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**Design Research of a Digital Database
for Historic Buildings in Baku**

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1. ABSTRACT

The Walled City (*Icheri Sheher*) of Baku, Azerbaijan, with the Ensemble of the Shirvanshah's Palace and the Maiden Tower (*Giz Galasy*), which has been included on the List of World Heritage in Danger since 2003. The post-Soviet Baku suffers from the consequence of the previous Soviet Urban Plan and the urban expansion from the latest oil boom. Recently, UNESCO World Heritage Centre launched a pilot study model before the full-scale inventory project to design and test a digital database for the inventory of historic buildings in *Icheri Sheher* and to conduct survey fieldwork for developing a monitoring tool. The paper concludes that a viable digital model of database needs to reflect the collective memory of the sites, coincide with social function of local neighborhood, and prioritize layers of information for common use.

2. INTRODUCTION

Icheri Sheher – the walled inner city of Baku, Azerbaijan – represents a small sample of the roughly 500 structures cataloged during a UNESCO inventory project conducted in 2006 and 2007 by UoM and AzUAC. The walled area includes landmarks such as the Maiden Tower and the Palace of the Shirvanshahs, as well as more modest structures, and offers a rich and diverse cultural landscape reflecting a wide range of historical and cultural influences.

The history of Baku can be traced to the Paleolithic era, when the site was first inhabited. In the Middle Ages the city thrived as a center of commerce, due to its location at the crossroads of the Silk Road trade routes as well as its status as a port on the Caspian Sea. Baku attracted merchants from as far away as India, and absorbed a wide range of cultural influences. Its status increased in the fifteenth century, when Baku became the capital of Shirvan state (modern Azerbaijan). In the sixteenth century the city was absorbed into the Safavid Empire and, after that, the Russian Empire. Baku gained worldwide importance with the increased demand for oil in the late nineteenth century, ushering in a period of expansive growth. The twentieth century brought continued growth and modernization as Baku became a major urban center of the Soviet Union and later, in 1991, the capital of an independent Azerbaijan. Into the twenty-first century the historic urban landscape of *Icheri Sheher* continues to retain a high degree of historic and architectural integrity, a fact recognized in 2000 with its inclusion on UNESCO's World Heritage List. However, an earthquake in November 2000, as well as continued urban development pressures, led to its placement on the list of World Heritage in Danger in 2003.

This change of status highlighted the need for a complete and up-to-date inventory of the historic buildings of *Icheri Sheher* to aid in their conservation, as well as for the preparation of a comprehensive management plan. Baku has had an inventory system based on the “card catalogue” system within which each historic building is catalogued by its address and its historic hierarchy and the language of description is Russian rather than Azeri. Within this old system, historic significance is often defined by locations and chronology. The challenge for designing a digital system for inventory is more than just converting the “card catalogue” system of information digitally. A digital system needs to be capable of documenting and presenting the inventory of heritage buildings according to the collective sense of places and memory, categories of attributes, and multiple languages. Especially, Baku has been a metropolis for many linguistic practices.

A preliminary UNESCO mission in September 2005 laid the groundwork for a pilot study and inventory project conducted from May 17 to June 12, 2006 to develop an electronic database and providing archival information on historic buildings. The pilot study was intended to develop an appropriate survey form for historic buildings in *Icheri Sheher*, design and test a digital database for use in the inventory, and to conduct the initial phase of survey fieldwork. Workshops were also organized to involve all stakeholders in the inventory process.

3. PILOT PROJECT FOR TESTING

The paradigm shift from the “card-catalogue” system to the digital database of inventory of historic sites demands significant changes in the conceptual frameworks of registration and application of historical data. The information of historic building sites is conventionally organized in the card-catalogue system following the knowledge model of “tree” pattern, whereas the digital database operates on the “matrix” pattern. Both models of knowledge illuminate different understanding of operations and meanings of historical information of sites. The differences between these two models of knowledge certainly call for a new digital database model that is capable of incorporating the collective memory of historic sites and conventional use of information, which are inherent in the card-catalogue system.

The epistemological issues of designing a digital database for the pilot study and its fieldwork and studio work of survey. These issues include 1) design the survey methodology for a testing model of a digital database, 2) define basic levels of information needed in the digital database for heritage classifications based on the card-catalogue system, 3) designate “zones” in the survey sequence and coordinate survey information and activities among fieldwork and studio-work groups, 4) Define the fields of database inputs and digital graphics for the studio work, 5) conduct fieldwork to test the model of digital database on site, and 6) review the final inputs and revise the testing model

In addition to detailed documentation of buildings and their condition, the inventory system needed to provide access to information about the heritage sites for use in research by practi-

Figure 1

Comparison between
Analogue and Digital Systems
for Inventory

ANALOGUE model of knowledge	DIGITAL model of knowledge
HERITAGE as Sites + Record Catalogue of card records Linear, tree-pattern hierarchy Address as the entry of records Single consistent language Chronicle history Limited accesses for elites	HERITAGE as Places + Memory Category of digital database Multi connections, networks Category of attributes Multiple linguistic practices Collective memory Easy uses for the public

Qeydiyyat nömrəsi\ Register Number		Qeydiyyat parolu \ Register Keyword		Tarix\ Date			
Binanın adı\ Building Name							
Ümumi yerləşmə\ General Location							
Ünvan Address							
Kateqoriya\ Heritage Classification	Yaşayış\ World	Kommersiya\ National	Təhsil \ Local	Dini\ Contextual	Başqa\ Others	Məlumat yox\ No Data	
Kateqoriya\ Category	Yaşayış\ Residential	Kommersiya\ Commercial	Təhsil \ Institutional	Dini\ Religious	Hökümət\ Governmental	Başqa\ Others	Məlumat yox\ No Data
Ümumi adı\ Common Name							
Əsl funksiyası\ Original Function			Cari funksiyası\ Current Use				
Tikilmə yaşı\ Date of Construction			Sakinlər\ Occupied	Yaşanır\ Occupied	yaşanmır\ Not Occupied	Məlumat yox\ No Data	Başqa\ Others
Sakinlərin sayı\ No. of Residents	Yox \ None	1 to 4	5 to 9	10 to 20	more than 21	Məlumat yox\ No Data	

Figure 2

Survey Form for Building General Data

tioners in the fields of Architecture, Urban Design, and Historic Preservation. To ensure widespread and long-term accessibility, the design and testing of a digital database was a main focus of the pilot study. Empirical testing of the prototype database would result in an improved model for registering all of the historic buildings in *Icheri Sheher*. Therefore, everything from the geographical organization of the survey process to the survey forms was examined and adjusted. For example, in previous inventories, streets typically were used to determine the survey sequence and numbering system to best reflect the collective memory of places. However, while street

numbers may be convenient for compiling survey data, they do not always mirror deeper social and communal patterns. In particular, many courtyard houses – a representative building type found in *Icheri Sheher* – are better studied and conserved as a sequence of buildings within a block or quarter rather than a series of street facades. Therefore a series of survey zones were defined for the project.

For the inventory of individual buildings, the team developed four survey forms for data collection. These included general building information; evaluation of authenticity; photographs; and measured drawings. The design of the survey forms and digital database also established standardized formats for drawings and images. All photos were to be submitted as high-resolution digital files, and drawings were to be preserved as both CAD and image files. The CAD documents included transformed archival drawings as well as newly measured drawings of historic buildings. All survey materials were bi-lingual to accommodate the international work team.

There were ninety-five buildings along the survey route representing a variety of types and conditions to give an approximation of the conditions found in the walled city as a whole. As the survey proceeded the database was tested, evaluated and revised to best reflect conditions on the ground. The entire process was coordinated with the Department of Heritage and local organizations within *Icheri Sheher*.

The pilot project also entails the following tasks in process: Provide training sessions on the inventory process to the students of UoM and AzUAC; Design the survey methodology for the inventory of historic buildings and develop a testing model of a digital database; Define levels of information needed in the digital database for heritage classifications; Translate all survey materials, instructions and survey forms into Azeri; Lead the fieldwork and constantly revise the model of digital database on site; Designate “zones” in the survey sequence and coordinate survey information and activities among fieldwork and studio-work groups; Define the fields of database inputs and digital graphics for the studio work; Discuss the survey fieldwork with local organizations of *Icheri Sheher* and hold a workshop with AzUAC for the stakeholders; Exhibit and present to the public the survey results, review the database and archival information; Transfer the revised digital database to AzUAC. Following the pilot study, AzUAC students, in consultation with the Department of Heritage, continued the project using the survey system and database, which had been developed.

4. CONCLUSION

To address the collective memory of places in a database system needs to design the inventory process be responsive to the changing ideals of neighborhoods and their inherent values in buildings. After completion of the inventory fieldwork in late fall 2006, the State Department of the Historical-Architectural Reserve *Icheri Sheher* (SDHARIS) has moved to halt new construction in the area; an international team appointed by the World Bank has prepared an Integrated Area Management Plan for the site; and initial steps have been taken to develop an Urban

Conservation Master Plan, to be integrated with the Master Plan for the City of Baku. A number of buildings whose condition has been identified as critical are being considered for renovation. However, several issues remain to be resolved, including the status of the buffer zone, which includes a large number of architecturally and historically important buildings dating from the late nineteenth and early twentieth centuries, and the development of design guidelines for new construction. Pending compliance with a number of World Heritage Committee decisions, *Icheri Sheher* today remains on the List of World Heritage in Danger.

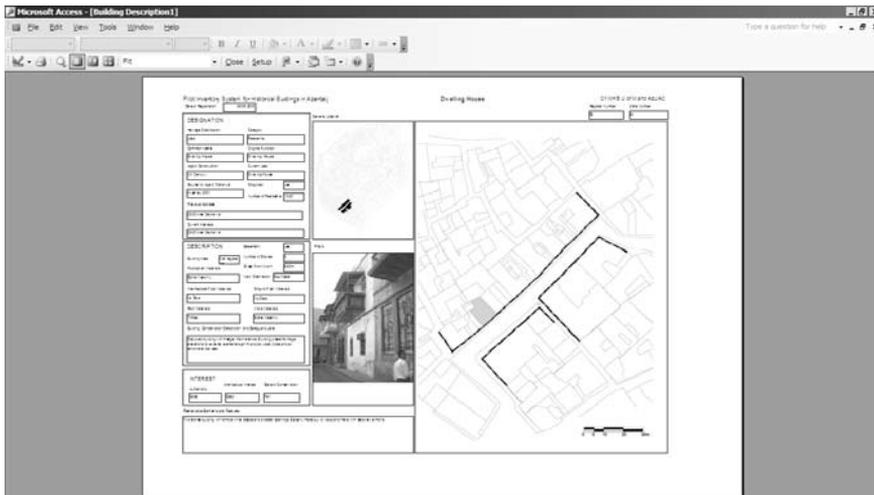


Figure 3
Report Screen for Print

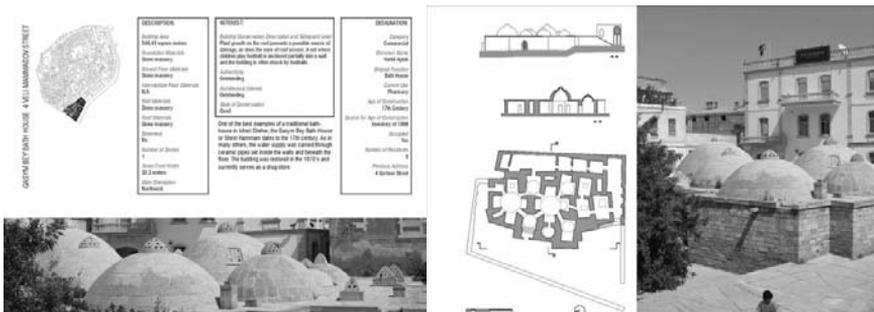


Figure 4
A Traditional Bath House Documented