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## **Taking local building cultures into consideration for a better sustainability of housing projects**

The study of the history of construction shows that builders have always been creative in adapting and upgrading housing structures by making the best use of locally available resources according to their needs, while taking into account local economic, social and climatic constraints. Societies worldwide have developed specific building cultures resulting in "contextual" architectures, featuring unique construction methods and determining specific ways of life. These, however, are not static. They evolve as societies do, in particular at times when exchanges with other countries and cultures take place, through which possibly new knowledge and/or building materials and techniques are introduced.

These local building cultures have often been linked to a need recognised and valued by traditional societies: the balance between Man and nature. This ancient quest equates to what is described today as "sustainable development". So many good examples of this concept are already present throughout the world! Unfortunately, under the influence of globalisation, these local intelligences are increasingly discredited, and have even become "endangered", similarly to a great number of animal or plant species. This does not only represent a loss in terms of worldwide cultural diversity, but also relates to the disappearance of amazing knowledge and scientific data that are relevant and can still be useful to humanity, as foundations for global thinking and, even more so, as principles upon which to act locally.

This knowledge relates to various dimensions: the definition of settlements, the distribution of activities and the management of urban and rural contexts, architectural composition, materials and the organisation of constructions. It also conveys very interesting approaches to risk prevention and preparedness and to post-disaster reconstruction. In fragile or high-risk areas, traditional technical solutions and their associated skills are often particularly clever and highly specific, and thus easier to detect.

With globalisation, building intelligences are wiped out, in the same manner and at the same pace as forests are disappearing from our planet. This takes place in a quieter manner, however, the effects are equally devastating. Such changes started to occur in the first half of the last century with the industrialisation of a number of building methods as background (mainly dealing with the use of cement and concrete) and through the generalisation of education principles exclusively dedicated to their implementation, involving engineering schools as well as technical and vocational education institutions.

Today, two different worlds coexist: that of the "rich", capable of adopting this modernity, and that of the "poor" that maintain their traditional ways of living but whom are pressured (socially and by the media) into building bad copies of modern buildings, or into making inadequate and even dangerous technical blends. A terrible example of this problem was noted in Haiti, after the earthquake of January 2010, as small traditional houses stood, whereas poorly constructed "modern" structures that the vast majority of Haitians struggle to afford proved to be deadly.

Still, international building standards prevail, bringing about similar results all around. Every disaster tends to remind us of this fact. In a majority of cases, close observation shows that purely traditional buildings are more resistant, or at least cause fewer casualties. Also, their rehabilitation is possible, simple and inexpensive and so accessible to many. These models should, therefore, inspire professionals involved in reconstruction programmes.

In the 1970s a new kind of awareness started to develop, strongly inspired by the work of the Egyptian architect Hassan Fathy, in the quest for alternatives to "modern" well regarded but too expensive architectures on the one hand, and, on the other hand, to traditional models, wrongly regarded as obsolete and irrelevant. Approaches long remained mainly technical in this era, that of "Appropriate Technologies", which granted access to a number of good results, but lacking in terms of cost-efficiency, reproducibility and so as a response to real needs and their variety worldwide.

Despite this awareness, an increasing number of disasters and pressure from the media keep on pushing towards housing programmes that aim on quantitative rather than on qualitative results. This is especially true at times when choices must be made in a hurry, which tends to lead to "ready-use",

so-called "universal" solutions. While it is true that such solutions can provide answers to needs in the short term, they often prove ineffective, and even counter-productive, in the medium and long term, as they generate inadequate standards and expectations impossible to fulfil at a large scale.

For the past 30 years and in collaboration with many partners, CRAterre ENSAG has conducted research activities adapted to actual programmes in the field, aiming to take better account of the remarkable potentials offered by local building cultures. Through the definition of concepts, while finding opportunities to implement solutions and develop appropriate methods and strategies, the main idea is, specifically, to identify local building systems as well as building-related knowledge, know-how and organisation methods with proven effectiveness, and later, to integrate them in the definition and design of new programmes and projects. Without ruling out the possible contributions achievable through industrial production, the goal is to meet the needs and expectations of local populations, but also to provide socially and culturally acceptable as well as economically accessible solutions.

Some of the programmes implemented clearly highlight the relevance of such choices.

In Mayotte, island of the Comoros Archipelago, a housing programme was launched in the early 1980s. The programme, conducted by the SIM (Société Immobilière de Mayotte) was preceded by an ethnological study of the local habitat. This allowed to define simple and well-adapted models. Assistance was provided to build core structures, which were then completed by beneficiary families that made use of their own resources, also involved in the construction of enclosure walls and toilets as well as in the implementation of self-sufficiency farming areas. Over the past thirty years, an equivalent of more than 20.000 social housing units could be achieved based on this model, also including a number of public buildings of varied nature.

More recently, in Haiti, following the earthquake of January 2010, the NGO Misereor requested the assistance from CRAterre to establish an ambitious reconstruction programme, dealing with the establishment of 5,000 basic housing units in rural and mountainous areas. Traditional wooden structures, making use of local materials as filling, were identified post-disaster, as the constructions "that did not kill" and were thus studied, providing a foundation for reflection. Their analysis revealed the existence of different building types (depending on conditions such as location, altitude, local economic activities, etc.) and the systematic presence of an expandable core. These characteristics were included as part of the design of new basic home models. Following the enthusiasm manifested by local populations after the construction of the first prototypes, the large-scale programme could be launched. It was conducted by local NGOs, with the participation of local artisans, the "Boss", in the framework of a traditional support-based system: the "*Kombi*". Traditional Haitian home decorating practices were also implemented as part of the programme and so, homes featuring bright, cheerful colours emerged, in contrast with unfinished, grey and sad buildings, leading to a valorisation of local cultures that was highly appreciated.

These projects are contributions demonstrating that the proposed approach can indeed generate effective solutions by yielding useful and sustainable results. At the same time, international normative frameworks continue to develop. Contrary to good intentions expressed in fragile contexts, norms often result in social exclusion and the irreversible loss of local identities related to architecture, lifestyle and land use. Yet, the potential of local building cultures is colossal and local building cultures represent an almost unlimited field of research for the development of useful and aesthetic solutions, conveying principles of resilience and sustainable development.

In this perspective, it is interesting to note that, as we manage to build a positive image for traditional architectures and offer it to the populations bearing them, very quickly, qualitative leaps may be achieved and widely replicated. For this to be effective, we must continue to work on the reverse engineering of traditional buildings. Indeed, many projects are blocked by lack of technical data and information on actual performances needed to reassure project managers and control offices. We are actually dealing with an in-depth reflection on architecture, because it is often in its global intelligence that the key elements to its actual valorisation may be found, in connection with the use of local materials, including modest-performance materials (earth, bamboo...). This being said, some traditional architectures do require improvement. Technical thinking remains essential. However, it is indeed by promoting local artisans and remaining close to the solutions they master and to the construction costs corresponding to these practices that we may most likely succeed at suggesting

improvements that may effectively be applied and adopted by indirect beneficiaries, in parallel and after the completion of projects.

It is therefore urgent for national and international institutions to be sensitised. Some have already joined CRAterre's efforts to launch a manifesto on "Promoting local building cultures to improve the efficiency of housing programs." This initiative is also supported by UN Habitat as part of its Global Network for Sustainable Housing (GNSH) and in the framework of some of its projects, as is the case in Pakistan, Republic of Congo or Somalia. The concept is also promoted by UNESCO and the World Bank has also recently integrated a more cultural approach within its "New Environmental and Social Framework". This should facilitate the adoption of the concept by other organisations, leading to the improvement the living conditions of populations around the world, while preserving cultural diversity.

To further enable such processes, CRAterre, in the framework of its research programme LABEX AE&CC, works in collaboration with the IFRC to establish reference materials to be used by the Shelter Clusters that provide basic information on the principles of traditional architectures and their possible integration as part of reconstruction programmes. Even though such tools prove useful, it would be even more beneficial to carry out in-depth research studies in high-risk countries, which would lead to the possibility of working in a more preventive manner, thus limiting the damage due to hazards and strengthening local capacities for resilience. If these approaches are particularly effective in areas at risk, the fact remains that their application is equally relevant in the context of housing improvement projects, as they enable to identify the real needs and expectations of local communities and respond with solutions that are fully accessible, namely in technical and financial terms, and which also meet the necessary requirements in terms of social recognition. It is through becoming more capable of supporting themselves, that communities, even in the poorest contexts, may regain their dignity and confidence in the future.

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