HOW TO DESIGN SCIENCE COMMUNICATION VIA WWW?: INTERACTION BETWEEN VIRTUAL AND REAL COMMUNITIES

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Abstract

Internet/WWW is one of the powerful tools to encourage communication between scientists and public. We report in this paper the framework of newly developing web site of the National Museum of Emerging Science and Innovation, Japan (Miraikan), focusing especially on the method and design for activating communication among real and virtual communities. In 2005 Miraikan has launched the project of creating the new web site, a kind of "portal" in which we edit and send various information of science and technology. Operation will start on July 2006. The "Café & Pub" is planned to be set up within this site for facilitate communication among scientists and public. We hope that this cyber Café will function as a node between real and digital worlds by connecting with real Café Scientifique and/or exhibitions in the Miraikan. This will also contribute to increase the number of visitors to Miraikan and to create newer community including people who seldom come to Miraikan, because of, say, living in distant place. We report some tips and devices to facilitate the communication between real and cyber communities.

Keywords: Real and virtual communities, Web site, Cyber Café, Science museum, Interaction

1. Introduction

Indifference to science and technology, especially student and general member of society's indifferences, keeps being pointed out in Japan for a long time. As the cause, it is assumed that the informational dispatch and public understanding is not made effectively, and the space of the discussion which involved in student and general member of society is not fully offered. Therefore, the opportunity for him/her to be conscious as involvement being in oneself about the influence which the latest science does to society or the future is not realized. However, the development of the science and technology, for example, cloning technology, reproductive medicine, etc., may also affect a life of ordinary person. In such a context, the importance is attached to the science communications between scientists and public, and it is groped for the technique in many cases.

One of the solutions to the problem of activation of the science communications between scientists and public, we are working on the Web site research and development that aims at the use of Internet/WWW as the tool. In this paper, we report on this ongoing Web site research and development project.

2. Necessity for the communication between virtual and real communities

Internet/WWW is a new Media, appeared only about ten years ago, becoming the one that cannot be disregarded now. It differs from the radio and television that are one direction mass media. Internet/WWW is an autonomous decentralized system, and is expected as an interactive media. When Internet/WWW appeared in the world and was expanding its influence in the amazing speed and power, with the new word "Cyberspace," "Virtual community," and "Netizen," it was expected that the network through a computer, that is, Internet/WWW could create new society. The virtual community was expected to be able to realize a direct democracy. This flow that sent some expectations to the Internet/WWW and the virtual community, was seen in Japan.

In Japan, it was seen as breakthrough that broke a long-term recession and a feeling of a blockade after the collapse of the economic bubble in the first half of 1990's. It is called "IT revolution," and tackled on the national policy level. It was expected, so that it was regarded as Third Industrial Revolution (Information Industry Revolution) following the Industrial Revolution at the end of the 18th century (light-industries revolution), and the second industrial revolution at the end of the 19th century (heavy-and-hemical-industries revolution). But, the ideal of the "Virtual community" and a "Netizen" is not realized now [1], [2].

3. The joint research project to build web site for public understanding, 2005-2008 fiscal year

The National Museum of Emerging Science and Innovation, Japan (Miraikan) is national science museum which is located in Tokyo, Japan, established in 2001, of which director is astronaut Dr. Mamoru Mohri. Number of visitors was ca.630 thousands per year (in 2004). It was born as a center for deepening an understanding of science and technology, and to fulfill Japan's aim of becoming a scientifically and technologically creative nation. Its main purpose is attractive exhibition of the products of advanced science and technology for public people, especially youngsters. Miraikan, along to this aim, is developing cooperative activity with secondary and high schools. It has the idea "The museum as a place accessible to everyone and where science and technology are perceived as a part of culture, their role in society and future possibilities are pondered, and ideas are shared." And, four concepts "Movement," "Mobile," "Media," "Meeting" are set up by the director, astronaut Dr. Mamoru Mohri.

This "The joint research project to build web site for public understanding" is carried out as the second stage of the information sending project that Miraikan does. In Miraikan, the official web site has already been operated. But, THIS web site which is being researched and developed in the present project is different from that one. This web site is designed, not simply to publicize the activity of Miraikan, but to edit and send various information on science and technology which is mainly concerned with the movement in Japan. And moreover, it is aimed at constructing an interactive communication space.

The research and development are in progress now. Full-scale operation of this web site "deep science" is scheduled for July, 2006. This web site is intended to be one mainly for person in his/her twenties-thirties, a generation who will bear and bring up a child from now on and will bear next-generation society.

The main contents of this research are as follows.

（1） Sending of information on the latest science and technology

Research into the new visualization technique via Internet/WWW as to scientific and technological information (program research and interface research), research into editorial technique to make unintelligible information attractive, familiar one, and to pass on (media research)

（2） Café Scientifique via Internet/WWW

Research into the communication technique for scientists, readers (public), and the both to interchange and discuss thier thoughts (research into the technique to facilitate communication and to create a new community)

（3） The informational connection and its effective use in on-line and off-line

Research into the technique to connect information using high technology

（4） Science toys for the adult using the bidirection unique to Internet/WWW

Program research and interface research

As composition of the web site, "Information dispatch," "Café & Pub," and "Links" are the main contents. In "Information dispatch," we send various information on science and technology like a web magazine. In "Café & Pub," we give it a role as a place of the discussion and the salon. In "Links," we plan to connect the information on virtual space and real space. The information acquired from the research activities in real space, Miraikan, serves as concrete contents.

The point where this research and development project differs from the other web site development is that we do collaborate. This is a joint research between Miraikan and three laboratories ; Akira Wakita (Faculty of Environmental Information, Keio University), Masahiko Furukata (International Academy of Media Arts and Sciences), and Osamu Sakura (Interfaculty Initiative in Information Studies, University of Tokyo). Respectively, they are taking charge of the research into information share system that connects virtual space to real space, the research into interface and appearance and design technology, and the research into communication technique and contents. Furthermore, on the occasion of actual web site development, an external designer and an external systems engineer are also tackled together. Each researcher has a different background, therefore we can share not only our roles but also knowledge and ideas. In such a joint research scheme, it is expectable to open the possibility of developing a newer web site from various viewpoints.

The next chapter concerns the "Café & Pub" plan in which the author is especially participating in this joint research project.

4. The "Café & Pub" plan

The "Café & Pub" is one of the contents in the web site of Miraikan above. We intend that the Café is a site for serious discussion, and the Pub for enjoyable dialogue. The goals of this content are the following five points.

（1） A scientist or technology specialist will give a short thesis displaying his/her opinion for rather important topic.
（2） Public people freely debate each other about the topic and specialists opinion through blog or BBS.
（3） The specialist and lay persons will exchange their thoughts.

(4) This cyber Café will function as a node between real and digital worlds by connecting with real Café Scientifique and/or exhibitions in the Miraikan.
(5) This will also contribute to increase the number of visitors to Miraikan and to create newer community including people who seldom come to Miraikan, because of, say, living in distant place.

To achieve these goals, first, there is the need to create newer virtual community which provides us the site to communicate with each other over the web site of Miraikan. However, over the www, it has not necessarily been right that many sites can get some hits and create the condition called a virtual community by generating human interaction. For example, as shown in the history of the USENET constructed in 1979, there was the case which wasn't in the right ballpark by posting such things as go-it-alone opinions or defamation on the BBS (Rheingold 2002). This phenomenon is still come across occasionally. The chief point in this example will be how much balance of interactivity and anonymity we set up which are characteristics of the Internet. This is an important point which has something to do with subtleties because this influences not only the outcome or the effect but also the management of the web site. We aim to construct the virtual community with reliability and reciprocity by mixing the characters of such things as a existing BBS, blog, SNS and avatar through the consideration of the balance of this interactivity and anonymity.

As to the relationship between the Café & Pub and a real community, we will attempt to have it work with real Café Scientifique which Miraikan presides over. Concretely speaking, the cyber Café provides a kind of portal site on which experts and public people who take part in real Café Scientifique post questions and answers, reviews and comments. We aim to create the reliable loosely-linked virtual community by having people who take part in the real Café Scientifique, the network of personal contacts which Miraikan has, and the organizers of the real Café Scientifiques communicate with each other which are held simultaneously nationwide in Japan on April 2006.

We also propose that those who post on the cyber Café are asked first for entering their personal information simply and setting up their avatars. As the items of them, we provide them the things to find their jobs or interests. And when they take part in the real Café Scientifique, we get them to bring the paper on which they print their avatars. It is our expectation that those who take part in the real Café Scientifique can recognize each other's backgrounds at a glance and facilitate communication with each other by attaching it on the tumbler used in the real Café Scientifique. Furthermore, we also aim to facilitate communication on the virtual community and decrease the posting of defamation by using their avatars as the characters which identify individuals. After operating the web site of Miraikan, we will continue to study the function and the effectiveness of an avatar as the media to activate communication through connecting real and cyber space.

When we will consider the characteristics of Websites, let us take a social networking service (following, SNS) for example. SNS visualizes the existing human relations on Web. Therefore, although clarifying personal information is usually accompanied by danger over the Internet, there is the tendency for anonymity to become low on SNS conversely because it can become an obstacle on SNS, in building the human relations on Web. Consequently, since the case where posters are specified increases on SNS, to ruin the communication on it decreases. Even if it is ruined, posters are ignored because the self-cleansing effect will work. And many SNS adopt the invitation system that someone cannot participate in SNS without the recognition from others. Thereby those who are invited on SNS by others refrain from the actions like defamation because it is rude to them, and similarly, those who invite others refrain from inviting someone as soon as possible who may post defamation on SNS since when the he posts defamation, someone who invites him can be held responsible for inviting him. Therefore, SNS is the system which can ensure certain reliability. In addition, SNS is not a pyramid organization but completely flat network structure and serves as a system which is suitable in interactive communication.

People cannot do real-time communication on SNS. However, when it is necessary to require real-time communication, the function of SNS is complemented by using tools, such as a messenger, a chat, and so on. Besides, when people want to put their diaries and reports on the Internet towards not only their human network but also unspecified persons, they had better use not SNS but blog. As stated above, we can build a desirable system by combining the existing websites. In fact, various kinds of SNSs exist by combination with various systems, such as what can specify others' position information, and a thing linked up with an auction, and so on.

5. Real Café Scientifique plan

The first research subject in this project is done research and development of the information dispatch web site. And also, how interaction between virtual and real communities is facilitated is an important subject which influences fulfillment of the principal research task and which should be solved. We want to develop this web site, not as the activity which is closed only in the virtual space, but as science communication activity connecting with real space. Thus, in this project, we also regard the linkage with actual Café Scientifique and exhibitions in Miraikan as important.

As part of a project we are going to hold Café Scientifique as one of the national simultaneous Café Scientifique in April, 2006. With regard to this plan, we are zealously preparing for it as of February, 2006.

6. Conclusion

This paper introduced the web site research-and-development project in Miraikan as one of the methods of facilitating the science communication between scientists and public. On the occasion of practical use of Internet/WWW, we described the necessity for the communication which connects virtual community to real

community, from the viewpoint that the conventional argument about a virtual community must have neglected the relation with a real community. In addition, as one of the experiments which realizes such communication, we introduced the "Café & Pub" plan which especially the author is taking part in the planning. The monitor public presentation of the prototype versionin is scheduled for April, 2006, and we DO the general public presentation in July, 2006. By then, we have to further research and discuss the linkage between an actual Café Scientifique and the web site. This project faced by the joint research scheme, making the most use of its advantage, goes to build the cycle which connects REAL Miraikan, VIRTUAL web site, and REAL Café Scientifique. Certainly, our project will contribute to the facilitation of interaction between virtual and real communities, and moreover, it can contribute to the encouragement of science communication.

7. References

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