Le Corbusier in the sun

The Marseilles Unité and the monuments of Chandigarh have been held up as examples of Le Corbusier's interest in passive energy control. Christopher Macdonald questioned these assumptions and attempted to check his hypothesis on a visit to India.

During the 1930s, Le Corbusier was working largely in hot countries, and the invention of the **brise-soleil** seemed to be the answer to problems of heat gain. Clive Entwistle, the British architect, who translated several of Le Corbusier's books, wrote to him in August 1946: "I take this opportunity on behalf of young people here to thank you for your latest gift to architecture: the brise-soleil, a splendid element, the key to infinite combinations. Now architecture is ready to take its place in life. You have given it a skeleton (independent structure), its vital organs (the communal services of a building), a fresh shining skin (the facade). And you now have given it magnificent clothes, adaptable to all climates! You must be a little proud!" (Deuxième Complète, Vol. IV, p.105).

In 1935 he developed horizontal, movable shutters for a housing scheme in Barcelona – the year in which he proposed **repetition on the concrete** and the **new functionalism** for the Geneva Life insurance office building. In that year, he proposed a block of flats in Algiers with sheer glass walls on the north and east sides, and **brises solaires** on the south and west elevations.

In 1930, Le Corbusier went to Brazil and acted as consultant architect for the Ministry of Health and Education in Rio de Janeiro. The result was an office building with **brises solaires** on the north (sun-facing) elevation. This was the first time he gave this treatment to an office building, perhaps as a result of his observations of the conditions suffered by the office workers in New York, due to the lack of protection from direct sunlight. He was not, however, altogether happy with the result: "The Ministry of Education and Public Health at Rio ... offers the first example of **brises-soleil** in modern architecture. But a mistake was made. The horizontal panels of the **brises solaires** are moveable. The real principle is this: it is the sun that does the moving, never once occupying the same place in the sky for 365 days. A scheme can therefore be devised, based on precise data: a) the course of the sun on every day of the year; b) problems of the latitude of the place where consideration is for example, the sun never touches a pane of glass during the summer period, between the two equinoxes, but in winter the sun may be perfectly bearable. On the one hand, one absolute among cosmic values; on the other, one relative: human predilections, freedom of choice." (My World, 1960, p.111).

This observation is significant as it demonstrates that Le Corbusier did not understand his own invention properly: it should be pointed out that under some circumstances, moveable **brises-soleils** may be the only way to achieve at least two hours of sunlight per day at the winter solstice (Charter of Athens 1951) – and protection from direct sunlight during the summer months: the sun is in the same position in the sky on the two equinoxes (i.e. solar geometry is symmetrical on either side of the solstices) but the temperature is, in most places, different. The sun may be desirable at the winter solstice but is intolerable at the summer solstice. Therefore fixed **brises-soleils** are not entirely appropriate.

Marseilles

After the War, Le Corbusier's work made a change in direction away from the unquestioning faith in Modernism and the new machine age towards a more responsive architecture, with more aesthetic emphasis on the crude and rustic, rather than the pure machine aesthetic. Even in the pre-war designs of the machine aesthetic, Le Corbusier showed a great interest in control of the environment, but the emphasis was on literally overpowering the natural environment with mechanical technology (near neutrality). This fitted very nicely with his predilection for the machine aesthetic, which was undoubtedly the generator of the technology.

But the difficulties of relying on mechanical environmental control were very apparent, and Le Corbusier's work began to get more involved with more passive means of environmental control, and ideas like the **brise-soleil**, and the **grille climatique** were adopted more often. There are sketches showing sun path diagrams, and CIAM's 1961 Charter of Athens prescribed that at least two hours of sunshine per day on the shortest day of the year should be allowed to enter every dwelling.

These are doubtless sound objectives by today's standards, but there is some evidence to suggest that the ideas were often severely compromised by Le Corbusier's compositional concerns. To give one example, one of the main compositional elements in the designs for the Unité of Habitation in Marseilles was his invention of the **brises-soleils**. For best results the rectangular buildings should be oriented so that the long facade should face south or even slightly south-east, so that the low morning sun can enter the