International Comparative Study of Identity as Presented on the Internet

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Abstract

The objective of this study is to explore the cultural differences that appear in terms of Web usage. We examined the homepages of 987 individuals of homogeneous social standings from Japan, the United States, Germany and South Korea. The contents of the homepages, such as academic backgrounds, research outcomes and personal information, were found to exhibit interesting differences. Subjects in the United States are more likely to express the identity of researchers' aspect, Japanese their whole personal identities and Koreans social status. Professors from Germany tend to use prepared templates and do not offer much information on their homepages.

1. Introduction

Various communities of widely separated people in both cyberspace and the real world have been formed by communication across networks. In this context, the Web is currently playing a crucial role in various communities on the net. For example, Kleinberg and his colleagues try to abstract hyperlinked Web communities that consist of "hubs" and "authorities" [1]. Other studies discuss about the communication patterns on the Web, for example [2]. These studies clarify the transition of the function of the Web, from search engines and broadcasting tools [3] to the tool for supporting human-human interaction in various communities.

However, little quantitative analysis has been given to the current situation of its peculiar communication pattern, "self presentation" [4] on the individuals' homepages. To regard the Web's particularity as the worldwide common platform, it is valuable to conduct a comparative statistical analysis on its communication pattern among countries. So, the objective of this study is set to explore the cultural differences that appear in terms of Web usage.

In this paper, we examine homepages built by individuals from Japan, the United States, Germany, and South Korea, which have high percentage of Internet usage in each area, to discern cultural differences from the page contents. This study indicates that building a personal homepage, i.e. presenting one's identity, provides a way for individuals to communicate with others all over the world.

2. Hypothesis and Research Method

We made a preliminary survey for this study in May 1998. Based on this survey, in the first place, we identified the necessary survey items in homepages at university Web sites. We posed research hypothesis for these survey items. For our survey items and research hypothesis, see Table 1.

In the second place, we selected survey subjects. First, we chose following four countries: Japan, The United States, Germany, and South Korea. They are selected because of their high percentage of Internet users per the nations in each area.

Second, for each country, fifty universities and institutes of technology offering doctoral courses in computer science/ engineering were sampled using charts of university rankings. Table 2 summarizes the

characteristics of research subjects in this study. Professors, associate professors, and Ph.D. candidates belonging to graduate schools of computer science/ engineering that had their own homepages, were sampled at random, using a table of random sampling numbers. The reason of these selections is that these three social positions are regarded quite similar among four countries. Therefore, the research subjects can be said to be very homogeneous.

Table 1. Survey objects and hypothesis

Group of Identity	Survey Objects	Research Hypothesis
Symbolic Identity	Photograph of the subject	Significant difference among the four countries in the frequency of each survey object appears.
Official Identity	Educational background. Research outcomes	
Personal Identity	Personal information	

Each survey item indicated in Table 1 on sampled homepages of individuals in Table 2 was examined in their respective social positions. The collected data was examined using the chi-square test (χ^2-test) and verified null hypothesis corresponding to the research hypothesis.

Besides the survey items listed in Table 1, we also analyzed the originality of the homepages. Here, if the homepage was designed and created by individual him/herself, we conceptualized it as a highly originated one. Conversely, if it was used a template prepared by department or laboratory, we conceptualized it as a lower originated homepage. We considered the latter type was not represented one's identity sufficiently. To find the relation, if any, between the presence of each survey item and homepage originality, the four-fold point correlation coefficient (f coefficient) was calculated. The significance of calculated f coefficient was verified with the chi-square test.

Table 2. Survey subjects

Characteristics of Survey Subjects		Number of Samples	
Condition	Social Position		
Individual who belongs to graduate school of computer science/engineering and has his/her own home page on the Web	Professor	Japan	110
		US	101
		Germany	86
		South Korea	61
		Subtotal	358
	Associate Professor	Japan	81
		US	87
		Germany	61
		South Korea	56
		Subtotal	285
	Ph.D. Candidate	Japan	81
		US	90
		Germany	79
		South Korea	102
		Subtotal	344
		Total	987

3. Analysis of Identity Presented on the Individual Homepages

This section analyzes the degree to which the subject's identity was expressed on the individual home pages. In case subjects have "official" homepages and also "personal" homepages from university Web sites, we inspected both of them. We also checked homepages written in their mother tongues as well as in English, with respect to Japan, Korea, and Germany.

Regarding page originality, we could find that individuals of higher social standing (professors) tend to use prepared templates more than the individuals of lower social standing (students). The most remarkable case was professors in Germany: 57% of professors did not design their homepages by themselves.

Photograph of the Subject (Symbolic Identity)

No significant difference was seen in the presence of photographs among the four countries for all social standings (*Prof.:* $\chi^2(3)=7.04$, *n.s.; Ass. prof.:* $\chi^2(3)=7.66$, *n.s.; Ph.D. candidate: :* $\chi^2(3)=7.04$, *n.s.*). It should be mentioned that there was a negative correlation between homepage originality and the presence of photographs with respect to German and Korean faculties (*Germany: f=-.21 (slight negative correlation, $p<.05$), Korea: f=-.24 (slight negative correlation, $p<.05$)*. Therefore, faculty members in Germany and Korea do not tend to attach their photographs to their original homepages.

Educational Background (Official Identity)

Significant difference was seen in the presence of educational backgrounds for all social standings (*Prof.:* $\chi^2(3)=58.3$, $p< .001$; *Ass. prof.:* $\chi^2(3)=24.43$, $p< .001$; *Ph.D. candidate: :* $\chi^2(3)=20.29$, $p< .001$) (Figure 1). Korean individuals

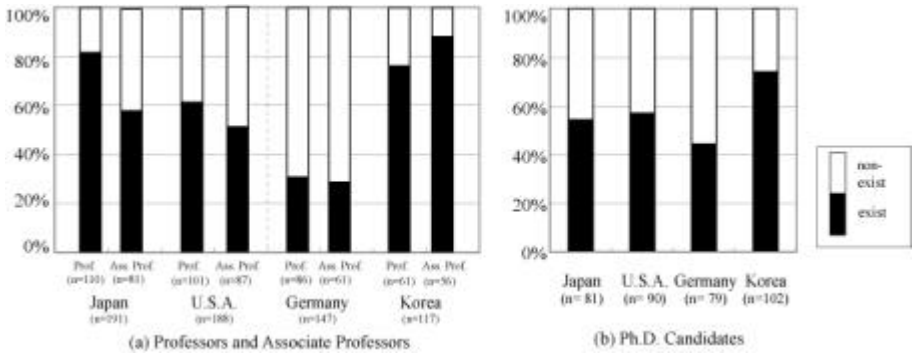

Figure1. Ratio of educational background

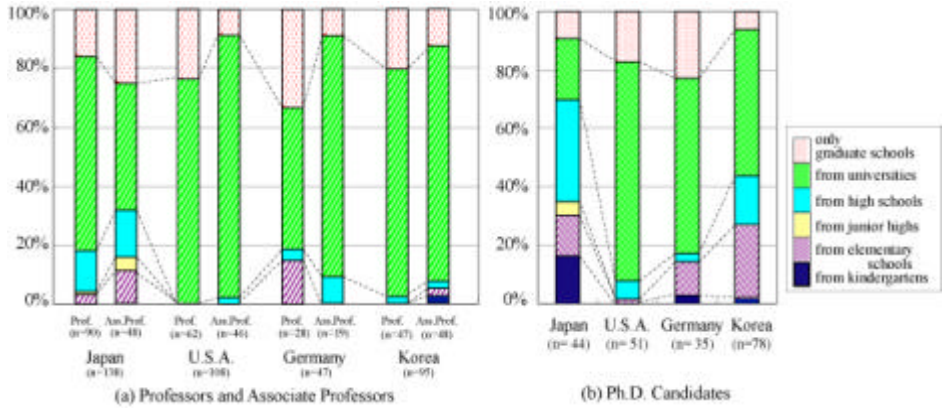

Figure2. The details of educational background

tend to emphasize their educational backgrounds compared to ones from the other countries. Concerning to faculties, the correlation between homepage originality and the presence of educational background was significant in Japanese and German (*Japan: f=.45 (moderately strong positive correlation, p<.001), Germany: f=-.24 (slight negative correlation, p<. 01)*). The original home pages of Japanese faculty members tend to describe their educational backgrounds, whereas the prepared templates do not. The opposite is true for German faculty members.

The detail of educational background presented was also examined, e.g., from kindergarten, from elementary school, from university, and so on. As shown in Figure 2, Japanese tend to provide more information than those of other countries (*Prof.: $\chi^2(15)=45.99$, $p< .001$; Ass. Prof.: $\chi^2(3)=29.18$, $p< .001$; Ph.D. candidate: $\chi^2(15)=85.09$, $p< .001$*). We could find significant difference in Ph.D. candidates. Japanese students tend to present the names of all their schools starting with kindergartens (Figure 2 (b)). More than 90% of students from the United States provided only their universities or in some cases, only their graduate school names.

Research Outcomes (Official Identity)

Research outcomes can prove how much the researcher actively participated and contributed to academic communities. However, as our hypothesis, we could find statistical significant difference among four countries (*Prof.: $\chi^2(3)=34.57$, $p< .001$; Ass prof.: $\chi^2(3)=9.21$, $p< .05$; Ph.D. Candidate: $\chi^2(3)=11.89$, $p< .01$*) (Figure 3). Faculties in Japan and the United States provide their research outcomes than those in other two countries. However, with respect to the contents of research outcomes, we cannot conclude that professors in above two countries state in details.

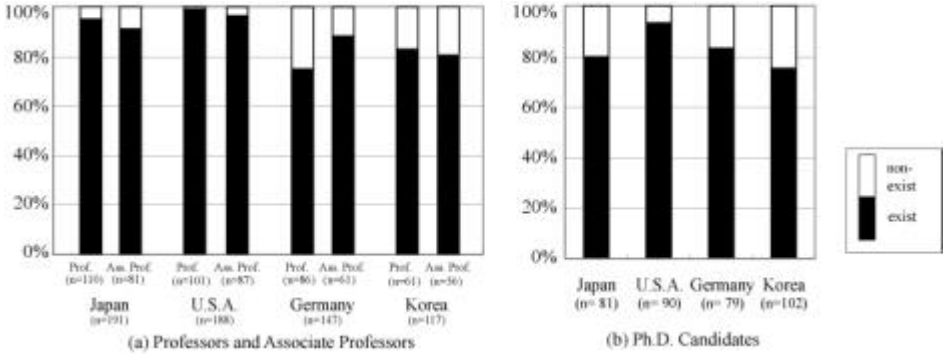

Figure3. Ratio of research outcomes

75% of professors who provide their research outcomes in the United States detailed their research theme, their roles in projects, and research papers as their outcomes. On the other hand, only 40% of Japanese professors stated such information detailedly, but just their interests. With respect to German and Korean professors, 60% and 56% of them, respectively, described detailed research outcomes. Hence, Japanese professors provided relatively scant information about their research activities. In the descriptions provided by associate professors, there was no significant difference among the four countries and they tended to provide detailed information on research outcomes. With respect to Ph.D. candidates, the percentage those who provided detailed research theme was 42% in Japan, 70% in the United States, 58% in Germany, and 53% in Korea.

Personal Information (Personal Identity)

Personal information, not related to research activities, includes hobbies, diary, religion, birthday, blood group, horoscope, and birthplace. It is natural that the percentage of faculties who provide ones' personal information on their homepages from the university Web sites is rather small. Although no statistical significant difference was seen among the four countries in the homepages of associate professors, the result of professors validated our hypothesis (*Prof.:* $\chi^2(3)=41.54, p< .001$; *Ass. prof.:* $\chi^2(3)=3.25$, *n.s.*) (Figure 4). Japanese professors tend to reveal more personal information than those in the other three countries. Concerning contents of personal information, Japanese professors and associate professors described a lot about their hobbies, dates of birth, and birthplaces. In addition, they provided their own blood groups and horoscopes, both of which were rare in the pages of the faculty members of the other three countries.

Compared to faculties, a considerable percentage of Ph.D. candidates present their personal data in every country. Like professors, Japanese Ph.D. candidates tend to reveal more personal information than the other countries' students ($\chi^2(3)=30.48, p< .001$). Additionally, they presented a wider variety of information than American or German students.

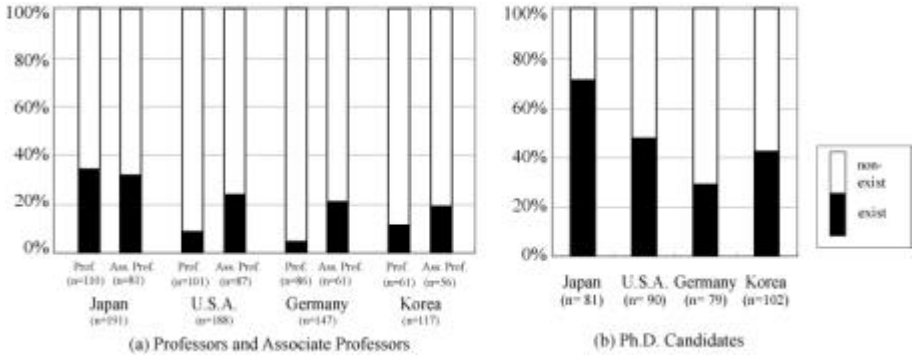

Figure4. Ratio of personal information

4. Conclusions

This paper provides a comparative study on the identity represented on the Web among academics in Japan, the United States, Germany and Korea. We paid attention to one of the important theories of international comparative studies, *spurious similarities* [5] when we selected survey subjects. Since the subjects examined were homogeneous because all were professors, associate professors, and doctoral students of graduate schools in the fields of computer science/ engineering, we consider that our data are accurate to compare. Nevertheless, the null hypothesis of educational backgrounds and research outcomes (official identity), and personal information (personal identity) for all social standings were accepted.

The remarkable characteristics of each country are summarized as below.

Japan: The notable features are; a) presenting early school names, b) scant contents of research outcomes, and c) high ratio and wide variety of personal information. In this paper, we can conclude that Japanese individuals tend not to be conscious of the sources, namely university Web sites hosting their homepages, and present their integrated identities on the Web.

The United States: American individuals stress their research outcomes. They present, as their educational background, just the universities related to their current research careers. It might be concluded that American academics are conscious of the sources (Web sites) hosting their homepages. They express the identities that make themselves attractive to their "home" communities.

Germany: The characteristic of Germany is the high frequency with which professors use prepared formats. German academics provide less description of educational backgrounds than those of other three countries. Additionally, they don't use this kind of information on their original homepages.

Korea: In Korea, educational background is emphasized when forming one's identity. They tend to express the social status through their affiliations on the Web.

From the data obtained on this paper, namely our statistical knowledge of current stage, we cannot definitely conclude the difference on the presentation of self identities among countries are due to the difference of cultures. Since this study is the first step of Web analysis from Computer Scientific point of view, deeper analysis should be done in cooperation with the academic area of Cultural Psychology, Intercultural Comparative Studies and so on.

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