BRINGING BACK THE LOST MONUMENT: INTERACTIVE VITUAL MODEL OF SOMPUR MAHAVIHARA, BENGAL

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ABSTRACT:

This study aims at developing an interactive virtual model of the lost architectural heritage of the 8th century Buddhist Monastery of Sompur Mahaviahara in Bengal. This monument at Paharpur drew the attention of the architectural historians of the South Asia from the very discovery of the ruins of the structure at the beginning of the twentieth century because of its unique architectural features and strategic spatio-temporal location. Several attempts have been made so far to recover the memories of this medieval Buddhist Monastery after the amnesia of a millennium. However, the limited amount of archaeological resource, literary evidences and epigraphic records at the disposal of the architectural historians appears as the main thicket. This study is an attempt to generate a an interactive virtual model of the monument that would accommodate different contesting narratives regarding its architecture. It looks into the history in a more dynamic way and uses virtual reconstruction as flexible tool to reconstruct the lost form of the building. The main idea is to develop a method conserving, retrieving and commemorating the both tangible and intangible aspects of the heritage through the participation of the general public. This model will be used as a virtual museum for continuous and feedback and verification from scholars and aspiring general public and eventually refine the model based on these feedback. This participatory approach of reconstructing will minimize the distance between the people and object of heritage as well as engender a new way of experiencing, evaluating and appreciating heritage buildings.

1. BACKGROUND

1.1 Introduction

Since its discovery in the early twentieth century the ruins of Sompur Buddhist monastery became the focus of the scholars of the architectural history of Bengal. This mega structure became a landmark in the history of architecture for two reasons. Firstly it marks an important transition between the subconscious and vernacular mode of architecture to the most conscious, symbolic and metaphoric mode. Secondly, it represents a particular era when Buddhism had its last stronghold under the royal patronage of the Pala kings and gradually transformed into a more ritualistic practise than the philosophical doctrine as preached by Buddha, which is known as neo-Buddhism (Chatterjee, 1985) or 'Tantric' Buddhism. Considering its cultural and historical significance, UNESCO has inscribed it as a World's Cultural Heritage Site in 1985.

1.2 The Problem

The most striking architectural feature that distinguished Sompur Mahavihara from the other Buddhist monasteries found in India is the central cruciform structure (Figure 1). Hence most of the debates generated hitherto on the architecture of Sompur mahavihara are centred on the missing superstructure as well as its layout, configuration and architectural details. The ruin of the structure rises upward in a tapering mass of three receding terraces, which reaches a height of 23 meters. Each of the terraces has a circum-ambulatory passage around the monument. At the topmost terrace (of the existing ruin) there were four antechambers on the projecting arms of the cross. The over all design of this complicated architecture is centred on a square hollow shaft, which runs down from the present top of the mound to the level of second terrace.
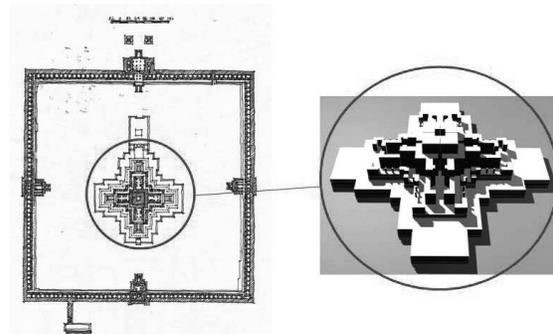

Figure 1: Plan of Sompur Mahaviahara and the reconstructed model of the central structure

Sompur Mahavihara is definitely the mostly studied historical monument in Bengal. There exist different arguments regarding the three-dimensional articulation of the missing superstructure. There are also some attempts of theoretical reconstruction of the central structure by different scholars. However, the nature and the extent of the earlier studies are not sufficient to generate necessary potential for a discourse. The reason may be manifold, but the most important one is the non-availability of substantial amount resource including a comprehensive architectural documentation at the disposal of the researchers. The first hand evidences like the archaeological remains are mostly at foundation level and inadequate. The epigraphic records remain almost mum regarding this monument.

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Consequently, most of the works done so far are mainly limited on the findings of the archaeological excavation and studying the artefacts from the archaeological perspective. Hence the history Buddhist architecture in Bengal is yet to recover from the amnesia of centuries.

2. BEGINNING

2.1 From Constraints to Opportunity

We have already mentioned that the earlier attempts of understanding architecture of this monastery were unsuccessful because of the limited resources. It is almost impossible to depend solely on materials that are available at first hand to demonstrate a continuous narrative of this monument. However the lack of physical resources could be transformed into opportunities than constraints for followings reasons.

1. The lack of sufficient physical resources may be a hindrance to demonstrate a tentative description of architecture. Nevertheless, It at the same time would help us to deconstruct any preconceived notion from the beginning. The apparent amnesia could be seen as a great opportunity to understand the building process of the monument from a very neutral point of view. It may not give us a very accurate understanding of the individual architecture but it would lessen the risk of deviation because of the wrong interpretation of the archaeological ruins. Especially for the case of Sompur Mahaviahara, where most of the architecture is missing we could use this situation to too look at the problem from a broader perspective and in a much flexible way. The focus of the study should be turned from the product to the process to use the fullest extent of this scope.

2. It further opens up a ground for accommodating the earlier studies and contesting hypothesis. The apparent discrete nature of the approaches of these earlier works does not necessarily indicate a disjunction. Rather it demonstrates the array of possibilities of looking at the problem. Putting them together in a common platform and a critical analysis may give us much clearer picture of the problem. The idea is not to debunk them or the assumptions upon which they are based, but to develop an integrated approach that includes all the possibilities and scopes. Eventually it may establish a theoretical framework for further study by accepting, criticizing and refuting some of these earlier assumptions. This study can be considered as an addition to the existing body of knowledge. The terrain will not only be much richer once all the ideas and hypothesis will be put together but also offer a much wider scope to fill up the lacuna.

3. As architecture this building is a part of the material culture of this region. The determinants of the material culture of particular location such as the tradition and world view of the people, the custom of reverence, symbol and rituals of expressing status, gender relationship, the sepulchral tradition etc exist in a layered manner. Religion acts as an additional layer in these whole set of accumulated layers. These layers are not only overlapped with each other but also maintain an osmotic relationship of continuous transformation of ideas and themes in between them. Hence, the religious architecture is a result of a contestation of multiple themes, ideas and authorship. Because of the

amorphous nature of the religion, Buddhist religious architecture is much susceptible to changes due the cultural paradigm both in terms of form and meaning. This is not as simple as borrowing some elements from the other or adopting some style of expression. It is deeply rooted at the very conception of architecture or piece of art. Hence once we could understand the process and discern the layers that acted we would be able to understand the architecture as well. That means we have to look into the history in a more dynamic way and use all the available tools. We need to use information from different sources and to evaluate the problem of architecture from a much broader perspective.

4. Virtual modelling can be used as a useful tool for multiple verification and criticism. It is not directed towards the end product as photographic realization of the original structure of *Sompur Mahavihara*. On the contrary, it concentrates more on developing a method of evaluation and synthesis to conceptualize the formal expression of the structure. Virtual reconstruction is to be applied in two levels for doing so. At one level it should be used to develop an exact visualization of the existing remains of the structure to be used as the basis for further study. The next level of modelling involves a comprehensive process of evaluation and verification. Main objective of this level is to generate a process of theoretical reconstruction of the structure by using all the available information. It is difficult from the presently available material to come up with a single model of the central structure. Hence the present study may end up with several theoretical models of the Sompur Maahvihara based on different contesting hypotheses. This process of theoretical restoration and interpreting available information is a continuous one. What would not be found today can be kept for the future to comprehend, provided that the present information is not destroyed (Forte and Silliotti, 1997). Even the corrections and criticisms and debate can be accommodated by the successive reconstruction. It is perhaps the most flexible means using all the available resources that are apparently inconspicuous in nature.

2.2 The preliminary reconstruction

Hence it is important here to understand the process through which architecture is conceived and materialized. We have started our study from a much broader perspective to develop a broader picture of Buddhist religious building and tried to identify the location our case within this. Then we gradually zoom down by discerning each of the layer one after another.

We tried to develop a system where the threads all the available resources will be put together in a scientific manner to construct the bigger scenario. We kept the other end of the thread for inflow of the future resources so that the model or the proposal can be modified when newer resources would be available. Based on this a three dimensional virtual model has been developed at the end. In this work an attempt was made to understand the lost architectural features of the monument by using these cross-disciplinary resources in a systematic manner. It looked into the history in a more dynamic way and uses virtual reconstruction as a flexible tool to reconstruct the lost form of the building. Based on this we developed a preliminary virtual model for the central structure of Sompur Mahavihara (Figure 2).

The main objective of this work was not to retrieve the architectural form as it was originally, which is not possible with nature of the available resources as well. Rather it focuses mainly on the collation and the examination of all the available resources that may have had some impact on the architectural form of Sompur Mahavihara, and put them in a framework so that we may have a better idea regarding its possible three dimensional manifestations. At the end a framework of knowledge regarding this monument was developed for future feedback (Figure 03). The most important aspect of the framework is that it not only relies on architectural or archaeological sources, rather it adopted a cross disciplinary approach. Hence any small discovery at any discipline can be used in this framework to observed how it will affect the three dimensional expression of this structure. Due to the limitation of time, this is study focused mainly on the central structure and considered only the formal aspects of architecture.
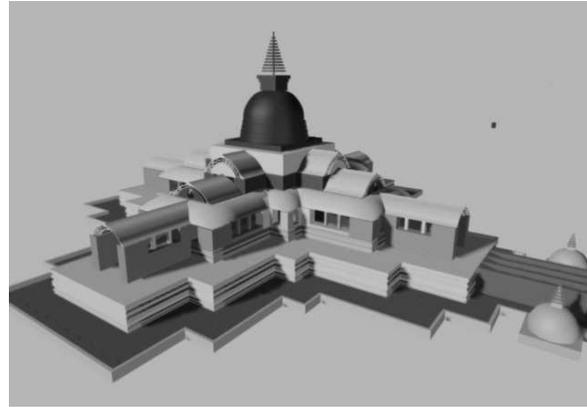

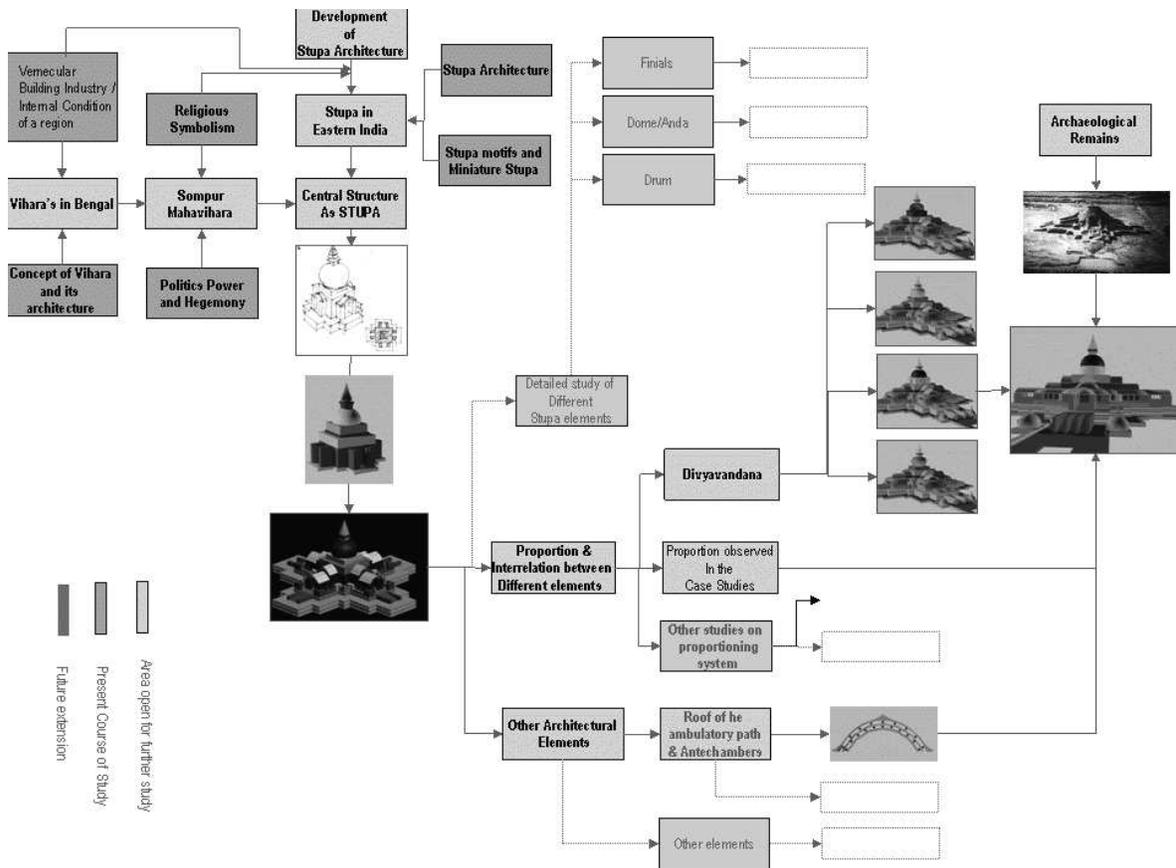Figure 2: Preliminary Reconstruction of the lost central structure of Sompur Mahavihara

Figure 3: The framework of knowledge for the reconstruction

3.   PRESENT STUDY; THE SECOND PHASE:

3.1 Objective

This second phase of the study is built on earlier reconstruction. During the process of the earlier reconstruction a distance between a heritage building and public drew our attention. Especially in the case where the heritage building is presently ruined (like our case) and a limited amount of archaeological resources are available to fill up the lacuna. It is a great challenge for the architectural historians to bring back this building to and its architecture based on this fragmented resources that are mostly inconspicuous in nature. In our previous reconstruction an attempt was made to recover the architectural form of the lost monument of Sompur Mahavihara. However it was felt that it was almost impossible to retrieve the lost form as it was, rather it was more convenient to collate and examine all the available resources that may have had some impact on the architectural form of this building. The idea was to develop a process that is open for future feedback and

correction. Now the question that comes in front is whether this recovery of architectural form is sufficient enough to understand the building as well as enliven the memories of the heritage back to the people and minimizing the distance between the people and the heritage. In this juncture the concept of 'Virtual Heritage' has emerged. Roussou (2002) described Virtual Heritage as an intersection of virtual- reality and cultural heritage. She further defined the functions of virtual heritage to facilitate the synthesis, conservation, reproduction, representation, digital processing and display of cultural evidences. There already exists example of Virtual Archaeology (Barceló 2000), where some archaeological sites have been reconstructed for three dimensional experiences. Nevertheless whether they are playing a successful role for heritage conservation is questionable. From the earlier examples it seems that that the end product (reconstructions of the lost buildings or sites) remains within the domain of academia. A few of them are merely published in websites, media or open to public spaces in museums. However, the broader definition of Virtual Heritage demonstrates a process that involves not only different disciplines (e.g. Architecture, Computation, History, Heritage and Museum studies, Cultural Studies etc) but a wider spectrum of people. It certainly needs a participatory approach to fully recover the memories of the building. The proposed study would embark on this premise.

Maria Roussou (2006) has defined three challenges for public presentation of virtual heritage, they are:

- Representation (to accurately visualize or visually reconstruct the data)
- Experience (to present and enhance the virtual environment with elements that incorporate   knowledge providing and vision) and
- Interaction (to provide ability to gain insights by actively engaging in and even modifying the experience)

Dourish (Dourish 2001) also emphasized on participation, task accomplishment and practical action for an effective embodiment with the environment. As successful interactive experience can only be achieved while a person feels interest with the content, poses empathy with it and finally can imagine the alternate reality (Schell and Shochet 2001) and that can only be achieved through proper interaction.

An architectural heritage is something more than the physical form. A building is a place for doing different activities. Especially spaces inside a religious building, e.g. Sompur Mahavihara, are precisely guided by the rituals and performances. To understand the architecture of this monument, mere virtual reconstruction of the three dimensional from would not be sufficient. In order to create virtual environment embodying the essence of place is inevitable (Jumphon 2008). Usually the role of 'Place' is virtual environments has been as a locator of objects (Champion and Dave 2002). But Kalay (Kalay and Marx 2001) pointed out that 'Places are created through inhabitation. People imbue space with social and cultural meaning, transforming mere space into a place'. Hence we need to know how this design of the building is conceived through the organization of different spaces within it. Being a monument that belongs to high Tantric phase of Buddhism in Bengali, the architecture of this monument was certainly determined by Tantric rituals and rites. The movements of monks within the complex, their daily life and periodic ritual performances had significant importance in the spatial

organization of Sompur Mahaviahara. Hence to recover of the memories of this building we have to examine the the aspects how spaces were generated, interpreted and interconnected with respect to the daily activities of the monks and the ritual performances. We have to analyse different activities and the ritual performances within the monastery and try to reconstruct the virtual model focusing on the aspects of spatiality.

This proposed study is designed to address these issues regarding the lost heritage building taking *Sompur Mahavihara* as a case. It is aimed to fulfil these following objectives:

1. To develop an interactive virtual model of Sompur Mahavihara focusing the aspects of spatiality.
2. To minimize the distance between the general public and heritage building by developing participatory reconstruction process using bringing this interactive model. It could be virtual museum that would allow the people to participate, educate, attach and preserve their memories associated with this building.
3. To collate the feedbacks from scholars and aspiring general public to verify and further develop the earlier framework of knowledge regarding this monument. The most important aspect of the framework would be that it would not only rely on architectural or archaeological sources, rather it would adopt a cross disciplinary approach. Hence any small discovery at any discipline can be used in this framework to observe how it will affect the three dimensional expression of this structure.

3.2 Significance and Innovation

Our current study is designed to address two fundamental problems. Firstly, the problem that lies inherently with the reconstruction/conservation of the lost archaeological monuments. A historical building is a memory of past and it should be preserved for its particular location in the history. However, is it only the commemorative value that we take into account? We don't think so. Actually a monument poses wide ranges of values, both tangible and intangible, towards itself. The physical conservation in its true form not only ensures the formal characteristics of the monument, but at the same time put a considerable impact on the others, especially on the intangible aspects. To preserve this whole set of values we need a detail inventory of information before going into a physical conservation of the monuments, because if the conservation attempt goes wrong it becomes hazardous enough to destroy the whole set of tangible as well as intangible values. This phenomenon is of utmost importance in the cases like *Sompur Mahavihara*, where archaeological information is really scarce. Hence, it is more practical and rational to go for an interactive virtual model, which eventually addresses all the related issues and disciplines. The premise upon which the initial model was developed considered architecture as a cultural product. As architecture this building is a part of the material culture of this region. The determinants of the material culture of particular location such as the tradition and world view of the people, the custom of reverence, symbol and rituals of expressing status, gender relationship, the sepulchral tradition etc exist in a layered manner. Religion acts as an additional layer in these whole set of accumulated layers. These layers are not only overlapped with each other but also maintain an osmotic relationship of continuous transformation of ideas and themes in between them. Hence, the religious architecture is a result of a contestation of multiple themes, ideas and authorship. This is not as simple as borrowing some elements from the other or

adopting some style of expression. It is deeply rooted at the very conception of architecture and its use. Hence once we could understand the process and discern the layers that acted we would be able to understand the architecture as well. That means we have to look into the history in a more dynamic way and use all the available tools. We need to use information from different sources and to evaluate the problem of architecture from a much broader perspective. In this proposed study, we would focus more on the spatial aspects that involved ritual performances within this building. This has potential to contribute significant knowledge in the field of spatial theory and architecture. Architecture is no more a discipline to be looked at by the architects and the archaeologists. A building is a result of different accumulative layers. And these layers should be unravelled and discerned if we really want understand the building. Hence this study offered an opportunity to look into architecture from a different perspective. A view of this building from different perspective has the opportunity to discern certain layers that render its overall architectural form. A comparison of this spatial model with the formal model of the building may lead us to reveal some of the intangible values related to this monument.

The second problem deals mainly with distance between the architectural knowledge of the general people. Because of the very inherent problem of the discipline certain gap has been maintained between the great architectural masterpieces and general public. These great monuments were considered more as objects / exhibits rather than space for activities and performance by the common people. They have very little role to play either in conservation or evaluating these monuments. The lost monuments, like our case has very little or no impact on the general architectural knowledge of the common people. However, they not only have significant historical and commemorative value but posses certain degree of cultural value as well. Hence it is important to let the people participate in the process of understanding this architecture. The intention is not to retrieve the lost architecture of this monument but to develop an interactive process where the distance between the general public to the monumental architecture could be minimized. The applied aspect of this study is that the iconic building would no longer be something; you should look from a distance. If we could incorporate contemporary studies on media and museum studies with this reconstructed spatial model then this interactive model could be a powerful tool to understand the architecture as well as life in this old monument and as an educational source for both aspiring student and general public.

3.3 Approach and Methodology

This research will combine architectural history with museum studies using the virtual technology as tool. As an architect I would be able to take care of the architectural part of the study, whereas for the other part like people's participation with the virtual model I would rely more on the expertise on the department of museum studies. The approach and the research procedure is divided into three major parts according to the research objectives.

1. Developing a comprehensive and interactive virtual model of Sompur Mahavihara: The major objective of this part of the study to develop a holistic and comprehensive architectural model of the lost heritage building, which would be used in the later part of the study. Being a monument that belongs to the high tantric phase of the Buddhism, this architecture certainly played a role as a stage for different ritual performances. As the objective of this part of this study is to understand the spaces of the monument in terms of ritual performance, a significant amount of time would be spent for observing and documenting contemporaneous Tantric rituals. Based on this study we would develop a preliminary spatial model for this lost monument. This model would be compared with the previously developed formal model to develop the final interactive virtual model for public's interaction. This model would not be photo realization of the original monument as Osberg (1997) identified that abstract drawing/ view is more effective and better understood than the highly realistic one. Hence, it concentrates more on developing a method of evaluation and synthesis to conceptualize the Architecture of the monument.

2. Bringing/conveying this interactive model toa wider spectrum of people by using website, museum installation and other means: In this part I would try to develop different means to convey this model to people from different spectrum for interaction and feedback. This model would be published in website to bring it to a larger community of scholars and other people. At the same time some smaller installation will be erected in different public places like Museum, Educational Institution and libraries so that the aspiring students and general public people can participate and interact with the model. Unlike the most Virtual heritage model this model would incorporate the cultural information or the 'intangible part of the heritage' (associated folk tales, local believes, religious believes, oral history etc) with the tangible one. It would not only be restricted with the developer's own narrative rather the users could personalize the interface or changed the story board if needed. These models or installation would be continuously monitored for collating feedback and accommodating, altering and even sometime rejecting the ideas for further modification of the model and framework of knowledge.

3. Collating the feedback and organizing the framework of knowledge and modify the virtual model accordingly: In this part of the study we would collate all the feedback regarding architecture of this heritage from the different input sources and then deduce logical inference by using this information. We would look into the problem in a more architectural way and fill up the gaps using architectonic reasoning. This might not give us a definite solution regarding the original form of the building but it generates a process of learning and evaluation. The main contribution of the study would not only the development of this interactive framework of information that is open for necessary feedback future and refinement of the virtual model, the most important part is to educate and attach the people with the lost heritage and let them participate in the process of conservation of this cultural heritage and preserve the memories. This framework will just try to compile all the available information and interlink them in a systematic way for the virtual reconstruction. The most important aspect of the framework is that it not only relies on architectural or archaeological sources, rather it would depend on wide varieties of sources. Hence any small discovery at any discipline or a little feedback can be used in this framework to observed how it will affect the three dimensional expression of this structure.

4. CONCLUSION

Mostly virtual reconstruction are developed by researchers and academicians (except movie industries for entertainment) requiring extensive labour and high expertise. However, the end product (3D models/environment) remains within the domain of scholars and academia. A few of them are merely published in websites or delivered to public spaces like museums. Again, present VR technologies for public viewing, poses a variety of practical limitations including high cost, development complexity and maintenance. Practical issues and problems are especially apparent when visitors have to follow a default narrative and merely can personalize or engage with the content restricted by their own cultural and technical background. In our case this interface will be developed as a virtual museum exhibit enhanced by user's cultural background, where user can easily participate with the content, personalize their way of retrieving information through an interface which can track human movement/gesture and response in real-time. We hope, by incorporating the cultural background of user while designing the interface will provoke a new way of experiencing, evaluating and appreciating heritage buildings. In our previous study we have reconstructed a virtual model of the lost mind Once completed this study would demonstrate a methodology that can be adopted for any other heritage site or building anywhere in the world, which is presently in ruinous condition. The main idea of this study is to develop a process through which the distance between the people and the heritage building can be minimized through interaction and at the same time to conserve the memories of the building while searching for its architectural form.
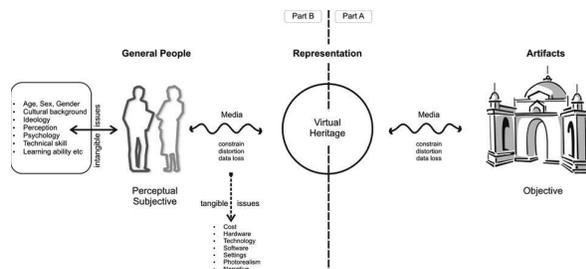

Figure 4: The possible scheme of the study.

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