knowledge", "Interaction" and "Language skills", as well as who formed distinct shape of ten dimensions.

A. Participant CH2 (Figure 7)

CH2 is a close friend of CH3 and they took part in the evaluation experiment together. As she has never been in Asakusa before, she was a beginner tourist in a way.
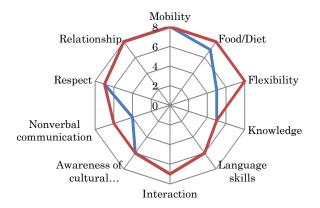

Figure 7. Participant CH2's CCUS score

Especially after listening to content "Guidebook" about small museum shows and offering of Japanese traditional handicrafts, she seemed to be interested in the place mentioned and took a couple of pictures in front of it. She

had a conversation with CH3 in Chinese and invited CH3 to go into the museum. Later on, CH2 told us they were talking about the Japanese craftsmen's elaborate work and made a comparison with Chinese merchandise including price. They recalled handicrafts sold in museum were very expensive and unfortunately they were not able to purchase any, nevertheless they were surprised of their good quality.

Talking with a peer participant in home language raised satisfaction to enhance "Flexibility" and "Nonverbal communication", which represents acculturation process [20]~[22] including elimination of uncertainty towards Japanese culture. It is assumed that CH2 has faced Japanese craftsmen's "Kodawari" to their works at the museum as her tangible experience, and the content worked as the trigger of cultural encounter.

B. Participant UZ (Figure 8)

UZ is a university student who has been studying Japanese for two years, and shows a great enthusiasm towards understanding local cultures. He was particularly interested in the concept of CCR and was cooperative for taking part in the evaluation experiment. He was walking the main street of Asakusa called Nakamise-dori, and after he listened to the content where a local person discussed the future of Asakusa (Fig. 3), he mentioned his hometown Samarkand. He told he genuinely would love but because of financial reasons lots of residents are leaving the city and flowing into Toshkent, the capital of Uzbekistan and he feels sad about it. He wishes people in Samarkand will love their city just like as Asakusa locals do. Obviously he felt something in common with Japanese people and cultivated affinity toward Japanese culture. In other words, he got an idea of Asakusa locals' "Omotenashi" mind to the foreigners, as his own mindset in himself when he would feel in Uzbekistan.
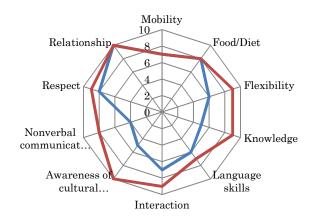

Figure 8. Participant UZ's CCUS score

He commented, "it was fun and I learned some internal/external factors of Japan, especially Asakusa city's culture and society." What he implies as internal and

external factors are about the context of both content. Internal factors are invisible cultural aspects such as Asakusa locals' attitude or value to the place, in relation to his radical improvement of "Awareness of cultural difference". On the contrary, external factors are attainable by information input, corresponds to "Knowledge". The synthesis of these noticeable two dimensions has appeared as the improvement of "Flexibility".

C. Participant JP (Figure 9)

JP is a friend of UK and they took part in the experiment together. Although born in Japan and being a Japanese citizen, she has international background. She is half Korean and was raised in Hawaii.
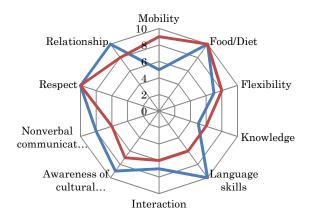
Figure 9.   Participant JP's CCUS score

After she listened to "Locals" content about the founding story of Nakamise-dori and a kindergarten nearby, she remembered when she learned phonetics in her childhood in Hawaii. As she has an Asian look some peers automatically assumed that she does not understand any English, hence she had a hard time to build close friendship with them. Now English is her native language and similar circumstance occurs when she encounters Japanese people who guess she would understand Japanese perfectly whilst she actually does not. JP admits "that awkward and annoying moment" frequently happens whenever she recognizes disappointment on their faces. JP's the biggest decline "Language skills" is not irrelevant with her story. On the other hand, she improved "Mobility", explained in her comment "now I feel more confident walking in Asakusa without GoogleMaps".

D. Participant UK (Figure 10)

The fieldwork for JP and UK was conducted in English since we wanted to encourage the casual conversation between two peers, which enabled us to observe frequent cultural exchange. UK arrived in Japan about 2 months before the fieldwork, and had just started learning Japanese language and culture.
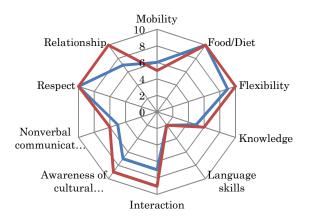
Figure 10. Participant UK's CCUS score

According to his feedback, "Locals" content was more enjoyable than "Guidebook" although he had never visited Asakusa before. JP and UK take the same courses in their studying abroad and had established a good rapport already. UK is researching theories of traditional Japanese music for his master degree, so it is reasonable to assume that he is more interested in Japanese culture than most of international tourists. He may have felt sympathy to the local people talking and that influenced his improvement of "Relationship", "Awareness of cultural difference" and "Interaction".

VI.   CONCLUSION AND FUTURE STUDIES

In this paper, place oriented Internet radio called CCR was proposed by providing two types of content, "Guidebook" and "Locals" which gives an idea about real cultural aspects of Japan, represented as "cultural keywords". To validate the effectiveness of this unique media, we also suggested CCUS as new criteria set to measure the level of cross-cultural understanding. According to the overall result of evaluation experiment conducted in Tokyo for 12 participants, it is reasonable to assume CCR has contributed to the enhancement of several aspects such as "Flexibility" and "Interaction" which are cultivated by listening to local's stories, and "Knowledge" in relation to the information provided by the guidebook. Besides, through advanced behavioral analysis for individual participants, some cultural aspects were found such as;

1)   Uncertainty Avoidance

Participants CH2 and CH3 both improved "Flexibility" through their conversation about Japanese culture in home language. CCR content will be more understandable when cultural uncertainty is reduced, and participants' verbal and nonverbal interaction greatly contributes to them.

2) Affinity towards Culture

For some participants, CCR content functioned as a sympathy builder. For instance, UZ listened to the "Locals" content illustrates local people's values and felt something in common with his own culture. In his specific case, his cultural appreciation enhanced "Awareness of cultural difference" and "Nonverbal communication".

3) Awareness of Language Skills

We observed the drop of "Language skills" in certain participant such as JP. Possibly this is because after the experiment she was more aware of her level of Japanese proficiency by listening to the "Locals" content, spoken partially in Japanese native speed. In addition, it is quite reasonable to say that just listening to a sequence of short audio clips will not enrich one's language skill hugely. In fact, sometimes it even causes a small decline of confidence.

For the future work, we will develop the variety of place-oriented content and add more participant of the evaluation experiment so CCUS will be more reliable. Additionally, the introduction of content "Tourists" to encourage listener's self/mutual reflection between other listeners is needed, to compare with conventional "Locals" and "Guidebook" content.

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Figure 11. Participants taking evaluation experiment in Asakusa