Sustainable Development and Historical Preservation of Adobe Buildings

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SUMMARY
This paper is an attempt to discuss the methods and tools of quantifying historical preservation benefits using non-market valuation methods. Talking about direct and indirect methods of valuation, the environmental, economic, and social components of sustainable development are discussed based on western and local data. The heritage is categorized for better and targeted valuation. The range of possible valuation methods for each category is considered and concluded that market valuation methods may be applicable for heritage assets that are not included in the National Heritage List. In addition, the necessity of development of financial and tax intensives is raised for provision of viable economic future and for better preservation and restoration of historic sites. Concluding the author states that development without historic preservation component is not sustainable.

The economics of preservation is a new field compared with other economics fields and disciplines. The main question that the field raise is: Does preservation pay? Due to complexity of the issue the answers are not simple. Furthermore, there are not sufficient studies in the field. As Randal Mason states in his studies “There is a relative lack of academic research on the economics of preservation (as compared with other economic sectors, or as compared to the literature on preservation’s cultural aspects generated from within the field itself). This is due to two factors, respectively: on the first point, cultural topics in general are seen as relatively unimportant, less serious, and less desirable subjects of economic research (there are many incentives for economists to work on traditional, market-centered topics); on the second point, preservation being a field, not a discipline, there is no established academic infrastructure and base of research institutions to support sustained research on the topic (or many other preservation topics) over time1.”

Economics of preservation of buildings made of sun-dried earth bricks (adobe) is a segment even less studied, though earthen architecture conservation as a discipline is getting more acceptance and popularity during the last decades as an indispensible part of heritage. Interest to earthen architecture was awaked by environmental movement, as the earth buildings were recognized as an almost zero carbon emission constructions. The earthen constructions over the entire life cycle: starting from raw material to brick production, design, construction, execution, maintenance, demolition and disposal is environmentally sustainable cycle.

The concept of sustainable development is perfectly applicable to the heritage preservation issue in general and preservation of earthen architecture heritage in particular. We can state with confidence that historic preservation is an important and integral part of sustainable development1. Moreover, there is no sustainable development without historic preservation. From the point of view of cultural heritage Brundtland’s famous definition can be paraphrased as - Sustainable development is a kind of development that meets cultural needs of the present without compromising the ability of future generations to meet their own cultural needs. In the framework of sustainable development that includes environmental, economic and social components, the cultural

1“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” from the World Commission on Environment and Development’s (the Brundtland Commission) report Our Common Future (Oxford: Oxford University Press, 1987).
component is missing. I have taken the freedom of adding cultural responsibility as a new component and expanding it into environmental, economic, social and cultural responsibility.

All definitions of sustainable development require that we see the world as a system that connects space; and a system that connects time. Architecture and historic preservation is about connecting the space and time. Architects design the space of tomorrow with the tools of today, connecting time and space. Thus we have to recognize the interrelationship and the interdependency between sustainable development and heritage conservation.

The advocates of sustainable development perceive environmental responsibility dominant to other categories, thus mixing with the idea of green architecture and preservation. Historical preservation is much more then green building or green architecture: it’s about national identity, understanding who we are individually and collectively, it’s about individual and collective sense of place and time, it’s about connection to the generations past, that locate us on this planet, it’s about lifestyle and values, it’s about culture. We all know this axiomatically, without looking for proof and we also know that historic preservation is much more.

Coming to green architecture we see that our lifestyle and values have changed dramatically during the last two hundred years, or as accepted to say during the industrialization area, and now the building sector consumes almost half of the energy produced on the earth in general and more the 70 percent of produced electric energy. This makes us to rethink and revise our attitude and value the sustainable and affordable earthen architecture buildings, preserve them for cultural diversity.

Why our heritage in Armenia is mostly uncared and misused? How can a country sustainably develop without historical preservation?

Due to my background I tend to look for the answers in economics. I see that historic preservation and economics are in conflict. The benefits of historic preservation seemed to be less than costs, as the costs for preservation have monetary expression, while benefits do not. We tend to use words for describing the benefits and numbers for describing the costs. This is an attempt to discuss the methods and tools of quantifying what historical buildings and landscapes mean to us. Engagement in some degree of quantitative front will advance in matching up benefits of historic preservation to the costs.

The economists have several mechanisms for valuation of above mentioned intangibles. The tools of the non-market valuation methods applicable to the similar issues are: contingent valuation method, travel cost method, Hedonic price method, property cost method, etc. We have studied the applications of the above mentioned methods on a Getazat village Cultural Center preservation/renovation project. The Cultural Center in Getazatis an adobe building (700 sq. meters, territory 0.43 hectares) built in 1937 and served as a community social and cultural hub starting from1937 up to 90s. As a state owned building it was included in the rehabilitation and renovation list of the Armenian Territorial Development Fund in 2015. The historical value of this adobe building is officially recognized and it is also included in the historical preservation list. Our application of the above mentioned intangible valuation methods for the Cultural Center (CC) are presented in short description below:

**Contingent valuation method** (CVM) is used to estimate economic values for historic places and constructions. It can be used to estimate both use and non-use values, and it is
the most widely used method for estimating existence values. This method reveals the value that a person is willing to pay for preserving historic place or monument. As the Getazat CC is not widely recognized we created a hypothetical marketplace through well designed surveys for the inhabitants of Getazat and the analysis reveals that the community is ready to pay only 10 percent of the rehabilitation project.

**Travel cost method** (TCM) is used to apply a value to a historic site that has no value or is priceless. This method assumes collecting data on willingness to pay for the traveling or the actual costs incurred by each individual in travelling to the historic site or monument. By summing the travel costs from each individuals participating in the survey a demand curve can be estimated, and as such a price obtained. The value for the site is estimated by multiplying total number of visitors \((N_1)\) per annum by the average \((P_1)\) travel costs. The formula for calculation is:

\[
N = (\text{T} \times w) + (D \times v) + Ca) \times Nv
\]

Where,

- **T** - travel time (in hours)
- **w** - average wage rate ($/hour)
- **D** - distance (in km)
- **v** - marginal vehicle operating costs
- **Ca** - cost of Admission to asset
- **Nv** - average number of visits per year

In this case the virtual visits are not included in the calculations. As an example the Metropolitan Museum of Art calculated that while the museum draws six million visitors in a year, its website attracts 29 million users and its Facebook page reaches 92 million.

The travel cost method is not applicable for the CC of Getazat, as it is out of touristic interest and may be applicable for only a small group of former inhabitants of Getazat that have emotional connections to the CC and a couple of scientists studying earth architectural heritage.

**Hedonic price method**: This method is used to estimate economic values for historic site or monument that directly affect market prices of the immovable. The formula for the hedonic price method is:
\[ P = f(s_1, s_2, s_3, \ldots, s_i; n_1, n_2, n_3, \ldots, n_j; e_1, e_2, e_3, \ldots, e_j) \]

Where:
- \( s_1, s_2, s_3 \) are the structural variables of the house;
- \( n_1, n_2, n_3 \) are the neighborhood to Historical areas variables,
- \( e_1, e_2, e_3 \) are environmental variables.

Through regression analysis, it is most commonly applied to variations in housing prices that reflect the value of local historic site. The studies on hedonic pricing method revealed that historic resources are economic engines for neighborhood. The CC of Getazat has no actual influence of the real estate prices in Getazat.

All these methods have some degree of precision and the accuracy of the valuation methods may vary from the level of recognition of the building as a cultural heritage, cultural significance, and population density in the area, biases common for survey-based valuation technique and many other variables. Even if we hesitate in precision of the valuation methods we have to apply them for better comparison, understanding and for quantitative balancing the core historic preservation benefits and costs.

Leaving alone the specifics of non-market valuation methods, I'll propose discussing the indirect benefits of historical preservation. What are the benefits of historic preservation from the point of view of sustainable development?

**Environmental Benefits:** We start from material flow and solid waste disposal. Donovan Rypkema in his studies on solid waste disposal states that “In the United States, almost one ton of solid waste per person is collected annually. Solid waste disposal is increasingly expensive both in dollars and in environmental impacts. You know we all diligently recycle our Coke cans. It’s a pain in the neck, but we do it because it’s good for the environment. Here is a typical building in a North American downtown – 25 feet wide and 100 or 120 or 140 feet deep. Let’s say that today we tear down one small building like this in your neighborhood. We have now wiped out the entire environmental benefit from the last 1,344,000 aluminum cans that were recycled. We’ve not only wasted an historic building, we’ve wasted months of diligent recycling by the good people of our community.” Consequently preserving historical buildings we produce less waste and avoid generating waste that will be assimilated in hundred years. When historic buildings and sites are torn down, a part of our past disappears forever and this costs to us. From the material and energy flow point, preserving historical buildings we consume less construction materials and accordingly we consume less energy that is embodied in the construction materials. Furthermore during preservation and restoration works mostly natural construction materials are used compared to the construction of new buildings. Consequently during restoration green construction is preferred.

**Economic and social benefits:** Economic impact is often expressed in statistics relating to several different aspects of historic preservation, such as rehabilitation work on buildings, heritage tourism, production of housing. Historic preservation benefits economy because it increases demand for labor, encourage private investments in an area by public commitment to an area. Recent studies conducted by Rutgers University have found that historic preservation has significant impact on short term jobs creation in construction related fields. Rutgers University’s study suggests, “Historic rehabilitation is more economically potent then new construction of roads or buildings”. For example for every $1 million spent on non-residential historic rehabilitation 38.3 jobs are created, $1,302,000 is
created in income, $1,711,000 in GDP, and $202,000 in taxes. In contrast, $1 million in non-residential new construction creates 36.1 jobs, $1,223,000 in income, $1,600,000 in GDP, and $189,000 in taxes. They have estimated that close to 2,316 jobs are created annually in New Jersey as a result of historic preservation.

Economic Impacts per Million Dollars of Initial Expenditure

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<thead>
<tr>
<th>Economic Effect (National)</th>
<th>Residential Historic Rehabilitation</th>
<th>Book Publishing</th>
<th>Pharmaceutical Production</th>
<th>Electronic Component Production</th>
</tr>
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<tbody>
<tr>
<td>Employment (jobs)</td>
<td>36</td>
<td>35</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>Income ($000)</td>
<td>1,240</td>
<td>1,160</td>
<td>1,045</td>
<td>1,018</td>
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<tr>
<td>GDP</td>
<td>1,672</td>
<td>1,722</td>
<td>1,546</td>
<td>1,483</td>
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<tr>
<td>State taxes ($000)</td>
<td>106</td>
<td>103</td>
<td>93</td>
<td>87</td>
</tr>
<tr>
<td>Local taxes ($000)</td>
<td>89</td>
<td>86</td>
<td>79</td>
<td>74</td>
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Source: Listokin and Lahr 1998

Most importantly, historic preservation can create major developments in the country’s tourist sector and all related industries. Tourism is one of the fastest growing segments of the world’s economy in the 21st Century. In Rutgers University studies, we see that heritage tourists in the USA are the growing largest group of tourists with the most money to spend. Heritage tourists tend to be older, likely have a post-graduate degree, take longer trips, spend more money, and participate in more activities. These aging baby boomers and senior citizens spend an average of $688 per trip compared to the average $428 of other travelers. Rutgers University found that $81 million in income taxes have been generated; $15 million in state and local taxes, $116 million in GDP, and $432 million have been pumped into the New Jersey economy from annual heritage tourists.

For Armenia, tourism is identified as an important component of an overall economic development strategy. According to the Ministry of Economy analysis, the tourism industry is one of the intensive growing industries of the country. Heritage tourism in Armenia has competitive advantage to other touristic categories. The identification and protection of the historic resources will be vital for a successful tourism effort.

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<th>2015</th>
<th>2014</th>
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<td>State budget for heritage preservation and rehabilitation (000 AMD)</td>
<td>473,133.9</td>
<td>399,353.6</td>
</tr>
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</table>

Source: State Budget Law for 2014 and 2015

In USAID Tourism Development Concept paper is mentioned that tourism resources diversity and quality in Armenia is high “historical monuments represent several distinctive cultures: Urartu, Hellenic, Christian, Muslim, Soviet, offering an outstanding richness. The majority of the most famous monuments is rather well-preserved and/or reasonably well-restored. Three of cultural-historical and nature monuments are among global cultural...
treasures (UNESCO): Haghpat, Sanahin, Geghardavank and the valley of Azat river, Etchmiadzin together with its Zvartnots temple. In the same paper is mentioned that “Currently Armenia does not stand out amongst the world’s tourism destinations despite its rich historical cultural and natural tourism resources. Only a small proportion of the global population have heard of Armenia, know where it is located or have an image of what the country has to offer. Armenia needs to position itself carefully in the global market as a tourism destination.”

All the above mentioned tools are necessary for economic valuation of the historic preservation, but they are not sufficient. Financial intensives and tax intensives have to be created and applied for better preservation and restoration of historic heritage. For the preserved historic building viable economic future have to be developed. “For the 21st Century only the foolish community will make the choice between historic preservation and economic development. The wise community will effectively utilize its historic built environment to meet the economic, social and cultural needs of its citizens well into the future.”

“Development without historic preservation component is not sustainable. Historic buildings are our greatest assets, but also our greatest challenges. The microeconomic valuation methods are important tools for stressing and measuring the benefits of cultural heritage conservation for the policy makers.

Illustrations
Bibliography

3. Donovan D. Rypkema, Historic Districts Council Annual Conference in New York City, on March 10, 2007, "Sustainability, Smart Growth and Historic Preservation",
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Biography

Marine Ghazaryan enjoyed six years of teaching Environmental Economics at Armenian State University of Economics, she has participated in several heritage preservation projects of Armenian Apostolic Church, and currently she is holding an administrative position at National University of Architecture And Construction of Armenia.

Artavazd Nazaretyan is architect and author of several preservation, rehabilitation and renovation projects of cultural heritages. Mr. Nazaretyan developed projects for preservation and usage of earthen architect monuments at Mother See of Holy Etchmiadzin, Armenia.