# EVOLUTION VECTORS OF A NEW CONSTRUCTION BEYOND 'BRICKS' AND CLOSER TO 'COMPUTERS'



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He earned a Degree in Architecture from the High Technical School of Architecture of Barcelona in 1969.

Since 1981, he has been Full Professor of Construction of the School of Architecture of Barcelona, and Deputy Director since June 1994.

Adviser to the Institut Tecnològic de la Construcció de Catalunya (ITEC) since 1980.

In 1984, he set up a partnership with Lluís Clotet, a partnership that lasted until 2008.

Research Director of iMat.

Some of his awards:

FAD Critics Award (1982): Restoration of the Lonja de Mar (Barcelona), in collaboration with Roberto Terradas.

FAD Interior Design, Jury, and Critics Award (1983): Azulete Restaurant (Barcelona), in collaboration with Oscar Tusquets and Pepe Cortés.

FAD Architecture Award (1988): Simón Hall in Canovelles (Barcelona).

FAD Architecture Award (1989): Bank of Spain in Girona.

National Award for Urban Development (1983): Construction aspects of the Special Plan for Barceloneta, in collaboration with Manuel de Solá-Morales.

National Cultural Heritage Award, Autonomous Government of Catalonia (1999): Simón Factory in Olot (Girona).

DECADA Award (2009) for the Best Work Constructed in Ten Years for the Pompeu Fabra University Library as restoration of the Water Tank of the Ciudadela Park.

He is a practising architect, who also teaches and researches.

The flow of ideas and experiences between these three fields has led to a stream of experiences and reflections, which he has voiced in numerous publications, such as:

- La construcción de la arquitectura, published by Itec (three volumes).
- Cuadernos técnicos, published by Bisagra.
- Vocabulario, published by Bisagra.
- Construcciones para iniciar un siglo, published by Bisagra.
- La vivienda contemporánea, published by Itec.

### **1. PREFABRICATION**

#### THE "BLACK BOX"

There is only one way to respond to the greater demands for quality and an increase in the requirement for accountability in the building industry: the completion in the workshop, as far as possible, of all tasks under strict quality control conditions. Any subsequent non-qualified intervention would mean the loss of guarantees.



Figure 1.

#### POKA-YOKE

Work conducted on site will be minimal and building elements will be designed so that it is practically impossible to make mistakes during the assembly process. At Toyota this is known as poka-yoke.



Figure 2.

## 2. "CUSTOMIZATION"

## "CUSTOMIZATION" IN CONSTRUCTION

Nowadays the building industry aims to satisfy the specific demands of each individual client. An example is a recent advertisement from Siemens, in which it places its technology at the disposal of the manufacturing industry so that industrial products can be tailored to individual requirements.



Figure 3.

#### THE CASE OF WINDOW CUSTOMIZATION

A few decades ago an attempt to produce modular windows, which seemed a rational enough idea, given the similar dimensions of the windows that are usually installed in residential buildings, was a failure. Nowadays numerically controlled machines have simplified the industrial manufacture of carpentry which is custom designed to the millimetre.



Figure 4.

## **3. SUSTAINABILITY**

#### ENERGY SAVING

Any building system will be evaluated in accordance with its energy 'performance' - both in terms of its life cycle and its role in thermal insulation and the harvesting of solar energy.

#### REHABILITATION

The recovery, adaptation and improvement of the existing habitat is the first premise of sustainability. Housing rehabilitation processes will need to undergo significant changes. It appears that different modes of participation on the part of large and small installation industries will have the support of the Government.



Figure 5.

## 4. APPLICATION TO ONE SPECIFIC ELEMENT: FAÇADES

#### THE MEMBRANE FAÇADE

A façade needs to be regarded as a filter in the same way as organic membranes or, to be more exact, as a group of filters which can adjust the exchanges occurring between the exterior and the interior, depending on the conditions and objectives at any particular moment. To intercept or entrap energy, see without being seen, for ventilation or watertightness, to control noise or silence and so on, as well as responding to aesthetic requirements and the demands of architectural composition.



Figure 6.

#### INTERMEDIATE SPACES

In our climate intermediate spaces are traditional and particularly enjoyed. These are spaces which are neither exterior nor interior but which, in certain circumstances, offer the best of both worlds. Porches, pergolas, arbours, patios and balconies, etc. These and other new architectural elements must be recovered and promoted in our architecture.



Figure 7.

## 5. THE ROLES OF CERAMICS

#### ON FAÇADES

Ventilated façades, screens, moveable slats, blinds, lightweight panels, loadbearing panels.

#### ON ROOFS

Tiles with a filter, green, uptake function ...

#### IN WET BUILDING AREAS

The hygiene-tile association. Rehabilitation.

#### IN TECHNICAL CENTRES

The new regulations and the grouping of vertical ducts.