a cura di LETIZIA DIPASQUALE SAVERIO MECCA LUCIA MONTONI

Heritage for people

Sharing vernacular knowledge to build the future













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VERNACULAR PARAMETERS OF SUSTAINABILITY IN 21ST CENTURY ARCHITECTURE

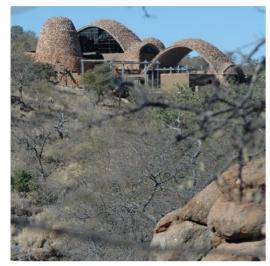
Juan María Songel, Fernando Vegas, Camilla Mileto, Juan Bravo Universitat Politècnica de València, Valencia, Spain

After nearly a quarter of the 21st century has elapsed with an ever increasing emphasis on sustainability, energy, environmental, global and local social issues, it seems appropriate to review the present situation. This analysis can help identify new lessons learned from vernacular architecture, ascertain how far these have been applied in contemporary architecture, and stimulate the development of new connections and possibilities. The parameters that arise from this vernacular-inspired contemporary 21st century architecture can be broadly summarised in four concepts: place, people, needs and materials.

- Place: this key aspect of architecture involves a good knowledge of environmental conditions to successfully select a suitable location, wisely chosen to fit in with the surroundings; these conditions include physical features, such as weather, climate, topography, winds, orientation and views.
- People: the social, cultural and economic context of the location should be taken into consideration both in the design and construction stages, and their skilful incorporation in these processes is crucial to a successful sustainable outcome.
- Needs: the skill to identify both physical and spiritual needs, accommodating them in appropriate
 forms, is as important as providing flexibility and adaptability for future changes.
- Materials: the selection of materials has immediate consequences for sustainability, affecting issues
 such as costs, local or remote sourcing, energy needed for their production and transportation,
 building construction processes, durability, maintenance, possibility of dismantling, recycling and
 reusing, pollution and waste reduction.

The representative - but not exhaustive - overview provided below gives some brief examples of these new attitudes of 21st century architecture. These attitudes, which are inspired by the parameters of vernacular architecture, are also far removed from the iconic architecture of the star architects typical of the 20th and early 21st centuries, up until the start of the 2008 economic crisis. The selection of these outstanding examples is based on accredited and reliable distinctions provided by international awards with worldwide recognition, such as the Global Award for Sustainable Architecture, supported by the Cité de l'architecture et du Patrimoine and UNESCO, or the International Award for Sustainable Architecture, supported by Fassa Bortolo and the Università degli Studi di Ferrara. Other relevant works are found in the Architecture guide to the 17 UN Sustainable Development Goals, published by the Royal Danish Academy and the UIA. The selected works will be surveyed taking into consideration relevant parameters of architecture and sustainability.

opposite page Community Center in Dalla designed by Abari, Nepal, 2019 (credits: Nripal Adhikari)







6

Mapungbuwe Interpretation Center, South Africa A building as an extension of nature in the landscape (credite: Poter Rich, 2000)

(credits: Peter Rich, 2009)

Interior carved out space breaking the order of the vaults (credits: Iwan Baan 2010, courtesy of Peter Rich)

Eyelid detail. Five tile thickness plus stone cladding (credits: Obie Oberholzer 2015, Courtesy of Peter Rich) The Mapungubwe Interpretation Centre in South Africa, designed by Peter Rich, is an example of a close bond between the work and the site, a National Park of important historical and archaeological value. The rocky landscape was the inspiration and source of the materials for the tile vaulting of the pavilions, which were built by local people trained in the manufacturing of earth tiles and the construction of tile vaults. Another case study showing the influence of place is the Kindergarten for the permaculture community *Poret* in Zimbabwe, designed by Anna Heringer, which showcases an approach that takes full advantage of existing local potential and resources, in order to accept, quoting the architect, "the ability of buildings to turn to compost or to go back to earth without harming the environment [...] The best thing is, when nothing remains from a building but the know-how and skills to make it better." Anna Heringer's work in Asia also emphasises the use of local materials like earth and bamboo, as well as local skills and craftsmanship, involving local people in the design and construction of the works.

The involvement of local communities is a strategy of vernacular architecture that is currently widely present in all projects. It is important to highlight the social and cultural context of works, which provides an invaluable background of experience, expertise and creativity that can be incorporated into the design and construction processes to the mutual benefit of designers and the local population. One example of these synergies is the work of *Abari*, led by Nripal Adhikary, in Nepal, struck by a major earthquake in 2015. In the reconstruction of schools such as Janajyoti Primary School or Saraswati Secondary School, the local community was trained in "new technologies and skills to build earthquake resistant homes using locally available earth and bamboo". A brick press was implemented to allow local people to make earthen bricks, and designers and builders were always on site to obtain insight and feedback from the users. This is actually an open source system, allowing changes from all participants. Locals have learned how to build with local resources, and that experience enabled them to rebuild their damaged homes on their own. The school will also house a "tool library" for the local community, so that anyone can borrow any tools to build their homes or create things, a sort of rural innovation cen-





tre. Abari has adapted the so-called 'Owner Driven Reconstruction' participatory model to the vernacular Nepali architecture, minimising the use of manufactured and imported materials, and releasing a number of open source small design manuals to help people build transitional shelters or classrooms, a permanent school, a compressed earth block house, or showing permanent housing prototypes.

Recycling materials in new constructions is an ancient vernacular strategy which avoids discarding waste into the environment while rooting the project in a given place. An example of this is Wang Shu's Ningbo History Museum with its characteristic façade mostly made up of debris gathered from a wide area around it, originally occupied by traditional Chinese villages which had been demolished to leave room for new developments. This work and other similar buildings designed by him, therefore, intend to recover a sense of place, and a settlement's identity, by recycling bricks and tiles dating back over a thousand years. They are packed using a traditional technique called *wapan*, with the collaboration of craftsmen, to produce a stable structure with a richly textured coloured cladding.

Concrete and metal structures have ceased to be the sole stars of contemporary architecture, which is now opening up to experimentation and construction using traditional materials such as earth, brick, timber and bamboo, among many others. In close connection with the materials and their sourcing, new structures other than the concrete post-and-beam scheme based upon traditional techniques are found in the selected examples: load-bearing walls, mostly built with rammed earth or pressed brick masonry; trusses, mostly built with bamboo, both flat and space; arches, vaults and domes, built primarily using tile vaulting; and frames, made up of bamboo space trusses, or bamboo post-and-beam construction, or arched timber planks resting on an upper central hub, like the supporting frame of the Kindergarten for the *Poret* permaculture community in Zimbabwe.

Madan Puraskar Pustakalaya (MPP) is the name given to a national library and archive in Nepal, housing more than 40,000 books and documents of historical relevance for the country. After the damage suffered in the 2015 earthquake, secure seismic-resistant reconstruction was carried out using locally



Madan Puraskar Pustakalaya designed by Abari. Lalitpur, Nepal, 2015

(credits: Asish Rajbansh)

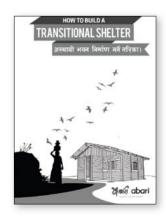
Kopila Valley School designed by Abari. Surkhet, Nepal, 2015

(credits: Chemo Dorje Lama)



Owner-driven reconstruction manual

(credits: Abari)







School designed by Francis Kéré, Dano, Burkina Faso, 2013 (credits: authors)

available bamboo and mud tiles. An overall structure of spaced trussed frames made up of bamboo rods and polyhedral knots, encompassing the full two-storey height of the building, was built.

Schools in remote rural areas with difficult accessibility must rely very heavily on local materials and population. The Saraswati Secondary School in Nepal was rebuilt after the 2015 earthquake, providing enclosed classroom spaces with open covered playground areas between them. Load-bearing seismic-resistant walls consisted of a thin linear reinforced concrete framework with infills of pressed earth brick masonry, and the roof was supported by flat bamboo trusses. In Bangladesh, the METI School is a successful representation of its architect's motto: "Architecture is a tool to improve lives" (Anna Heringer). Work with the local population inspired self-confidence and strengthened their identity, after discovering the wealth and possibilities of available materials, labour and know-how in their closest environment. In this case load-bearing walls on the ground floor level were built with rammed earth, and the upper floor roof bamboo structure was made up of beams supported by vertical post pairs and diagonal braces.

Education and health are two essential public assistance services that must be guaranteed even in the remotest areas of the territory. The Anandaloy Building in the village of Rudrapur (Bangladesh) hosts a therapy centre for people with disabilities and a textile studio. It was built upon the experience gained from previous projects by Anna Heringer in the same village using local materials: mud and bamboo. These were used in a creative way, not just because of the low cost, but also in an effort to take advantage of them to their full potential. With a specific mud technique called cob, no formwork is needed and curved walls can easily be built. The building has a curved outline, in contrast with others with a straighter orthogonal layout, and a ramp connects the ground with the upper floor following the peripheral curved walls. This makes it accessible for the disabled and generates very welcoming intermediate spaces in the surrounding covered gallery.

But it is not necessary to look to developing countries to find examples of this new architecture, which

takes its inspiration from the principles of vernacular sustainability. Until recently the reuse of anonymous residential architectures lacking in personality during the years of economic developmentalism would have been unthinkable given the throwaway philosophy which characterised 20th century consumerism. Western European and North American countries with a heavily industrialised background show a vast and consolidated built heritage, which includes large scale social housing blocks built in the Sixties, usually in a poor state of repair and with an alienating social atmosphere. In the Cité du Grand Parc in Bordeaux (France), the architects Anne Lacaton and Jean-Philippe Vassal took up the challenge of preventing demolition and renovating existing buildings, as well as improving the standards, dignifying the habitat and providing a sense of identity. Their approach to the project avoided any major interventions in the existing structure, and was based mainly on additions and extensions, such as a new bay with winter gardens on the south façade and new improved insulation on the north façade. This solution considerably increased the architectural quality of the dwellings and the overall performance of the buildings.

Conclusion

It is striking that architects such as Lacaton and Vassal or Francis Diébedo Kéré, following this philosophy, have recently received a Pritzker Prize given this prestigious award's support of a heterodox and rather iconoclastic approach to contemporary architecture. In fact, the overall feeling is that there is no going back in this new direction taken by contemporary architecture, carefully considering the parameters of sustainability that have always characterised different types of vernacular architecture. 19th and 20th century architecture were two sides of the same coin: in the 19th century, architecture went hand-in-hand with history, while in the 20th century it tried, unsuccessfully, to be a-historical. However, both these architectures showed an obsession with language. The architecture of the 21st century has no choice but to be sustainable in every possible way, learning from the wisdom of vernacular architecture. There is no going back. Our lives depend on it.

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