

In search of Responsible Architecture: Sustainable Building Practices for Behavior Change

Keywords: *Responsible Architecture, Sustainable Building Practices, Design for Behavior Change*

By holding a stake in designing our surroundings, architects are constantly defining the way people use spaces, communicate, live, feel and behave (Hall and Hall, 1995), making design choices can frequently impact the environment, society and economy, before and after the construction.

Recent researchers have started to consider how design can influence people's environmental behavior and how architecture can influence people to adopt a more sustainable-lifestyle, by including clients in the design process (Wever et al., 2008) or giving people a chance to experience sustainable construction (Thomsen et al., 2013), or incorporating of behavior change activities into the project (UN-HABITAT, 2015). Therefore, behavior change strategies are an important element that should be included in holistic methodologies to design, evaluate and practice architecture.

In search of new methods of architectural practice that addresses the growing need for design that engages contemporary environmental, economic and social issues, my PhD thesis introduces the concept of Responsible Architecture (RA). RA is presented as a design paradigm that uses participatory sustainable building practices to promote long-term sustainable behavior as a goal. This study proposes 20 design and building principles to achieve RA that address environmental, economic, social and behavior change strategies (see figure 1 and 2).



Figure 1: Wheel of main components of Responsible Architecture

Through analysis of an individual case study reports on different sustainable building practices in Brazil, Japan and Mongolia, the thesis will present examples of a sustainable constructions that used RA principles in its design and building process. Data was collected through direct participation in the construction of case studies and post-occupancy evaluation. Methods included participant's interview surveys, focus group-discussion and observation.

Analysis will attempt to evaluate how these projects succeeded in building sustainable houses with low budget while impacting participant's pro-environmental behavior change (example, by incorporating local and recycled materials, educational programs and community collaborations with local volunteers into building practices, see figure 3).

Design Principles of Responsible Architecture					
Environmental	1) To respect environmental context and landscape to have minimal environmental impact, by making appropriate choice of site, ensure site's regeneration integration	2) To benefit from natural and climatic resources climate and the terrain qualities are taken as the starting point to conceive the design, taking advantages of bioclimatic features, provide proper orientation and natural resources management	3) To reduce pollution and waste to work with local and recycled materials with low embodied energy, reduce transportation and CO ₂ emissions	4) To contribute to health and welfare ensure thermal comfort with natural and passive heating and ventilation, provide general wellbeing with adequate design and avoid toxic materials	5) To reduce natural hazards effects design architectural strategies to cope with local natural risks
Behavior change	6) To promote participation and sense of ownership promote direct participation in building practices and decision making	7) To provide adequate contextual factors provide the right settings (physical and psychological) and facilities to support behavior change	8) To promote motivational strategies promote goal-achievement experiences and impacts in small and big scales	9) To promote knowledge creation promote educational building practices and knowledge exchange between participants	10) To create and enhance intangible values transmit cultural values and history, incorporate social rituals, building community character and sense of place
Social	11) To protect cultural landscape and cultural adequacy understanding the value of the place and its dynamics, land use that sustain biological and cultural diversity	12) To transfer construction cultures promote practical building experiences involving different generations and cultures, include indigenous knowledge and workmanship	13) To enhance innovative and creative solutions develop collective intelligence, encourage diversity in techniques and allow experimentation	14) To address rights and equality consider marginalized groups and equality between participants, ensure access to information, consider cultural expression and adequacy and age-gender sensitive shelter	15) To encourage social cohesion promote intergenerational relations and value the development of collective welfare, bonding activities and space for community meetings
Economic	16) To save resources reduce, reuse and recycle, promote building compactness, use renewable energy and construction systems adequate to local conditions	17) To extend the building lifetime strong structure and design that prevents erosion, planning maintenance, flexible design for possible changes and extensions	18) To ensure affordability optimize use of materials and schedule, enhancing technical simplicity, reducing transportation efforts, usage of low-transformed materials	19) To promote local autonomy and activities promote local production of food, share resources, enhance local human resources and production with local materials	20) To ensure safety and access ensure access to infrastructure facilities, employment, security of tenure and safety against threats (human/natural)

Figure 2: Draft of 20 design strategies of Responsible Architecture



Figure 3: Case study in Rio de Janeiro, Brazil. A sustainable house built by volunteers.

Responsible Architecture could be able to change people's perception of value and their expectation of what they can do towards building and designing in a sustainable way. With this lesson learned, this study will promote a new way of practicing architecture that reflects the state and values of the society we want to create. This can lead to a great shift in the way we think, practice and teach design and also how we will teach the next generations about our discipline.

References

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