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4.
Dialogue between Generations and Gender

With half of the world's population under twenty-five years and one third of it under fifteen, young people hold more power to our world's sustainable future than ever before

Siddharth Agarwal

Vernacular architecture has the potential to be an unlimited source of conceptual solutions through which sustainability can be rediscovered

Mariana Correia

Experiences from the Past for Today's Challenges

Mariana Correia

During the twentieth century technological development and the increase of mass production led to a progressive abandonment of traditional building techniques and ways of life, especially in urbanized regions pressured by rapid and unrestrained growth. From the seven billion people that today inhabit the planet, the United Nations Human Settlements Programme estimates that four billion live in informal houses, from which one billion of urban poor live in slums (UN-Habitat 2006). According to UN-Habitat, a slum is an urban area with a lack of basic services (sanitation, potable water, and electricity), substandard housing, overcrowding, unhealthy and hazardous locations, insecure tenure and social exclusion (UN-Habitat 2003). In a short time period, several communities around the globe felt pressured to move from rural regions to urban areas located in the outskirts of cities. In these urban substandard areas, rapidly growing to become part of megacities, construction is developed using all sorts of materials and building possibilities, following neither standard regulations, nor the building-culture intelligence encompassed in vernacular construction.

Meanwhile, the 3.1 billion people that live in rural areas (United Nations 2014), mostly have no access to Internet (ICT 2015), and a great number still lead traditional ways of life, with long-established customs and beliefs that have passed from one generation to another. In these communities, vernacular architecture expresses their adaptation to climatic and landscape contexts, the use of local natural materials, and the embodiment of their empirical knowledge regarding construction know-how (Correia 2009).

Vernacular Architecture

Thus, what is vernacular architecture and why is it relevant? According to Rapoport, the term refers to specific dwellings built in a certain geographical context, responding to the physical and cultural environment that surrounds it (Rapport 1972). Rudofsky calls vernacular the architecture without architects that is anonymous, spontaneous, indigenous, or rural (Rudofsky 1990). For the *Encyclopedia of Vernacular Architecture of the World,* Oliver defines vernacular architecture as all the dwellings and buildings, either private or community-owned, which were built using traditional technologies (Oliver 1997). The *Oxford Dictionary* (2016) defines vernacular architecture as that which concerns domestic and functional rather than

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public or monumental buildings. Its designation and conceptual development is also discussed in "Vernacular Architecture?" (Carlos et al. 2015). Hence, vernacular architecture can clearly have different approaches, interpretations and meanings. The operational definition for this framework will be the architecture that has no formal planning, but holds an intrinsic built-in intelligent culture.

Nowadays, vernacular architecture is considered by many in the Western world as a heritage to study, conserve and value, an "old" form of traditional architecture, part of a region's identity. Many others, mostly in rural areas of the undeveloped world, live with vernacular architecture on a daily basis, as traditional building systems are still employed in day-to-day life, using the resources available in their immediate surroundings and the know-how associated with local building culture. Using stone, earth and wood, bamboo or reeds remains a common and intelligent way of building in harmony with the context. Several communities continue to build in the same way as their ancestors used to, putting to use the local know-how and building culture passed to them from generation to generation.

Given the balance between energy saving, tradition, environment, and social commitment it can boast, vernacular architecture has the potential to be an unlimited source of conceptual solutions through which sustainability can be rediscovered. The project *VerSus: Lessons from Vernacular Heritage to Sustainable Architecture*, coordinated by Escola Superior Gallaecia with the cooperation of its European partners (Correia, Dipasquale and Mecca 2014), entailed the identification of the principles embodied in vernacular knowledge, which are nowadays being applied throughout the world in various efforts concerning traditional and contemporary sustainable development.

Community Engagement

Furthermore, in vernacular architecture, know-how can only be transferred if the community is still empowered to optimize the use of local intangible resources, contributing towards the development of effective strategies for sustainable development. Thus, community engagement has contributed to integrate people in society, to support traditional ways of life, and to keep social cohesion. This has been possible through balanced efforts directed to a more inclusive enhancement of the communities' approach toward sustainable development.

What can be observed around the world is an upsurge in the value ascribed to community engagement and capacity building, as they could have a positive impact on the transfer of local know-how and of intangible knowledge. For instance, in Mali, local communities use self-organized craftsmanship associations to transfer their know-how, encouraging traditional values and respect for the empirical knowledge of the older generation. This is evidenced for instance, in the annual festival carried out at Djenné Mosque, a renowned World Heritage site in Mali. The entire community gets together to participate in the ritual celebration of the mosque's maintenance, climbing the built-in scaffolding to apply the traditional earthen plaster. Also in Nicaragua, communities of workingwomen play a leading role in developing capacity-building skills among the younger generations, as all over the country inspiring women committed to their communities impart training on traditional building techniques to young unemployed people. By developing their building skills they give them the chance to live an independent yet integrated life.

Nowadays, community engagement is therefore most relevant, as it promotes the integration of people in society, supports traditional ways of life, and maintains social cohesion, reinforcing sustained local values in communities and emphasizing a sense of belonging. Engagement in communities becomes essential and connects populations socially and culturally.

Collective Values

Several communities worldwide have created sustainable systems for local development. They aim to promote an efficient and affordable use of local resources, techniques, and goods, sharing the know-how of the different individuals within the community in order to enhance their collective values.

To survive harsh environments, isolated communities look for efficient ways to manage their few resources, mainly by communal systems. This is evident, for instance, in desert climates, where systems are devised to collect, distribute, and use water in an efficient way. Underground tunnels created by men carry water over long distances in the desert, reaching the soil on the surface and creating oases for populations to settle. These hydraulic systems supply drinking water, as well

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as irrigation for agriculture. They are used across the Mediterranean region and Middle East, and are known as *qanat* in Iran; *falaj* in the United Arab Emirates; *khettara* in Morocco; or *foggara* in Algeria. This collective use of water is only possible through community values shared by people who live in very dry climate regions.

This sense of community self-help, currently at work in different regions of the world, is also evident in the collective construction of houses or rural facilities in isolated regions. This system is known in South America as *minga*, and it brings together neighbors from the same community on the basis of mutual aid to build dwellings. *Minga* is mainly used in rural areas and its practice is observed at least in Argentina, Chile, Ecuador, and Paraguay, though it is also stipulated in other Latin countries, as revealed in the publication *Earthen Architecture in Latin America* (Correia et al. 2016).

Local Knowledge

Working on heritage implies valuing local and traditional knowledge, which for thousands of years was key to fulfill humanity's housing needs. Nowadays, heritage conservation also demands the preservation of craftsmanship skills. Viewed as a resourceful database of local building culture, this know-how is becoming widely respected, as it is now considered part of the knowledge required for the maintenance of monuments, but also of vernacular heritage. In Japan, keeping alive traditional craftsmanship skills is a way of preserving the authenticity and integrity of their principles, especially among the most holly Shinto shrines and Buddhist temples classified as World Heritage sites.

Local know-how associated to intangible heritage is essential—the cornerstone, even—for conservation in contexts where social and cultural cohesion are at the core of local sustainability. Safeguarding cultural heritage as well as the knowledge of intangible resources through capacity building therefore constitutes a fundamental contribution for cultural diversity and human sustainable development.

Establishing relations that value the development of strategies to enhance local knowledge in different communities takes time. One way of creating such relations, for instance, is through workshops. However, if the same workshop content is developed recurrently in many different places then its impact will be the exact opposite. The main goal should be to identify the know-how

of local building cultures, in order to establish strategies to enhance them and value their conservation. Rediscovering their building tradition highlights the importance of communities and their heritage, and thus contributes to the local economy. This in turn helps to place value on the identity of the community and its sustainable development. It could also improve the social stability of the community and create the conditions for a more balanced approach toward the preservation of heritage, as recommended by the international conservation charters and guidelines.

Life Cycle of Buildings

With the current emphasis on high-performance construction, why is know-how of local building culture important?

The building sector plays a key role in the consumption of energy and resources in the world, as well as in the production of waste. According to UNEP-SBCI, it is estimated that at present buildings contribute as much as one third of the total global greenhouse gas emissions (UNEP-SBCI 2009). This is mainly due to the use of fossil fuels in their operational phase. However, the three phases of energy consumption in the lifespan of a building should be considered (Evangelinos and Zacharopoulos 2013). The first phase is the *manufacturing-construction period*: materials are extracted from the natural environment, processed or manufactured (*embodied energy* relates to the production of the material; *grey energy* relates to the transport of the material; and *induced energy* relates to the energy needed for the construction of the building). The second phase is the *useful life of the building*, which relates to the energy needed for its maintenance (*operating energy* required for the *building* during its lifespan). Finally, the third and last phase is the building's post-life period (the energy needed for the *demolition* of the building, *recycling* of the material, and the *reuse* of any relevant component).

One of the key factors behind the present interest in traditional building techniques and local know-how relates to the savings derived from the use of natural, ecologic and sustainable materials rather than excessively processed ones. Furthermore, this type of traditional building exacts far lower levels of energy consumption. Earthen architecture, for instance, so much in fashion over the last decade, provides a perfect example of this situation: embodied, grey and induced energy requirements are reduced to a minimum; the material is available onsite, so no energy is consumed in processing or transporting it; and energy consumption requirements for its construction are minimal. Also, the operating energy required for the maintenance of the building can also be reduced if bioclimatic features are considered in the building's design, for instance, through the incorporation of heating and cooling systems to the passive design. Furthermore, the use of natural building materials reduces the chemical impact on the inhabitants, which contributes to a better quality of life. Finally, the post-life building phase has an enormous potential, as the material can be recycled and reused in construction.

The Focus on Education

Students of architecture, engineering, planning, and conservation must be trained to value and enhance the local buildings cultures still prevalent around the world. In most architecture and engineering faculties students are taught about modern materials and contemporary building systems. Most of the time these university students are not sufficiently capacitated to understand and value traditional building knowledge, even if a great part of the world's built heritage has been constructed using local building cultures. As a result, and following the lessons they have been imparted, a good number of architects and engineers engaged in heritage intervention opt to remove parts of the building's interior and replace them with new materials and contemporary building systems. Indeed, at times the scope of the "rehabilitation" is overstretched and interpreted as an actual "reconstruction," with new materials and spatial typology.

But new contemporary architecture and heritage intervention could also incorporate community values and ascribe significance to knowledge of building traditions. In this regard, curricula of schools and faculties of architecture, engineering, urban design, planning and conservation should play a key role in valuing and enhancing traditional building systems, local knowledge and the uniqueness of the vernacular architecture of the different countries. Architecture should be with the people and for the people and should genuinely contribute to the improvement of society and the quality of people's lives.

Much of the world's expected future urban growth will take place in developing countries. As a result, these

The use of natural, ecologic and sustainable materials, traditional building techniques and local know-how exact far lower levels of energy consumption

countries will face numerous challenges in meeting the needs of their growing urban populations (United Nations 2014). One way to balance this huge influx will be to value the knowledge held by traditional communities. Preserving and understanding human and social systems can have a major impact on the quality of life of the different communities. Considering the great diversity found in local vernacular architecture, a single and conventional international architecture will not adequately respond to all the intrinsically unique contexts of the world. Respect for diversity and empirical knowledge with critical thinking can contribute to look at each context with a distinctly creative and intelligent approach. Relying on local knowledge gives communities a chance to take part in a more balanced and ethical sustainable development.

If know-how of local building culture is integrated in this new contemporary and participatory architecture, then the relevance of the social contribution made by all parties involved becomes a crucial aspect of quality building, which therefore also contributes to the sustainable development of communities.

* * *

It is no longer sufficient to lay the blame on politicians. It becomes the responsibility of citizens to demand but especially to work toward the improvement of their quality of life and that of the people and the society around them. As architects, engineers, planners, conservators, builders, artists, teachers, researchers, parents, citizens, we have a responsibility to identify the priorities and criteria that make the transfer of knowledge and know-how possible, significantly boosting local communities; develop skills to integrate local knowledge into projects, ensuring that they are in tune with their environment and social community; engage with isolated and segregated communities to incorporate them into society in a open, balanced and respectful way, because no culture should dominate over other cultures; and finally, contribute toward the creation of a more socially responsible world.

We must all take more action and contribute toward sustainable development, community engagement, capacity building, and valuing of local knowledge with social responsibility. This can be achieved if we move beyond our comfort zones, and endorse personal engagement, ethical work and responsible teamwork.

References

Carlos, Gilberto D., Mariana Correia, Sandra Rocha and P. Frey. 2015. "Vernacular Architecture?" In *Seismic Retrofitting: Learning from Vernacular Architecture*, edited by Mariana Correia, Paulo B. Lourenço and Humberto Varum. London: Taylor and Francis Group: 11–16.

Correia, Mariana. 2009. "Sustainability: Concept and Development." In *Renewable Energies*. Porto: Atelier Nunes e Pã: 68–76.

Correia, Mariana, Letizia Dipasquale and Saverio Mecca. 2014. *VERSUS: Heritage for Tomorrow. Vernacular Knowledge for Sustainable Architecture*. Florence: DIDA. http://www.fupress.com/archivio/pdf/2920_7032.pdf.

Correia, Mariana, Celia Neves, Luis Fernando Guerrero, and Hugo Pereira Gigogne. 2016. *Arquitectura de Tierra en America Latina*. Lisbon: ARGUMENTUM and PROTERRA.

Evangelinos, Evangelos, and Elias Zacharopoulos. 2013. "Sustainable Design, Construction and Operation." In *Environmental Design of Urban Buildings: An Integrated Approach*, edited by Mat Santamouris. London: Earthscan: 63–72.

ICT Data and Statistics Division. 2015. *MDGs 2000–2015: ICT Revolution and Remaining Gaps*. Geneva: Telecommunication Development Bureau and International Telecommunication Union. https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2015.pdf.

Oliver, Paul. 1997. *Encyclopedia of Vernacular Architecture of the World*. Cambridge: Cambridge University Press.

Oxford Dictionary. 2016. Oxford: Oxford University Press. https://en.oxforddictionaries.com/definition/vernacular.

Rapoport, Amos. 1972. *Vivienda y Cultura*. Barcelona: Editorial Gustavo Gili.

Rudofsky, Bernard. 1990. *Architecture without Architects: A Short Introduction to Non-Pedigreed Architecture*. Albuquerque: University of New Mexico Press.

United Nations. 2014. "World's Population Increasingly Urban with More than Half Living in Urban Areas." http://www.un.org/en/development/desa/news/population/world-urbanization-prospects-2014.html.

UNEP-SBCI (United Nations Environment Programme, Sustainable Buildings and Climate Initiative). 2009. *Buildings and Climate Change: Summary for Decision-Makers*. United Nations Environment Programme. Paris: UNEP-SBCI and UNEP-DTIE. http://www.unep.org/sbci/pdfs/SBCI-BCCSummary.pdf.

UN-Habitat (United Nations Human Settlements Programme). 2003. *The Challenge of Slums: Global Report on Human Settlements*. London: Earthscan Publications.

UN-Habitat (United Nations Human Settlements Programme). 2006. *The State of the World's Cities Report 2006/2007. 30 Years of Shaping the Habitat Agenda*. London: Earthscan and UN-Habitat.

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