

Cultural Computing: A New Bridge of Eastern and Western Culture Through Technology

1. Acquiring Cultural Information

Nowadays, more and more individuals communicate in daily life with people who have various cultural backgrounds. We now have greater need to understand history within our cultures and other cultures. The common way to understand these, however, is only to read books or go to museums. So, it is hard to pick up the information about other cultures needed to understand them properly.

Developments in computers through Information Technology reached out to make computers linked by networks, mobilized and mutually connected. How can we utilize that for communication among cultures? In this research, we start from the simple question of developing a field called Cultural Computing: that is, computing the essence of a culture like sensibilities, ethnicity, and narrativity that hides within our unconsciousness. Then, we integrate nonverbal information and verbal information within this new field that processes cultural reliving and the exchanging of cultural models. Cultural Computing is necessary for the ability of future communication through computers. Originally, human communication has grown from the environment of a region, the racial climate, and language itself. This shows that what people heaped up in their cultures in the forms of actions or grammar has both forms shared among cultures and unique forms to each.

On the other hand, Informatics only processes infrastructures, to order information quantity. There is “information of meanings” that represents information qualities, like sensibility and culture. It is time to process this “information of meanings.” Engineering has treated only the shared part of global cultures and done away with other, local information. But cultural information with national features lives on within those nations. A depth of communication is thought to be included in that local ethnicity, but there has been little research about the expression and communication of such.

Communication media have developed along with books, music, and movies to mutually transfer identities of cultures. Today, when a computer

society covers up the earth, what computers should try to do is intercommunicating local and global cultures precisely. In order to do that, computer technicians should make use of local features of cultures in computers.

2. Systems to Compute Cultural Structures

Because Cultural Computing directly processes culture, we must utilize a specific culture as the basis to create this system. We focused on Japanese Zen to process spirits that represent culture using computers. In our work <<ZENetic Computer>>, we modeled the structure of Sansui paintings, a part of Zen training. We researched and developed interactions based on inspirations included in Zen dialogues and interactions associated with symbols and allegories of Japanese culture. This work was exhibited in world museums and a Zen temple.

The user of <<ZENetic Computer>> follows a long flow of experiences. At first, the user constructs a 3D image of a Sansui painting on a scroll, by arranging icons of Sansui elements displayed on the screen. After that, the user enters the 3D Sansui world.

These images represent various characteristic ideas of nature and philosophy in Eastern Asia and Japan. Symbols in our daily life give different dramatic experience to the user. The system essentially wakes the user in the introduction and brings forth the user's unconscious imagination.

In the next part, the system recognizes the user's state of mind based on Buddhism using a Dual Synchronized Chaos system by considering the user's design of the Sansui picture. The system generates a story for the user at the same time, to lead the user to the world through its display.

We added a mechanism that uses Haiku and Zen dialogues to stimulate to the user's consciousness. These scenarios are not linear and completed like movies or novels, but non-linear subsets of stories. The user experiences fragile scenes of stories and feels a kind of anxiety that makes them hope to complete the entire story by connecting them together. The user tries to answer the questions presented, and generally has a kind of hesitation (fig.1).

In the next section, I speak of a “computer that read the situation,” <<i.plot>>. This is an association system of words and images that stimulate our inspiration. We have search engines to access huge quantities of data on the Internet. But this method is limited to simplicity that uses only “keywords” to access data. The <<i.plot>> uses “thought forms” of humans to process an intuitive thought space for finding relevant words. It is a brand-new way to access a database that gives the user inspiration or hints to discover hidden relations. The computer automatically visualizes the association space of inspiration from the situation implied by input dialogues. Also, it generates associated image between English (phonogram) and Kanji (ideogram), in other words, a word and its implied image or associated images are found simultaneously (fig.2) (fig.3).

We developed these systems as sponsored research of JST “Interaction and Intelligence,” MIT, and France telecomm, financially supported by ATR and NICT. An iPhone product, “Sansui Ink Painting,” based on <<ZENetic Computer>> was released by an American software company, as well.

<http://itunes.apple.com/jp/app/sansui-ink-painting/id359077376?mt=8>

3. Pros of Cultural Computing, and Our Goal

Let us think of the pros of Cultural Computing, compared to present cultural content processing by computers. One of them is that Cultural Computing presents easier understanding of a culture, because it processes the structure of a culture as well as the cultural information itself. Each culture has a complex structure, so many cultural exhibitions in museums can only explain from some specific viewpoints. There are many possible viewpoints that may correspond to an onlooker’s knowledge and interests, but no systems have answered all of their questions.

If there were such systems, we would be able to simulate spirits that represent culture. Controlling the process (for example, we can set a system to correspond to the age of Buddhism’s coming to Japan) will enable us to interactively experience the other culture’s spirits and history. It will enable us to develop new popular culture through the meshing of multiple cultures.

I noticed that computers have good functionality for the creation of new culture. Computers process something with algorithms and data, and that corresponds to structures and contents! New expressions emerge when computers process and combine models of culture. Why would this not be called the creation of culture? We need to communicate with others globally without losing our inner ethnicity. We cannot take culture off like clothing. Therefore, we need software that connects scattered information on global computer networks. One of the values of Cultural Computing is the universally-oriented interface that connects the “local” and “global,” thereby allowing the mix of Eastern and Western cultural information. See my book, *Cultural Computing* (Author: Naoko Tosa, NTT Publishing) for more intensive information.