China and Japan Heritages Timeline System for History Museum Data

A Case of National Palace Museum and the Tokugawa Art Museum

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ABSTRACT

This paper describes a study in which we enable access to China and Japan cultural heritage information from two history museums, the National palace museum in Taiwan and the Tokugawa art museum in Japan. Results from these museum databases were used to develop a prototype system to demonstrate advanced cultural learning and historical timeline functionalities for foreigners. This system is based on temporal data from museum database, and provided the user with powerful data manipulation and graphical visualization tools. For instance, interactive timeline interfaces could be described which allow a viewer to scroll, change the area, select from multiple timelines, and display attributes of history events. It might become a basis of an interactive digital museum system for China and Japan heritages especially for foreign users.

Keyword: Museum, Heritage, Timeline, Foreigner Support System, User Interface

1. Introduction

Museums around the world often rely on the internet to enable access to digitized versions of their collections. Similarly to digital library access, many institutions provide users with both text searching of collection content and categories, such as object type or subject matter, it is really useful in organizing items for the museum. However, these broad institutions may not always allow the individual to find other's museum collections quickly and easily. There are no systems to integrate other museum

collections by different areas, even by different countries. It is difficult to advance in the new application method has made it increasingly possible to search and browse for different museum items, using richer sets of heritage classifications which based on the collections database. This study described here used two museums data (National palace museum in Taiwan and Tokugawa art museum in Japan) as our sample, to express how museum web systems could be applied to enhance access to a large online heritage collection of different museums. We regard to browsing and exploring the heritage material related to the history timeline.

2. Timeline displays

Many applications for information visualization have been developed, some researchers have already applied subjective measurements to accompany objective results. There are many familiar examples of timelines. Figure 1 shows a particularly elaborate timeline, The Wall Chart of World History. This displays the reigns of rulers of the major countries of the world along with commentary about those reigns and important historical events. Visually, the timeline makes extensive use of color, shape and scale, and a few other familiar paper timelines show cultural and scientific advances. Event relations are particularly important. Viewing event relations between the news with timelines has some similarities to viewing postulated relationships between propositions in hypertext argumentation systems (Figure 2).
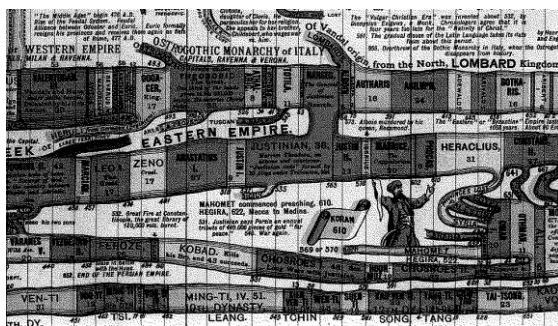

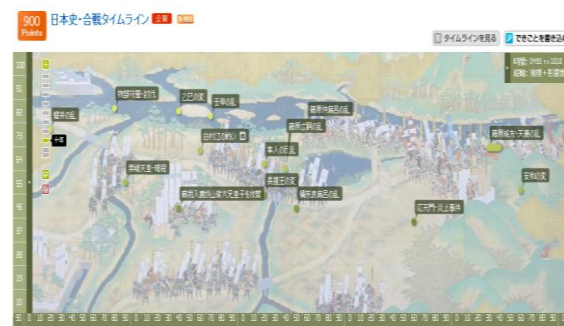Figure 1：The Wall Chart of World History　　Figure 2: @nifty TimeLine

On the other hand, for visualization systems, some researchers use the points of keywords, time, and 3D space to display visualization interfaces. For example, Nomata proposed a novel visualization system for news articles that supports the exploration, the observation, and the supplying of visual summaries of news articles. Matsumoto proposed a multi-channel dissemination system with a time dependent filter and an application technique for time-series documents on the Internet. He also took a

push-based application method based on confidence and scoop levels to describe a prototype system.

2.1 Timeline system of museums

We surveyed several timeline applications of all kinds of museums all over the world. It is a popular way for museums to express their heritage collections by time or history classification. It was conducted to get an idea of why people use the museum timeline site, and to use this input to help guide the design of a system for browsing and exploring material related to the heritage history or culture. With regards to interface design matters, researchers mention both typical and more experimental visualization techniques ranging from ranked lists, clustered result displays, tag clouds, cluster maps, and data-specific designs such as timelines (Figure 3).
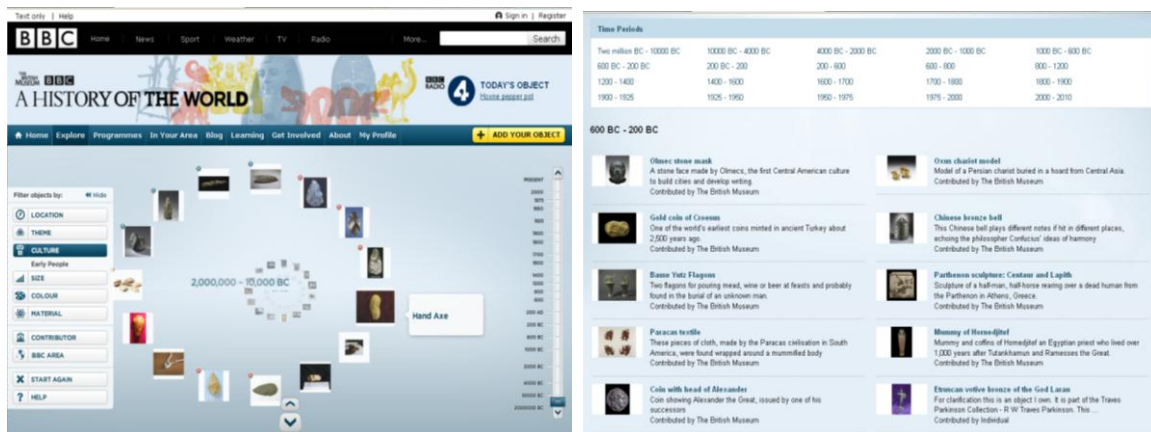

Figure 3: The Timeline of British Museum

In traditional timeline systems are also incorporated into the different museum site's advanced data relations, however most users are usually required to directly select a specific year or range of times. Enhanced presentation of event-based information could include an interactive timeline, it is also of interest would be the ability to explore relationships between each heritage background.

2.2 National palace museum and Tokugawa art museum

The National Palace Museum is an art museum in Taipei, Taiwan (Figure 4). It is the national museum of the Republic of China, and has a permanent collection of over 677,687 pieces of ancient Chinese artifacts and artworks, making it one of the largest in the world. The collection encompasses over 8,000 years of Chinese history from the Neolithic age to the late Qing Dynasty. Most of the collection is high quality pieces

collected by China's ancient emperors. In 2009, it was the 11th most visited art museum in the world. In the Tokugawa Art Museum some idea of the quality of the collection can be gleaned from the fact that besides this early masterpiece the collection includes nine other designated national treasures, fifty-seven registered important cultural properties, and forty-six important art objects. The museum is noted further for the overall fine condition of its pieces (Figure 5). Moreover most objects have been handed down accompanied by meticulous family documents, catalogues and other records. However, in these museums, despite the situation only one museum data of providing access to cultural heritage material, the applications of browsing websites described here have primarily been adopted on experimental sites or for small amounts of collection data, rather than being deployed by large cultural heritage organizations.

Figure 4: The site of The National Palace Museum

Figure 5: The site of the Tokugawa Art Museum

3. Museum heritages timeline system

Timelines can be an effective aid for understanding relationships among events. Interactive timeline interfaces of the museum could enhance traditional collections information. For instance, relevant information could be displayed to a user and the user could browse for additional information as needed. Prototype interfaces are described which allow users to scroll the time bar and select from multiple timelines to display attributes of every event. Timelines can provide the integration across many different parts of history. The user could be oriented to a specific time period with a dynasty of timelines. Temporal information can also be presented in tabular form, for some purposes that may be a satisfactory representation. Tabular presentations may be characterized as showing ordinal representations while graphical timelines generally provide interval representations.

3.1 Purpose for museum data-link

We want to help the user even in a different culture, let them be possible to understand the cultural relics and museum information, moreover, building a useful education system according their needs. This system integrates the cultural relics data of two museums and build a new format, and develops a new cultural relics system which using NPM (National Palace Museum) data as a radical; in other hand, to use the existing digital resource of NPM effectively and to make the user range more popular, even the foreign learner also can use it. Because a spatial extent is useful to select for the organization of information on digital media, and a wide variety of geographic information system (GIS) interfaces are currently being developed. It would be possible to combine temporal information with spatial information. Moreover, time interact in causal explanations, by concept of timeline, this system can improve the problem that only a basic facility for exploring relationships was implemented, using the interface and the user can see the information on immediately related collections. A timeline interface may provide several types of cognitive advantages for a user; it can provide the basic information about the dates of events; it can show all contexts and can help the user to compare events; it has the characteristic for encapsulate; and it also can show all attributes or a hypothesized causal relationship by keyword links.

3.2 Interface for historical events

This study attempted to explore the feasibility of history museums in the context of a larger online heritage collection, with an emphasis on different country background of task and user. The interface applies the events by the horizontal layer, this style is especially suitable for displaying bounded events such as the history events or the museum collections (Figure 6). It is also convenient for displaying multiple bounded attributes. When clicking on objects in the interface can have a variety of effects. Clicking on dates on the timeline gives more information about other events occurring during that year. Given a sophisticated representation of events, it might be possible to apply complex reasoning to the relationships collected in the database of historical facts. However, reasoning from large collections of complex information in knowledge representation systems has proven difficult.

A useful interface could show links in response to show the useful information for the user's queries and explain it. In this system, the user is able to scroll the timeline horizontally to show different time periods. The prototype allows users to explore the collection using one of three concepts (Figure 7):

- Concept of the museum: providing information on museums and the titles of their artworks.
- Concept of the culture and background: providing more information on the artwork and featuring history events.
- Concept of history timeline: providing history event and heritage collections.

The interface shows timelines being split and merge, it also shows the explanation of heritages which give a visual representation of major history events. And illustrated timelines of the heritage history could be developed in which the influences on any work selected by the user would be illustrated with extensive graphics or pictures. If an expert on China history might want far more detail displayed about that topic than the ordinary user, precisely predicting which information will be relevant for a user is difficult.

But the most complex issues in the design of timeline interfaces have been the layout of the museum objects. Therefore, this timeline system is possibility of accessing other links in different languages such as English, Japanese or Chinese via the collection introduction is deemed to be useful, in order to further the users' information seeking and exploring process. Upon investigation, the most notable difference being the percentage of people who would find it useful to explore relationships. For example the timeline of the Chinese dynasties, the user has clicked on the label for the Sung Dynasty and all history descriptions of the events within that dynasty has been opened to display more details (Figure 8). Therefore, the user can see both the overall context for a particular period as well as viewing specific relations between each event. Reference events from political history and the history of heritage relations have also been shown. Ideally, these reference events would help to orient each well known event and set their associations. The user clicks on a time period to open a window where other related information can be found.
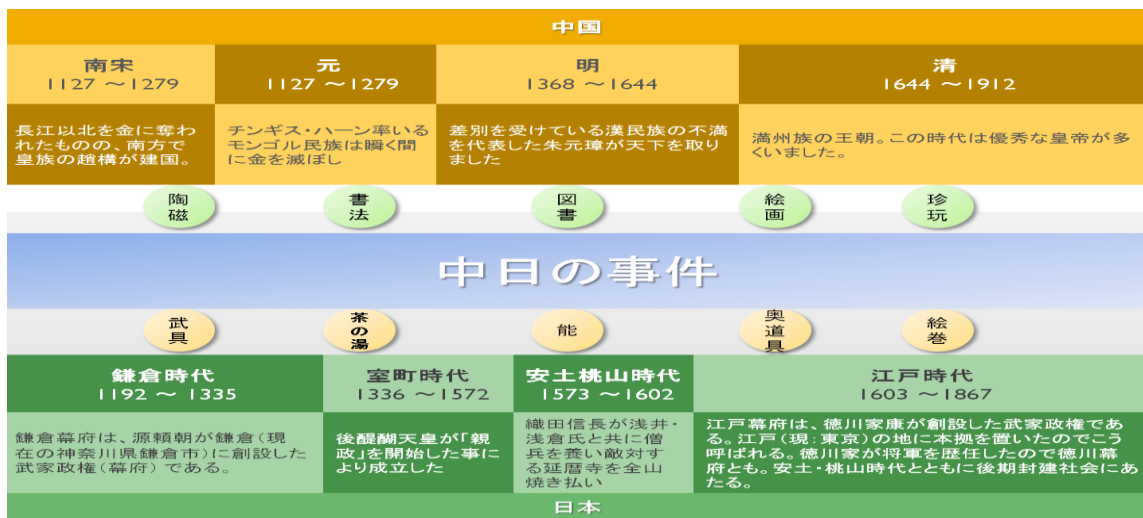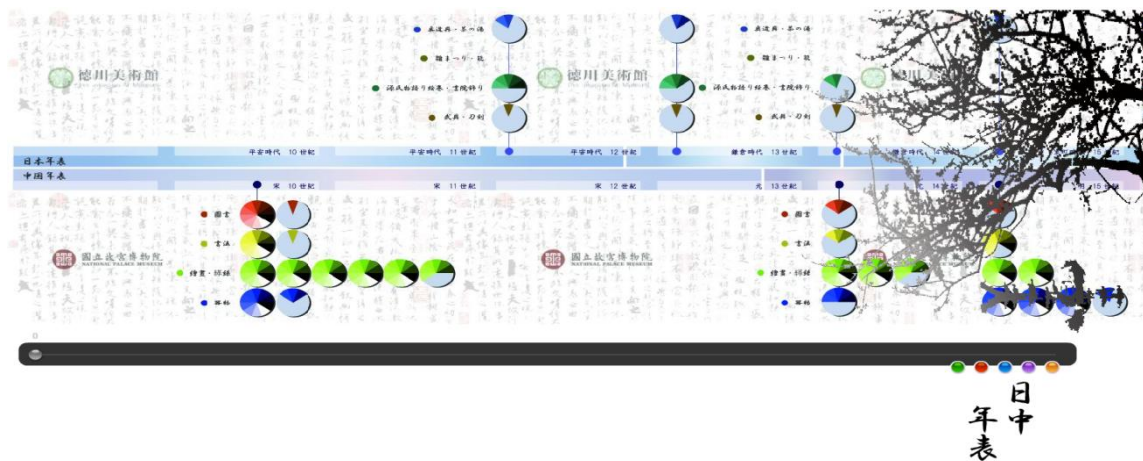
Figure 6: The prototype of timeline concept

Figure 7: The interface of main timeline

Figure 8: The application of history events

Using the program may be configured so that clicking on objects may also produce other timelines of different museums. Before constructing museum timeline system, we classified and analyzed all the museum collection data in websites of "National palace museum" (http://www.npm.gov.tw/index.html) , and "Tokugawa art museum " (http://www.tokugawa-art-museum.jp/index.html) using the collection content of each museum object as basic data. Museum timeline system is mainly constructed by the user interface, and the collection database. The first step of system construction is to capture heritage data from websites. Setting various countries representative history museum as our objects, and capture all information from museum websites. The results displayed in all the views are constrained by the values selected in both history events and heritage facets.

4. Conclusion

This paper describes a study in which we enable access to China and Japan cultural heritage information from two history museums, the National palace museum in Taiwan and the Tokugawa art museum in Japan. Results from these museum databases were used to develop a prototype system to demonstrate advanced cultural learning and historical timeline functionalities for foreigners. This system is based on temporal data from museum database, and provided the user with powerful data manipulation. For instance, interactive timeline interfaces could be described which allow a viewer to scroll, change the area, select from multiple timelines, and display attributes of history events. This was mainly due to this system provided relatively wide network of relationships between the collections of National palace museum in Taiwan and Tokugawa art museum in Japan. The focus of the content related specifically to the histories and heritages. The initial results indicate that users can have different information seeking needs, depending on event period in the heritage domain, and reasons for visiting a museum collection-related site. And it might become a basis of an interactive digital museum system for China and Japan heritages especially for foreign learners. This Timelines system is an interactive data collection and visualization tool which supports both heritages of the National palace museum and the Tokugawa art museum. It accepts many diverse types of temporal data and provides the user with useful application and graphical visualization tools.

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