ESTABLISHING A DIGITAL PLATFORM FOR CULTURE OF TURKEY

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ABSTRACT

The project aims at setting up guidelines to prepare an infrastructure and interactive, spatial database that would ensure survey and protection of Turkey's cultural heritage and its evolution as a resource to contribute to its social and economic wealth. The working themes are; cultural inventory-by using conventional and space based information technologies, education system concerning cultural heritage and its management, modernization of the concept of museums and museology, restoration, reconstruction and design of cultural monuments and sites. Within the framework of the cultural inventory program, the following groups have already been activated: archaeological heritage, urban architectural heritage, rural architectural heritage, ethnography, ethnobotany, oral history, geological heritage and geoarchaeology. The project was implemented in the summer of 2001 in two towns : Birecik -Suruç in Southeastern Anatolia, and Buldan (Denizli) in Inner Western Anatolia. The pilot region studies were completed in 2004. Consequently, teams of expert academicians prepared inventories on above groups. Turkish Academy of Sciences (TÜBA) has developed CULTUREBOOK which combines cultural and GIS data with photographs, diagrams, maps and written text.

1. INTRODUCTION

Turkey is a country of culture, enriched by the synthesis of innumerable ancient civilisations. She even conceals many other cultures besides those already discovered. Turkish Academy of Sciences (TÜBA) has undertaken an initiative to determine the present status of cultural heritage resources of Turkey. The main goal of this initiative is to recognize and to conserve heritage items, places or systems that are significant to the communities, and which we want to pass on to our descendants. The Turkish Academy of Sciences (TÜBA) sees the creation of an inventory of Turkey’s cultural heritage as a precondition of achieving this goal. As a prerequisite for such an initiative is documenting the cultural heritage, work on a cultural inventory has been started under the title “Turkey’s Cultural Inventory Project”. Principles to be used in the documentation of assets in archaeology, urban and rural architecture, ethnography, ethnobotany, oral history, geological heritage and geoarchaeology have been established and put into implementation in Birecik-Suruç districts in Sanliurfa province (South-East Anatolia) and in Buldan district in Denizli province (Central-West Anatolia), which have been selected as pilot regions. Collecting inventory data by scanning the pilot regions is implemented by committees and working groups, made up primarily of Academy members, aided by the contributions of volunteers from the scientific community. Turkish Academy of Sciences-TÜBA has developed a Geographic Information Systems-GIS based software, entitled as CULTUREBOOK, that combines cultural (tabular) and spatial data with photographs, diagrams, maps and written text to enhance competitiveness and sustainability for the economic development.

2. A SCIENTIFIC APPROACH TO CULTURAL HERITAGE IN TURKEY

Heritage information is fast becoming a new global commodity. This is especially so in the context of environmental conventions, and of the development process. Access to such information is needed to support it. Therefore, The Turkish Academy of Sciences (TÜBA) has undertaken an initiative to evaluate the present status of the cultural remains, which constitute a major asset of Turkey. This initiative aims to ultimately exploit the cultural resources, so as to include them in the social and economic wealth of the country. Such an undertaking can only be accomplished through the formulation of an extensive, long-term and multifaceted project with the involvement of diverse institutions; the advantages of its being carried out under the umbrella of TÜBA is evident. This initiative means devising, adopting end making use of innovative methods and facilities for managing, accessing, interpreting, preserving and visualization of Turkey’s rich cultural heritage. It is about turning information found in various undocumented heritage related resources into active knowledge specific to our needs, and readily accessible through new channels such as the Internet. The complete picture will be idealized as a series of system elements for culture and will be presented by inputs, outputs, transfers and transformations that all characterize of a “Cultural System of Turkey”. This will demonstrate the contribution of cultural heritage research to a new product which is entitled as “CULTUREBOOK” and information technologies (Space Remote Sensing and Geographic Information Technologies) to enhance competitiveness and sustainability for the economic development. This project aims at setting up guidelines to prepare an infrastructure and interactive, spatial database that would ensure survey and protection of Turkey’s cultural heritage and its evolution as a resource to contribute to its social and economic wealth. The working themes are,

- Cultural inventory-by using conventional and space based information technologies.
- Education system concerning cultural heritage and its management
- Modernization of the concept of museums and museology
- Restoration, reconstruction and design of cultural monuments and sites
Within the framework of the cultural inventory program, the following groups have been activated:
- Archaeological heritage
- Urban architectural heritage
- Rural architectural heritage
- Ethnography
- Oral history
- Geological heritage and geoarchaeology
- Databank as ‘CULTUREBOOK’-a spatial database for culture heritage-using information technologies (Space Remote Sensing and Geographic Information Technologies)

Turkey’s Cultural Inventory Project is mainly divided into two sections; to collect the inventory data and to develop a GIS based software-culturebook.
3. CREATION PROCESS OF THE TURKISH CULTURAL INVENTORY PROJECT

It is obvious that making an inventory of the cultural inheritance in various fields by academicians and experts only shall prevent their being damaged, and shall aid their protection. The inventory teams had to work in complete coordination. This could only be realized by preparing specific inventory cards for cultural heritage in different fields; and by applying similar methods. After long studies by academicians, sample inventory cards were prepared for each field, and methods were standardized. As a principle, it was accepted that, the teams would only use these cards and methods during the documentation of the inventory, as it was possible to transfer these efforts to the virtual medium only by documenting the cultural inheritance in a standardized system and method. So, the “Cultural Inventory Project” within the framework of TÜBA-TÜKSEK was started, to take at least ten years.

4. APPLYING CULTURAL INVENTORY PROJECT IN PILOT REGIONS

In order to be able to eliminate problems in practice, the project was implemented in the summer of 2001 in two towns: Birecik and Suriç districts in Sanlıurfa province in southeastern Anatolia and Buldan district in Denizli province in Inner Western Anatolia. Consequently, teams of expert academicians prepared inventories on archaeology, urban architecture, rural architecture, ethnobotany, ethnography, oral history, geology in Birecik-Suriç and in Buldan.

4.1 Archaeology

Although the project has been done for the purpose of documenting the cultural remains in the pilot regions, the basic target of this study was to build a system to prepare archaeological inventory of Turkey and achieve financial data about time, team, background and monetary possibilities required for such a study. So various methods such as intensive search, systematic collection, random collection have been tested in pilot regions to foresee how many fields can be explored in how much time and clarify optimum numbers and quality of the teams considering the different geographic environment. Problems such as storing the collected material, converting them to usable information archive, standardizing the visual material and transferring to digital media have tried to be solved. As a consequence, expert academicians have explored the field, and collected inventory data have been evaluated and organized according to the pre-defined inventory form system, and each inventory has been related with its visual material via gis based CULTUREBOOK software. The archaeological survey was carried out by the team from the universities. During the researches some ancient settlements and monuments were located.

4.2 Urban Architecture

In the extent of the Turkey Cultural Heritage Inventory Project, to document the urban cultural assets, two pilot regions (Buldan and Birecik-Suriç) have been chosen from the west and southeast part of Turkey to have experience on study conditions and possibilities in these different regions. Another reason for choosing one sample from different regions is, to test the inventory data form thought for urban settlements in Turkey and determine whether it covers the needs of different characters or not. Urban Inventory Group has prepared two types of form; Urban Settlement and Urban Monument Forms. Urban Settlement Form is shaped as a guide to describe the building parcel. The density of information which would be documented in Monument Form was considered and the Monument Form targeted to collect the data correctly, fast and easy for a functional database. For this purpose, titles have been divided into subtitles by choosing keywords. In this context, expert teams have documented the urban monument and settlement inventories. For each inventory, black-white and digital photos have been taken, plan sketches have been drawn and geographic locations have been determined and transferred to digital platform by using CULTUREBOOK program. Detail layers (buildings, parcels, roads, green areas, lakes...) have been digitized on 1-m resolution satellite images of both Birecik and Buldan districts.

4.3 Rural Architecture

The aim of this part of project is to establish a methodology of rural architecture inventory, which is suitable for the specific conditions of Turkey while developing this method of inventoryization by testing it on the selected area. In this context, basic approach of this rural architecture inventory is to document all the rural settlements and all rural architectural elements at all scales. The documentation work uses inventory forms developed for rural architecture which have two different versions - for settlements and buildings. In the Settlement Form, the traditional architectural characteristics of a settlement are explained in detail and the level of protection of the original characteristics is questioned. The Building Form is used for the buildings which are worth being documented in the settlement. In this context, rural settlement and building inventories have been determined by fieldworks, each inventory's geographic coordinates have been measured with gps and inventory data has been transferred to digital media via CULTUREBOOK by relating to its visual material.

4.4 Ethnography

The social texture in the zone has been constituting the cultural integrity within the vivacity created by different groups, from antiquity to the recent past. Besides the known wars in military, strategic, and historical contexts, as well as the archaeological elements as an extension of the antique cities, the multi-color, socio-cultural ethnographic values have maintained their properties in the society so far, in formation of the cultural integrity of the zone. The fact that the zone contains centers of settlement with origins dating back to unknown period has contributed to the accumulation of the ethnographic riches. In the Cultural Inventory Project, these ethnographic riches have been determined and inventoried, and visual material of each inventory has been collected and transferred to digital media.

4.5 Ethnobotany

Ethnobotany project aims to collect traditional knowledge relating to wild and agriculture plants used as food, medicinal, fodder, fuel and other uses today and in past. The pilot regions, provide a superb area for searching useful plants, not only because of its rich vegetation, provided by its geographical and climatic conditions; but also because of its people’s consciousness for the protection of their cultural identity. During the field work, with the participation of the researchers, information was gathered from informants, plant samples were collected, and collection places have been defined with gps and some on maps, photos have been taken and recipes relating to plants were documented. Among the sample plants food, medicinal, handicraft, fodder, fuel and plants with various uses were recorded. Markets provided an important fieldwork area for gathering information. The ethnobotanical study and the inventory of ethnobotanical knowledge have been carried out
and collected data was carried to digital platform through CULTUREBOOK-gis based software.

4.6 Oral History

The oral history field research primarily focused on gathering life history data for analyzing the changing economic, social and human factors in the lives of native dwellers. In the content of oral history field research, life history interviews have been gathered along with a focus group interview and multi respondent interviews. The interviews are recorded and visual documentation are made by digital camera and video tape. The interviewee group is composed of people of different gender, age and social standing. The collected inventory data have been transferred to digital media by using CULTUREBOOK program.

4.7 Geology

The aim was to explore the basic geological properties of pilot regions, to answer the geological questions of other inventory groups and to document the inventories of geological formations which are in the context of geological inheritance. Formations in the characteristics of natural monument, original and rare geological formations, geological elements in archaeology, urban and rural architecture have been inventoried under the titles of “Natural Monument”, “Geoarchaeology and Architectural Observation”. Earthquake catalogues and geological layers (alluvium, formations, micashist, gneiss, fault, aspect, slope...) of pilot regions have been formed. All these data can be reached through CULTUREBOOK program.

4. DIGITAL PLATFORM FOR CULTURE

To constitute a developed culture sector and extract the quantity and quality of culture assets completely, a GIS based software, entitled as CULTUREBOOK was developed. Collected inventory data (including visual material and geographic data) of each group (archeology, urban architecture, rural architecture, ethnobotany, ethnography, oral history and geological heritage) have been gathered through CULTUREBOOK program. CULTUREBOOK software enables users to display static and dynamic data, explore the imagery, zoom in/out of a particular area, turn layers on or off, query attributes, easy intuitive access to detailed GIS information, develop customized maps and reports based on a specific geographic query. With its book-like format, GIS information is presented on pages, users can easily flip through the pages of the book to access images, maps and supporting content. CULTUREBOOK combines cultural and GIS data with photographs, diagrams, maps and written text. Software is mainly formed of three main parts; data entry, query and analysis.

4.1 CultureBook

At the beginning, the user interface was considered as an initial subject. It should have an user friendly interface that provides multiple views at the same time. The transactions between the inventory groups should have been easy and provide a common layout for all parts. In this context, a book like interface has been developed. The book view has been designed on two sides like the pages of a book which has seven tabs like an index of a catalogue on left side, each provides travelling between cultural groups. The right side of the software page consists of four tabs offering basic utilities -data entry, query, analysis and geographic data. To enable users focusing on several subjects at the same time; a map frame, legend, map toolbar, visual material window, database function buttons are located on the right side of the query, analysis and GIS data tab pages. (Figure 1) Culturebook offers data entry, queries, analysis and reporting functions for each group of culture asset -Archaeology, Urban Architecture, Rural Architecture, Ethnobotany, Ethnography, Oral History, Geology- through its userfriendly book like design format.

4.1.1 Data Entry Page: At the data entry part of the software, there is easy to use dataentry form made up of menus and submenus specific to each group of cultural heritage. Each cultural group has its own data entry pages whose titles are determined by the expert academicians. Data entrance is performed through qualified menus and submenus formed of comboboxes, checkboxes and textboxes which are laid on the scorable pages. When latitude and longitude gps values of inventory are entered, software automatically forms the point feature of related culture layer considering the projection and locates on the 3-d relief base map and on the satellite image. Each inventory can be related with its visual material considering the types– b/w, digital or coloured photos, plan drawings, slides through an “add photo” button on data entry page. Through “add/edit photo” window, user can browse for the visual material, add or remove it and relate with a photo explanation. There is a navigation system on data entry page which enable users to flip through the inventory form records and visual material of each inventory. Not only new data entrance can be performed but also users can update the existing records as well as point feature via navigation system.

4.1.2 Query Page: In the query part of the software, all of the querying menus that enable users to define query criterions are on the left side of the page. By scrolling down or up the page, user can easily make choices and carry out a query. There is an “inventory list box” showing a list of inventories matching query criterions, filled interactively by the user input. When an inventory number is selected through this box, whole inventory information and photos appear in the fields while related point feature is flashing on the map with a constant zoom extent. Information belongs to an inventory can be easily reported by highlighting an inventory number listed and then pressing the “report” button. Report layout consists of row by row text data, customizable map and picture frames on landscape A4 page by default. Report page can be customized by selecting desired field titles, changing text colors, main title and deciding whether map or picture(s) will exist or not. All visual material of the inventory can be shown by categories (b/w, digital or coloured photos, plan drawings, slides) in a picture frame and can be viewed on larger window with its photo explanation as a tip when the mouse comes over it. There is a “map window” which has very strong map properties: Via tools on the toolbar; users can explore the imagery, zoom in and out of a particular area, pan and identify features (access detailed gis information), can measure between locations on the map, can develop customized maps and export map to different file format and print the layout. This window includes a scalebar indicating the map scale, a label pointing the x-y coordinates as the mouse moves on the map and a small overview window showing current extent on overall map. The spatial queries can also be made such as when an inventory point feature is selected on the map, the form fields are filled with the related inventory data and pictures are shown. With “legend window”, geographic layers can be turned on or off,
and symbol colors of each layer can be changed. The framework layers used in this project are categorized as following:

**Inventory** (archaeology, rural building, rural settlement, urban monument, urban settlement, ethnobotany, oral history, geology-natural monument, geology-archeogeology and architectural observation, geology-earthquake)

**Urban information system** (buildings, parcels, roads, rivers, green areas are all digitized by using the cities’ 1-m resolution Ikonos satellite imagery)

**Geological layers** (alluvium, formations (Tosunlar, Kolonkaya, Sazak, Kizilburun), micashist, gneiss, fault, slope, aspect)

**Turkey specific layers** (villages, districts, provinces, major roads, hills, lakes, 1/25000 sheets, 1/100000 sheets, 3-d relief)

**Satellite images** (Buldan and Birecik districts)

**4.1.3 Analysis Page:** The aim of the preparation of analysis page is to query the inventories spatially and to prepare a guide to determine the disturbed cultural heritage in the situation of natural disaster, to forecast affected inventories in the case of some projects like constructing energy dams, thematic powerhouses, road construction … etc. and to interfere the project at the beginning phase if required for preserving the cultural heritage. The determination of inventories in a bounding area is provided by three different kinds of analysis:

**Buffer analysis:** aims to draw a circular area whose radius and xy coordinates of central point are input by the user. Thereby inventories in the drawn area can be highlighted with the selection color on the map and listed in a listbox.

**Drawing a polygonal area manually:** selection of inventory points on the map by drawing a polygonal area is possible. Then the selected inventory numbers are listed in the box.

**Listing according to the sheets:** there are lists of 1/100.000 and 1/25.000 sheet numbers of Turkey. When a 1/100.000 sheet number is highlighted, both 1/25.000 sheets and inventories that are included in are listed and selected on the map. It works similar in the situation of highlighting the 1/25.000 sheet no. The database(s) of the inventory(ies) in the listbox can be reached through a database button and data functions can be performed.

**Spatial cross query:** the map view of each query, carried out in different cultural sections (Archaeology, Urban Architecture, Rural Architecture, Ethnobotany, Ethnography, Oral History, Geology), can be seen totally in analysis page on map window. This provides a way of obtaining multi-sectional inventory information. The queried inventories belonging to different cultural layers can be displayed all together and collected on a common platform.

**5. CONCLUSIONS**

The purpose of the Turkish Cultural Sector is to document Turkey’s diverse tangible and intangible cultural inheritance their ecological environment; and to assess our universal cultural heritage in such a way as to contribute to the social and economic development. In order for cultural heritage to be properly assessed, protected and transferred to future generations, it was first necessary to prepare a full list, or inventory of all cultural heritage. Furthermore, in order to be able to offer new solutions for the accumulated problems
concerning cultural inheritance, the decision to modernize education, museum studies, restoration, relevant regulations and the administrative organization; to do the necessary preparations for implementing databases in the virtual medium; and to prepare reports on these subjects was taken. The results will encourage Turkish institutions and organizations of cultural and scientific content, and research communities to form collaborative partnerships aimed at strategic goals. The project brings together a wide range of actors from the research groups, the public and the private sectors, including libraries, museums and galleries, archives, public bodies, educational institutions (schools, universities) and research centers which are responsible for the management of cultural inventory in Turkey. Finally, the approach will increase information value in a spatial database for cultural heritage and the level of technology used in the research and academic institutions. The anticipated result after all is making cultural heritage available at the click of mouse for everyone.

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