Heritage Buildings Conservation in the Light of Sustainable Built Environment: A Case Study of Few Selected Projects in Samarkand City

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Abstract. Samarkand, mostly known as crossroads of Cultures City has a remarkable history, Heritage buildings (HBs) with sites attracting tourists. Such HBs have undergone conservation and restoration processes due to centuries of neglect. The conservation status of a building and its durability over time relates to the components that make up the building. This paper examines the applicability of various conservation processes, approaches and or strategies employed in some selected HBs of Samarkand City in conformity with Sustainable Built Environment. The research was basically centered on reviewed sources and materials ranging from academic journals, conference proceedings, textbooks, newspapers, photo and historical archives of conservation projects with more emphasis on Samarkand heritages. These highlights the way to understanding conservation processes, approaches and or strategies known as 10Rs employed in the selected HBs of Samarkand City. The Conservation improves the sense of magnificence, attractiveness, beautification and the awesomeness of the historical and HBs of Samarkand city in Uzbekistan.

1. Introduction
The conservation of urban Heritage buildings (HBs) or ensembles or Sites extends beyond the consideration of individual HBS and structures but instead focuses on clusters of other residential or commercial buildings, streets or entire districts. An urban HBS is characterized by ‘an overall architectural quality or historical association often denotes a significant historical and social relationship to the rest of the town’ [1]. The conservation of HBS structures is a critical component of urban and modernization planning as rapid urbanization and other pressures may threaten the preservation of cultural histories [2], [3]. Because such HBS structures can influence values for residential properties and local economic development [4], [5]. However, it is imperative that those heritage structures, buildings and or ensembles not be identified and managed ‘as separate entities within a larger whole’ [6]. Instead, they must be managed through an integrated, structured planning-led strategic approach that considers interrelated physical and spatial development with social and political dimensions [7], [8]. Samarkand is a great historical city and the capital of Samarqand Region; also the second-largest
city in Uzbekistan. Historically, the city was ruled by a succession of Empires from the Iranian/Persian, Turkish, to the Mongols under Genghis Khan conquered Samarkand in the year 1220 [9]. This was due to the location and the trade routes through the city in the ancient era from silk trade to other kinds of trades and socialization from East to Middle East and West. The city was noted for being an Islamic knowledge Centre for scholarly study. In the 14th century, it became the capital of the empire of Tamerlane, also known as Timur. The city has rich traditions of ancient crafts: gold embroidery, embroidery, silk weaving, ceramics, engraving on copper, carving and painting on wood, that is carefully preserved [10].

Today, Samarkand is a tourist attraction city due to its world-known remarkable history, HBs and sites acknowledged by UNESCO, thereby confirming its known status as Crossroads of Cultures City. Such remarkable Heritage sites are many among which are the Registan square, The Gul-Emir, The Grand Bibi Khanum mosque and the Shahi-Zinda necropolis. Registan square, which is arguably the most spectacular architectural ensemble and masterpiece in central Asia, consisting of three huge turquoise-domed former school/madrasas flanking a large central square built between 1417-1659. The Bibi Khanum mosque partially ruined but probably intended by its builder Tamerlane to be the central feature of his Samarkand-based empire. The Gur-Emir, where the Tamer-lane’s tombstone is located, and the world’s largest slab of jade. The Shahi-Zinda necropolis, which is of great interest to the Muslims pilgrims, it also includes the probable 7th-century tomb of Qasim ibn Abbas (R.A.), a known cousin of the Prophet Muhammed (SAW).

Unfortunately, since the end of 17th century, Samarkand has suffered a long period of decline. The city lost its status of capital, which transferred to Bukhara. The city was significantly affected as the Great Silk Road bypassed it and its great historical monuments stood empty, deteriorate, and forgotten [11]. The city lost its vigour, relevance and pride until few decades after the Second World War when some conservation and restoration works began in the city’s heritage.

The conservation status of a building and its durability over time is related to the components that make up the building and are sensitive to events that generate one or various consequences and vulnerabilities[12]. As such, all endeavours and efforts towards managing knowledge within the field of architectural heritage conservation for HBs should necessarily consider complexity and specificity of conservation activities [13]. These indicate that every heritage intervention is developed and carried out on the knowledge of the fabric of the building to achieve full comprehension through an effective investigation process by examination of the building, and its critical appraisal.

Altogether, they are very demanding and challenging especially taking into consideration the adjoining buildings and the overall harmony sustainability of the built environment. Embaby [14] stated that Protecting built heritage and conserving the cultural values and local traditions of communities for coming/future generations present real challenges for architects, developers, and other stakeholders as conservation projects have vulnerabilities and risks which must be analysed in different ways [15]. This will require various conservation strategies that are pragmatic, doable and effective. Hence, this paper examines the applicability of various conservation approaches and or strategies employed in selected HBS of Samarkand City in conformity of Sustainable Built Environment. The research was basically centered on reviewed sources and materials ranging from academic journals, conference proceedings, textbooks, newspapers, photo and historical archives of conservation projects with more emphasis on Samarkand heritages. These paved the way to understanding conservation processes, approaches and or strategies employed in the selected HBS of Samarkand City.

2. Heritage Building Conservation Projects in Samarkand Built Environment
The growth and development of the architectural conservation movement took place at a time of scientific advancement with significant archaeological discovery. The scholars of the era began to see various examples of architecture as either being “correct” or “incorrect” [16]. Two schools of thought began to emerge within the field of building conservation because of that. The first architectural school of thought refer to conservation as encouraged measures that would protect and maintain buildings in their current state or would prevent further damage and deterioration to them. This school of thought
saw the original design of old buildings as correct in and of themselves. 19th-century art critic John Ruskin and artist William Morris championed these thoughts. Whereas other conservationists like Eugène Viollet-le-Duc believed, historic buildings could be improved, and sometimes even completed, using current day materials, design, and techniques. In this way, it is very similar to the Modernist architectural theory, except it does not advocate the destruction of ancient structures [17] [18]. This study looked at the in-depth conservation processes and strategies.

The different historic phases of Samarkand’s development from Afrosiab to the Timurid city and then to the 19th-century development have taken place alongside rather than on top of each other. Nevertheless, it still contains a substantial urban fabric of traditional Islamic housing quarters, with some fine examples of traditional houses. Notwithstanding, there are several factors that can render the integrity of the property vulnerable that require sustained management and conservation actions [19]. However, from the late 1960s to 1970s, up to the founding of the Republic of Uzbekistan in 1991, major conservation works were carried out in Samarkand city’s heritages especially the care of his places of worship; through the efforts of the Scientific Board on Protection and Utilization of Monuments in Samarkand and the State Samarkand Historical Architectural Reserve. Most often with intervention and funding from UNESCO [11]. The figures 1 and 2 below show some damages and dilapidated parts of the structures within the some selected HBS and the conservation works carried out.

Figure 1. Decline of Samarkand Heritages prior to conservation in the 20th century. (From top: Gul-emir, Registan square, Shah-i-Zinda and Bibi-Khanymn mosque)
Sources: [20], [21]
3. **Conservations Processes, Approaches and Strategies in Samarkand Built Environment**

Architectural conservation encompasses all the process for prolonging the historical integrity of humanity’s built heritage through carefully planned efforts, interventions and or preservations. The professional known as the Conservation Architect, brings other built environment professionals into the Heritage conservation works. Most Architectural conservation works involves 10Rs Conservation Processes, Approaches and Strategies listed and shown in the Figure 3 below:

![Figure 3. 10Rs Conservation Model for HBs. Source: Author, 2019](image)

- **Remodelling** is changing or altering the structure, style, or form of heritages by improving the damaged, or outdated structure that was broken. Historically, remodelling is cheaper than new or fresh building from the scratch.
- **Redesign** means to revise the form of appearance, function, and or content. Redesigning consider the socio-political and economic dimensions of both the design object and design process from aesthetic and functional views.
- **Restoration** is bringing back to a former condition and or position. It incorporates all the process attempts to return cultural heritage to some previous state that the restorer imagines were the “original”.
- **Renovation** encompasses all the processes of improving a outdated structure that was broken or damaged. Additionally, renovation can refer to bringing something back to life or making something new and can apply in social contexts. This, is mostly applied to Heritages in order to prolong the life span of the structural elements that comprises the Heritage.
- **Rehabilitation** “emphasizes the retention and repair of historic materials, but more
latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. Both Preservation and Rehabilitation processes focus attention on the extending the life span of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character [28]. Rehabilitation might involve repair or replacement of original building details or the introduction of new elements that are not original but with careful selection and planning, it can relate properly to the original components of the building and the surrounding neighbourhood. Reconstruction / Rebuild means returning a damaged or collapsed building to a known earlier state by the introduction of new and modern materials [29].

Re-creation is the process of Giving new life or energy to Old buildings especially, Historical building that is ruined by lack of maintenance or natural disasters. It involves the retention of materials from the most significant time in a HB’s history while permitting the removal of materials from other periods that may have deteriorated. The purpose of which is to re-create the old structure. Re-facing involved all processes used to renew, restore, or repair the face or surface of buildings especially, Historical building that is ruined by lack of maintenance or natural and climatic conditions [30]. Refacing is a faster and easier way to breathe some new life into a heritage building which will add to its beautification and awesomeness. Rejuvenation of a building or heritage refers to strategies that involve or giving new vitality and freshness by restoring the appearance to the original and actual condition. It is also the phenomenon of vitality and freshness being restored in a heritage building under consideration [31][32]. Reinvigoration means to put vitality, strength and vigour back into Architectural HBS under conservation [31][32]. This will attract tourist and economic activities around the Heritage site. Altogether, they may overcome any hindrance within the sustainable built environment [33], especially in a remarkable city of Samarkand.

4. The implication of the Conservation Strategies / Approaches / Processes (10Rs) to the Selected Heritage Buildings under Consideration

Most of these heritages Samarkand city of Uzbekistan before conservations and restorations have partially and or significantly crumbled and badly damaged, hence putting them back necessitates all the 10Rs mentioned above. Most areas that partially and fully crumbled were reconstructed based on new designs and models by changing and altering the structure, style, form, facings and finishing improving the buildings. To renew some parts by bringing back to life will require considering the aesthetic functions; through architectural concepts of rehabilitation, restoration (repairing and improving existing building structural fabric) and preservation (the prevention of further deterioration and decay), through extensive form of reconstruction by creating an almost or similar replica of the destroyed HB. Altogether, they inject new vitality and vigour by restoring the appearance to the perceived original or actual condition of the buildings. The Conservation improves the sense of magnificence, attractiveness, beautification and the awesomeness of the historical and HBS of Samarkand city in Uzbekistan.

5. Conclusions and Recommendations

The Decline of Samarkand city from the end of the 17th century affects the conditions of its heritage and historical sites, also it lost the status of capital to Bukhara. Up till the middle and end of the 20th century, the heritage and historical sites were not maintained these led to partial and significant crumbling, necessitating conservation and preservation. The conservation status of a HB building and its durability over time is related to the components that make up the building. The difference in era influence the materials, construction methods and technologies used in the conservation projects. These involve the 10Rs, which includes Remodelling, Redesign, Restoration, Renovation, Rehabilitation, Reconstruction / Rebuild, Re-creation, Refacing, Rejuvenation, and Reinvigoration. These restored the magnificence and the awesomeness of this historical and HBS in Samarkand city in Uzbekistan.
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