Evolutive housing:
architecture and technical research

Lorenzo Ciccarelli

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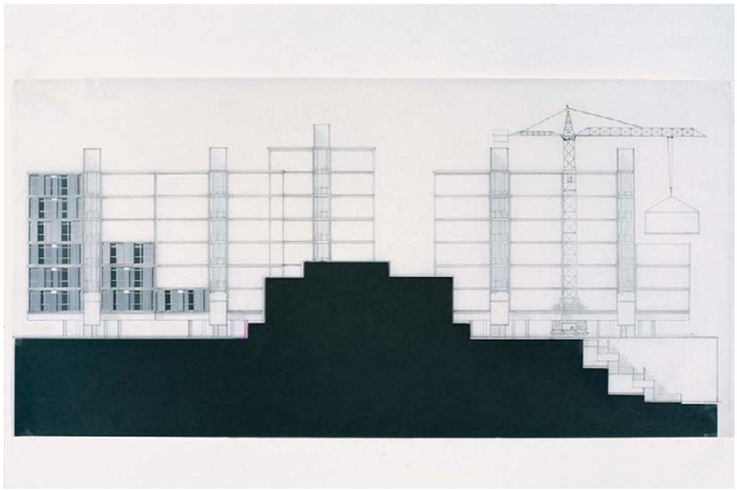
Various unifying threads run through long series of projects and completed works Renzo Piano has produced over the last sixty years: technical solutions, spatial installations or design strategies that he has investigated in numerous projects. The flexibility of the living space, together with the prefabrication of the structural components, is undoubtedly one of the strands of research running through long series of experimental structures and projects in the sixties and seventies.

The buildings of the Boschetto residential estate (1968-70) in Genoa, the free-plan house (1969) at Garonne; single-family dwellings (1970-74) in Cusago, the standard Evolutive Housing (1978) for the reconstruction after the earthquake in Friuli Venezia Giulia, and its extensive application in Il Rigo housing estate (1978-82) in Corciano: all these embodied a flexible living space, to be expanded or modified over time based on contingent needs. The flexibility of the plan is significantly also the emblem of his most famous work, the Centre Pompidou (1971-77), designed and built in the same years as these more restrained experiments.

Photo 1_*Prototype of Evolutive Housing.*

Photo 2_*The Boschetto Quarter residential buildings conceived as precast concrete boxes.*

Photo 3_ *The Boschetto Quarter buildings built on Erzelli hill.*



In these prototypes, the flexibility of the living space was invariably entwined with the construction of prefabricated elements. It was precisely the organization of the building site as an “assembly workshop” – assembling parts developed and produced in the workshop – which made it possible to organize the space to a modular logic. Renzo Piano defined a primary structure and a secondary structure, entrusted respectively to the architect and to the future inhabitant of the dwelling. The architect was responsible for designing the load-bearing structure of the building and its perimeter walls, leaving the inhabitant the task of subdividing the interior space. This strategy involved the inhabitants in the process of defining the building. Significantly, in the seventies the great architect Giancarlo De Carlo (1919-2005) engaged in “participatory” architecture, for example by holding frequent meetings with the inhabitants of the Matteotti workers’ district (1969-75) at Terni, which he was designing. Renzo Piano also proved extremely sensitive to this kind of inclusive approach, as revealed by his experiment with the workshops in the UNESCO district for recovering the historic center of Otranto (1979).

Photo 4_*One of the Cusago Houses.*

Photo 5_ *Flexibility of the living space.*

In the three residential buildings of the Boschetto district (1969-70), Piano defined a massive floor plate, made up of reinforced concrete prestressed beams, on which stood the distribution towers and the side walls, also in concrete conglomerate cast in situ. The arrangement of the fronts of the housing, as well as the internal partitions, were entrusted to the care of the future inhabitants, who could choose between a range of opaque prefabricated lightweight panels or windows.

The four single-family houses (1970-74) at Cusago, in the suburbs of Milan presented a development out of this model. From outside, the houses look the same: four single-story box-shaped volumes measuring 15 meters square, in which the blind masonry side walls support light lattice girders that completely free the domestic space, occupied only by the service block. Opaque and translucent prefabricated infill panels cover the entry fronts and rears. If necessary, the panels could be freely arranged inside to shape the different rooms of the house.

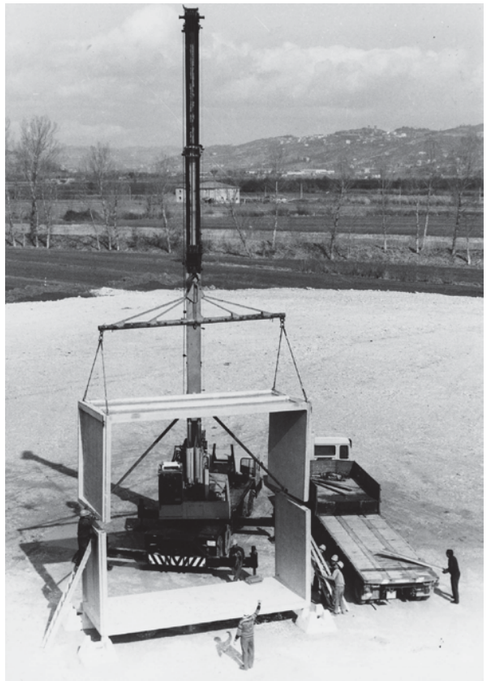


Photo 6_*Two reinforced concrete C-shaped profiles assembled to compose a monolithic box for the prototype of Evolutive Housing.*

Photo 7_*The modular living space.*

Further refined research, in collaboration with Peter Rice, appeared in the prototype presented at the 1976 competition for reconstruction after the earthquake in Friuli Venezia Giulia. The prototype – developed with the Vibrocemento Perugia company, now Generale Prefabbricati – consisted of an anti-seismic structure of reinforced concrete C-shaped profiles assembled to compose a monolithic box measuring 6 meters square for the floor, side walls and slab of the housing module. The two open sides were filled in with large windows, and the interior could be divided up with an intermediate floor supported by slender metal lattice beams. The living area in this way could vary from 50 to 120 square meters, according to the needs of the future inhabitants. The domestic space was intended as a "living organism, imperfect and modifiable," with the architect providing only the basic anti-seismic structure, which the inhabitants could personalize.

This construction system – termed "Evolutive Housing" at the time – had, albeit with variations, an extensive application in Il Rigo housing estate (1978-82) at Corciano near Perugia. The housing modules, single or clustered in line, built as duplexes for a maximum height of 12 meters, rested in parallel rows on the ridge of a hill and following its contours. Instead of movable windows, the houses have fixed walls in green, yellow, pink and bright red sandwich panels, which make Il Rigo immediately recognizable from the road lower in the valley.

Photo 8_*Axonometric drawing of Il Rigo Quarter.*

Photo 9_*The housing modules built as duplexes.*

This rich fund of research also flowed into the more celebrated buildings designed by Renzo Piano in the following decades. If the unobstructed surfaces, which could be partitioned with mobile panels, were a feature of the Centre Pompidou's exhibition spaces, his most recent museums also exhibit a marked degree of flexibility, for example in the large surfaces of the Whitney Museum of American Art in New York, with large side windows opening onto natural and urban landscapes. A similar flexibility – of space open to unforeseen uses, for spontaneous meetings and gatherings of citizens – is the emblem of the Italian piazza so dear to Renzo Piano. In endless variations, this space appears in all his buildings: from the Morgan Library in New York to the Stavros Niarchos Foundation Cultural Center in Athens, the reconstruction of the Potsdamerplatz in Berlin and Central St. Giles in London.

*Photo 10_**Panoramic view of the housing complex.***

PHOTO CREDITS

Photo 1, cover_Prototype of Evolutive Housing, 1976.
Evolutive Housing System, 1977/1978
Renzo Piano Foundation Archives, Cor__042
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Photo 2, pag. 3_The Boschetto Quarter residential buildings conceived as precast concrete boxes, s.d.
Quartiere Boschetto - Industrialized Construction System for a Residential District, 1967/1970
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Photo 3, pag. 3_The Boschetto Quarter buildings built on Erzelli hill, s.d.
Quartiere Boschetto - Industrialized Construction System for a Residential District, 1967/1970
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Photo 4, pag. 5_One of the Cusago Houses, s.d.
Free Plan House- Casa per civile abitazione Proprietà Lucci, 1970/1974
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Photo 5, pag. 5_Flexibility of the living space, s.d.
Free Plan House- Casa per civile abitazione Proprietà Lucci, 1970/1974
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Photo 6, pag. 7_Two reinforced concrete C-shaped profiles assembled to compose a monolithic box for the prototype of Evolutive Housing, s.d.
Evolutive Housing System, 1977/1978
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Photo 7, pag. 7_The modular living space, s.d.
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Photo 8, pag. 9_Axonometric drawing of Il Rigo Quarter, s.d.
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Photo 9, pag. 9_The housing modules built as duplexes, s.d.
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Photo 10, pag. 11_Panoramic view of the housing complex, s.d.
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