TOWARD AN ETHIOPIAN ARCHITECTURE

ALFONSO RAMÍREZ PONCE

Graft the world into our republics, but the main stem must come from our own republics.

José Martí

If the cultural interchange between Ethiopia and Mexico have been infrequent, the architectural and urban ones have been almost inexistent. This prompts me to think about the Ethiopian leader Haile Selassie, who visited my country in the middle of the last century. As a testament of his visit a square in Mexico City was named “Plaza Etiopía”, and conversely in Addis Ababa a square was named “Plaza Mexico”. Initially, they were conceived as two public spaces for the enjoyment of the inhabitants of both cities, particularly for the neighbours in the local vicinity. However, in contrast with the Plaza Etiopía in Mexico, which is still public, the Plaza Mexico, to my surprise, has since been converted to a semi-private square. The civil servants at the Mexican embassy decided to put up a fence around the gardens, such that people could see it but not “inhabit” it. It was a decision, which embarrassed me greatly.

Among the many pleasant impressions of my first trip to Addis Abeba, was my visit to the EiABC campus (Ethiopian Institute of Architecture Building Construction and City Development). The Institute includes several buildings constructed with experimental methods, applying the results of their research into different constructive techniques. We believe this approach to be essential in order to determine optimum construction solutions based on cost efficiency, among other factors. Uruguayan engineer Eladio Dieste termed this approach “a healthy architecture” and I would echo that sentiment in a phrase which attempts to define the crucial focus of designing and constructing in our developing countries: “to do more and better with less”.

In particular, I discovered a house on the EiABC campus, which had a round base with various levels and thick walls. I assumed the walls have been constructed based on the rammed earth technique. Window lights had been designed through brick’s lattice and what most caught my attention were the bamboo roofs, --a material that exists in the northern part of Ethiopia--, which were beautifully decorated. I immediately thought of Moroccan roofs, not because of the material but due to the use of colour and the striking decoration.
But to my surprise I found a two-level construction, which the EiABC has built, a Sustainable Urban Dwelling Unit (SUDU). It was a surprise because my colleagues, Lara Davis and Philippe Block from the Thin Shell Masonry Workshop, with whom I have been working in Palma de Mallorca, Spain, and more recently in October 2010 in Cambridge University, UK, were the project participants. They designed and implemented the barrel vault of the first floor with the layer vault technique traditionally used in Catalonia, Spain. This technique, which can be appreciated in Michael Ramage’s buildings, another colleague from the Masonry Workshop, results in a contemporary expression through the skilful mixing of traditional and innovative techniques.
To my great satisfaction, the cover of the second level was constructed using the technique that we use in Mexico and which I have named the “leaning brick” technique, due its main characteristic. Several Mexican architects use this technique in our buildings, although it is not a technique, which is taught in architecture or engineering schools.
The main reason why this technique is not taught in academia, is that it is the product of popular knowledge. It was not invented by an architect or by an engineer, a fact which unfortunately limits its diffusion. In this respect, I consider myself an exception since I teach it in my postgraduate seminars at the National Autonomous University of Mexico (UNAM). I decided to teach it because it provides an intelligent, beautiful, and economical way to build a roof or cover. In addition, it is based on raw materials, which are easy to source in my country.

I visited the EiABC Campus due to a friend, Dr. Assefa Gebremichael, who in turn introduced me to the architect Melakeselam Moges, who is responsible for the “leaning brick” construction. During my visit, Melakeselam told me:

“*We based the building on your instructional articles training our masons to build the dome with compressed blocks of earth. We are thrilled that you happened to visit us and are able to check our progress with the technique*.”

When several years ago I uploaded my articles and photographs of buildings to the WWW [www.arponce.itgo.com](http://www.arponce.itgo.com) with the intention of disseminating the “leaning brick” technique I never imagined that they would find “receptive eyes and ears” in Africa and in Ethiopia in particular. The SUDU has really proven my assumptions: first, any mason with interest can learn the technique, and secondly, the papers on the web can be an effective practical guide for teaching how to build with this cost-effective technique.
The SUDU is built on the EIABC campus as a research and building demo. It is a two-storey building (ground floor plus one) with a load-bearing rammed earth wall for the ground floor, with Catalan barrel vaults which provide the flooring for the first level. A compressed stabilized earth block wall is then used for the first floor reinforced at a span of 2 meters, and a roofing dome of brick without beams, similar to the ones we build in Mexico, rests over a rectangular perimeter formed by a reinforced concrete beam.

Some while ago I read an Ethiopian proverb, which reflected that: “a spider’s web cannot trap a lion. The webs of many spiders can”. Each time I make or see how a dome is constructed, I extrapolate this proverb, to say: “a small and humble brick cannot trap the space. But many bricks together can”. Our technique is the tangible expression that architecture is a social knowledge and know-how by antonomasia.

We would like to express our appreciation for the technical team who implemented the SUDU, including Dirk Hebel, Scientific Director of EIABC, the initial designers, Melakeselam Moges in collaboration with Dr. Elias Yetbarek, Housing Chairman, and the final designer Herbert Schmitz.
And as always, we have a special appreciation for those who are ultimately responsible for turning our dreams into reality, the masons: Alemu Sori, Yoseph, and Dawit Garadew. The task of building the SUDU was especially difficult for beginners given the dome’s dimensions (6m x 7.5m). In spite of this, with the right technical support the results were far beyond everyone’s expectations.

Among the numerous challenges that this successful experience has posed, has been the in depth study of the regional cultures of Ethiopia. Research has been carried out into the different ways of life, customs and traditions of a typical family, including its day to day activities. Notably, research has also examined a family’s required living spaces, the ecological toilets, the kitchen with its efficient stoves to avoid high wood consumption, the common bread oven linked to the kitchen, the need for water recycling and the use of alternative energies, among other measures that complement the idea of cost-effective and sustainable housing in urban land. This, of course in addition to the use of prime materials from the region, which are low-energy consumption and highly structurally efficient, such as those already tested by the SUDU: compacted earth, wood, bamboo, and brick, among others. The desire to discover Ethiopia’s own architectural expression was also within the realms of the project. An architectural expression, which reflected the country’s economic conditions and the search for autonomous regional architectures, complemented by the use of environmentally sustainable ecological techniques.

Architectonic works have general qualitative requisites, which in architectural theory we call principles or categories. These principles were referred by Bruno Zevi as invariants and as “lamps or spirits” by the architecture’s fan John Ruskin. In this sense, regionalism is not a movement or tendency that appears and disappears, or opposes, criticizes or resists the architectural fashions of the industrialized countries. Regionalism is a position, a posture which has existed with diverse nuances, since always and which is based on the necessary belonging of architecture to its geographical place. Thus, it does not admit the adjective limitations which have been given by some architecture critics and theorists. It is not new – Lewis Mumford-, nor critical – Kenneth Frampton – nor resistant – Marina Waisman-, it is a position which in general is thought, designed and constructed from within the non-industrialized countries and is the expression of a social, cultural and economic reality of majority groups.
The complete study of regionalism is beyond the scope of this text. We will only point out, as necessary for its analysis, three different levels. The first one is the social and cultural one. Since human beings are at the beginning and at the end of our work, their particularities and corresponding spatial needs determine the characteristics of the countless regional architectures. The second level of regionalism is its environmental character, its best known facet. The relationship with the environment at two aspects: The general, which deals with the climate, rains, winds and the seismic conditions, among others, and the specific to the place, including the topography, the access and boundaries, the dimensions and the geometry, the views from and to the plot of land, and the orientation, among others. Finally, the third aspect is the material regionalism, the way in which buildings are designed and constructed also has local accents. Here is where we position the much-cited sustainable architecture. The term sustainable comes from the concept of “sustainable development”, a development that is sustained over time. Transferring this adjective to qualify architecture is not entirely precise. Sustain is a verb that in the field of architecture, refers more to the stability and the “Vitruvian firmitas”, than the durability over time. In reality, architecture, which uses local materials, requiring low energy consumption in terms of their production, is a responsible architecture, a solitary architecture with its space and its time, the present and as it looks towards the future.

It was extremely gratifying to find a working group whose aims coincided with many other groups in Latin America and inclusive in industrialized countries. For many architects in our developing
countries, the architectonical fashions represent a model to be imitated and literally copied, producing contradictory results well known for everybody. Also, as I corroborated last year whilst visiting Cambridge University, there are several research groups which, for quite sometime, have been criticizing architectural tendencies showing with their lucid analysis its contradictions, particularly the relation with the natural environment, and its limited resources. Other very important critic is about the separation between design and construction. Sometimes the design is made without a precise specification about the materials to build it. These critical groups are not dominants, but on a qualitative level they have made sure that their voices do not go unheard.

Speaking of those groups, let me simply mention some ones; Michael Ramage and Matthew Dejong’s group at Cambridge University; Philippe Black and Lara Davis’ group at ETH in Zurich; John Ochsendorf’s group at MIT; Santiago Huerta’s group at the U. P. in Madrid and Miquel Ramis’ with his Artifex School in Palma de Mallorca. In Latin America, examples abound. From memory alone I will mention just a few. The Itinerant School of Architecture founded by Fruto Vivas from Venezuela, Jorge Morán from Ecuador, Mario Moscoso from Bolivia and myself. Groups such as the Iberamerican Seminary for Earth Construction (SIACOT) and the Experimental Center for the Economic Dwelling(CEVE). Also Eladio Dieste (1917-2000) from Uruguay, who was a teacher for many of us, Claudio Caveri, Víctor Pelli, Giancarlo Puppo, Rafael Mellace, Horacio Saleme from Argentina, Carlos Milla and Eliseo Guzmán from Peru, Severiano Porto from Brazil, Oscar Hidalgo, Simón Vélez, Laureano Forero, Lucía Garzón from Colombia; Edwin Quiles from Puerto Rico; Carlos González Lobo from Mexico and many, many others whose works are impossible to include here given the limits of this text.

Some architects of worldwide renown, have now added their voices too. Norman Foster wrote recently:
“If we live in a world which has a number of major issues in terms of population growth, climate change, energy shortages, then really there is an imperative to try to do more with less. This means that our buildings shouldn’t just use less energy but should have a zero tolerance for carbon and waste” ...“The real challenge now given increased urbanisation is for our energy use to be cleaner and less. Reducing our energy consumption is the only way to strike a balance in terms of quality of life for all ... we should bear in mind that 40% of the world’s population do not have sanitary toilets, 25% do not have electricity, 17% lack running water and a third of the world’s population live in slums”.

Sentiments such as these are not frequently expressed by renamed architects. Of particular note is the reiteration of the “more with less” philosophy coined by Pier Luigi Nervi—with early echoes from Mexican Juan O’Gorman and later echoes from Cuban, Fernando Salinas— and which exemplifies what we understand to be the basic principle of Economy, an unavoidable condition for architecture in our African, Asian and Latin American countries.

Foster acknowledges the inexcusable poverty of thousands of millions, but omits, --consciously or not--, that to a great extent, this same poverty is due to the foreign colonizing powers which have ransacked resources and which now deplete the planet’s energy resources with their hyper consumption levels. In essence, the same developed societies which Foster serves and to which he belongs. As such, it remains to be said that there will not be equality until the planet’s energy supplies are shared between all countries and social groups in an equal manner and independently of their level of development.

This may well sound more like wishful thinking rather than something that’s possible to bring about in the short term. Just think back to the reaction of the industrialized countries —the greatest polluters—, to the international summits in Kyoto and more recently in Cancun, Mexico.

In short, within the fields of architecture and urbanism, the aforementioned groups of architects with their range of ideas, are facing up to the challenge to try to resolve the world population’s urgent needs for today and for the future.

By way of conclusion, let me cite the collective work of researchers, architects, engineers and other related professionals who have critiqued the fickle and transient fashions of architecture, based on highly industrialised materials, of low
structural resistance and with very high energy consumption levels. All this, now seen through the ubiquitous lens of sustainability.

Put briefly, our principal conclusion is that architecture, not only has to respect Nature and its limited resources, but should no longer be viewed as an elitist profession, --as it has hitherto been considered--, but instead architecture should be seen as a service profession, along with many others, it’s main duty being to be of service to all.

In other words, architecture and urbanism’s short and mid term future, is not the way in which we think, plan and build for a privileged few of the seven billion human beings who inhabit the planet, but to provide dignified, useful, beautiful and secure dwellings, in order to satisfy and enhance the well being of the majority of our fellow planet inhabitants.

What do you think?

Dream or reality?
Numbered Photos (to see text)

1- Plaza Mexico
2- Ethiopian house with bamboo’s roof
3- Decorated roof
4- Cultural center; South Africa. Michael Ramage
5- House; Acapulco, Mexico
6- Popular Hospital, Mexico City
7- House; Cuernavaca, Mexico
8- Painting studio; Acapulco, Mexico
9- SUDU
10- SUDU
11- Meeting hall; Pachuca, Mexico
12- House, Mexico City
13- House; Cuernavaca, Mexico
14- Catalonian Vault; SUDU
15- Leaned brick dome; SUDU
16- Ethiopian’s Vault’s masonry workers
17- Ethiopian family
18- Ethiopian(?) building
19- Ethiopian(?) building
20- Ethiopian child’s poster
21- Ethiopian child

All the photographs taken for Alfonso Ramírez Ponce. The only exception is photo number 4.