“Normality back better” through reconstruction

Arch. Candida Maria Vassallo
Email: cdd74@hotmail.com

Abstract
The process, for the reconstruction post emergency of public buildings in developing countries, has been elaborated through different professional experiences in Post Emergency Programs. It could be considered as a guide to be used for optimizing the resources and times in each phases’ reconstruction from design to construction works.

The main objective of process is to reconstruct the normal condition life through an appropriate architecture guaranteeing the integration in the community, in the village, in the city, in the territory through the respect of social, cultural, religious, economic, political reality. To achieve it, the general objective has been structured in the following six specific objectives: I) To reconstruct the Identity; II) To interpret the Needs; III) To optimize the Limits; IV) To reduce the Vulnerability; V) To sustain the Transformability; VI) To get the Resilience.

The above objectives are reachable through the sequential phases: 1) Identification of components; 2) Data collection for each component; 3) Cognitive and Interpretative Analysis of components; 4) Elaboration of components for each specific objective; 5) Architectural/Structural Composition; 6) Construction works.

In particular, the phase 1 Identification of components is the first important step to determinate all components that should be considered as part of the architectural/structural composition, in fact each one has specific weight on the single choice both for the design and the construction. As a consequence, to ensure the appropriate integration, each component is strongly connected in the social, cultural, religious, economic, political context.

The systematic actions with relative results of the process will be illustrated through the New Swat Archaeological Museum in Saidu Sharif (Pakistan) reconstructed after the 2005 earthquake and 2008 terrorist attack. The New Museum reconstructs the great cultural and social value for the community getting all above objectives through an appropriate architecture integrated in the context joining tradition and innovation.

Keywords: Identity; Needs; Limits; Transformability; Resilience.

Abstract Reference Number: 9

Introduction
The process for reconstruction post emergency of public buildings has been elaborated and structured during personal 10 years’ experience, as construction supervisor and project designer,
in different developing countries\(^1\). Thanks to their social, cultural, political and economic value, the public buildings assume a fundamental role of public buildings as driving force to reconstruct the "normality" after disaster. As a consequence, it has been necessary a reflection about the renewed strategic role of architectural/structural composition, both theoretical and practical point of view, that starts from a systematic process with the scope to optimize the actions in the complex scenery of reconstruction post emergency for avoiding any prefabricated solutions. In other words, this process, through the definition and the organization of resources and tools, could be considered as a guide to accelerate the architectural and structural joined choices, both in design and in construction works, defining adaptable actions to different contexts.

General objective: to reconstruct the public buildings through an appropriate architecture integrated in the territory, in the environment, in the city, in the village, in the community through the respect of social, cultural, religious, economic, political reality.

Specific objectives identified by keywords in bold:
- To rebuild the **Identity** through communicative and cultural memory (Cuzmalo, 2012);
- To interpret the **Needs** in emotions and functions involving all stakeholders in particular the community (Gropius, 1963);
- To optimize the **intrinsic Limits** in social, economic, cultural, territorial, political, normative context that strongly compromise the positive result of project because of incapacity to manage the post-emergency reconstruction (Chang et al. 2010);
- To reduce the **Vulnerability** with the improvement of local accessible resources (materials, techniques, capacity workers);
- To guarantee the **Transformability** to be sustainable with flexible and modular structure with easy maintenance and adaptable to possible transformations (Ceragioli 1969);
- To reach the **Resilience that involves all above** to be find in the capacity of architectural and technological choices to got a resilient building.

Follow the sequential Phases with relative results expected:

<table>
<thead>
<tr>
<th>Phases</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Identification of components</td>
<td>Components’ list with specifications</td>
</tr>
<tr>
<td>2 Data collection</td>
<td>Documents’ list with relative source for each component</td>
</tr>
<tr>
<td>3 Cognitive/Interpretative Analysis</td>
<td>Conclusion and recommendations about the use of single component and the weight of each component on the 5)</td>
</tr>
<tr>
<td>4 Elaboration</td>
<td>Interlink between components and for each specific objective;</td>
</tr>
<tr>
<td>5 Architectural/structural composition</td>
<td>Architectural/structural project: plans; sections; elevations, 3d</td>
</tr>
<tr>
<td>6 Construction work</td>
<td>Master Plan; technical and financial monitoring schedule.</td>
</tr>
</tbody>
</table>

\(^1\) Pakistan, Srilanka, Mali, Eritrea in Post-Emergency Reconstruction Programs with UN-Agencies, International governmental and not Governmental Organizations.
For components means elements of the architectural/structural composition, so, in order to obtain an integrated solution, they are both strongly connected to the context and to the public building to be reconstructed.

All phases could be executed through communication, cooperation, collaboration between architect and all stakeholders involved (local authorities; donors; international organizations; contractors; community) especially with beneficiary community. In addition, the choices relative of Phase 5 Architectural/structural composition should be defined on the base of the three fundamental dimensions of post-emergency reconstruction projects: social responsibility, economic responsibility and environmental sustainability (Lizarralde et al. 2010).

The process will be illustrated through the New Archaeological Museum in Saidu Sharif (Pakistan) reconstructed, after 2005 earthquake and 2008 Taliban attack emergency, inside ACT-Field School Project2 with a professional team under the coordination of arch. Ivano Marati and arch. Candida M. Vassallo to design a new master plan and to supervise the construction works.

The Phases of reconstruction design process will be illustrated briefly as follows: Phase 1-2-3 in fig. 1; Phase 4 in fig. 2; Phase 5 through the six specific objectives.

---

2 Archaeology-Community Tourism Field School is a three-years project of Italian Archaeological Mission (IAM) and Directorate of Archaeology and Museum, KP Province (DOAM) founded by "Pakistan-Italian Debt Swap Agreement" (PISDA).
Follows the Phase 5 Architectural/structural Composition illustrated through the architectural/structural project (Marati, Vassallo; 2013) showing “HOW” each specific objective has been achieved.

Considering the great significant for the community, the new Identity has been reconstructed in according both its social and architectural context, finding its connections in the forms and volumes of the local fortified edifices, that abound in the area, to ward off both the chaotic encroachment of the city and the possible risks. (fig. 3)
After the demolishing of frontal part, the functional Needs have been obtained adding two new blocks (A on the front and B on the back) with resting block H. The architectural composition (fig. 4,5,6,7,8) is achieved by the contraposition and integration of the three blocks’ volumes (A, H, B) that, connect by two courtyards and the four emergency exits’ nodes, are enclosed by an imposing slanted fence-wall that asserts its strength in the central part of the facade and regresses to reveal the soul of the steel structure.

The emotional Needs through the fence is a virtual connection that, combining the past and the present, takes the visitor from the entrance and leads him around the exhibition, becoming an integral part of the exhibits in the courtyards with imprints of proto-historical rock painting. The volumes of the blocks, in different heights and slopes, create a rhythm of solids and voids, where natural light, local materials, Islamic and Gandharan decorative motifs are an integral part of the whole composition.

The Limits (as for components: risks; technology; shortage; budget fig. 1) imposed by context have strongly conditioned the choices of architectural/structural in the use of steel modular structure; of natural light through the courtyards; of local materials; of local constructive techniques improved as for international anti-seismic standards.
As for the conclusion and recommendation coming from the Structural Health Assessment\(^3\) the **Vulnerability** in the existing building has been reduced with the selective demolition of the frontal part and the retrofitting of the remaining "block H" with specific interventions for seismic structural upgrades. In addition for new blocks, the **Vulnerability** has been reduced through improvement and the optimization of the local resources in technology (materials and techniques) and in training of local workers.

The two new blocks, "block A" on the front and "block B" on the back, were built with an anti-seismic modular structure\(^4\) that consists of: foundation in plinths connected by beams in reinforced cement concrete; vertical and horizontal steel modular elements; ventilated walls with a double reinforced wall encompassing the vertical structure. The use of steel modular elements permitted to reduce the risks and shortages (fig. 1) thanks to the acceleration of execution time, thereby ensuring adequate monitoring of the modules’ construction in workshop, and their on-site assembly.

To guarantee the **Transformability** to be sustainable with flexible and modular structure with easy maintenance and adaptable to possible future transformations (fig. 9).

The **Resilience** in Museum building has been obtained thanks to its architectural/structural system able to resist to any type of impact, reserving the own structural features and maintaining own stability control.

In the end, as for the process’ scope the New Swat Archaeological Museum gets an appropriate integration in the context through the achievement of all six objectives.

**References**

**Book**


**Book chapter:** Ceragioli G. 1969, “Sviluppo e abitazione” in “Terzo Mondo”- anno II- n.4 (pp 8).

**Journal article:** Cuzmalo V., 2012 *Architecture and Identity in Autoportret1* (36) (pp 47).

**Online document**: Chang Y., Wilkinson S., Seville E., Potangaroa R. 2010 *Resourcing for a resilient post-disaster reconstruction environment* (pp 6)


---

\(^3\) SHA executed by the University of Engineering and Technology (UET), Peshawar, Pakistan.

\(^4\) The structure was designed in collaboration with prof. eng. Claudio Cristilli Department of Architecture, University of Naples “Federico II” in collaboration with AIRES Engineering, Caserta
Author's Biography

Architect specialized in “Engineering of Emergency” and in “Technology and Architecture of Developing Country Urban Areas”, with more than 10 years’ experience as construction supervisor, project designer in Post-Emergency Programs with Ingo, Governmental and UN Agencies in Pakistan, Sri-Lanka, Mali, Montenegro, Eritrea and Italy.

Main areas of responsibility: to define strategical approach from design to construction; to determinate the appropriate constructive technologies; to guarantee the positive result through an detailed cognitive/interpretative analysis of social, cultural, political and economic context.