17 LE CORBUSIER PART 2 1932–1965

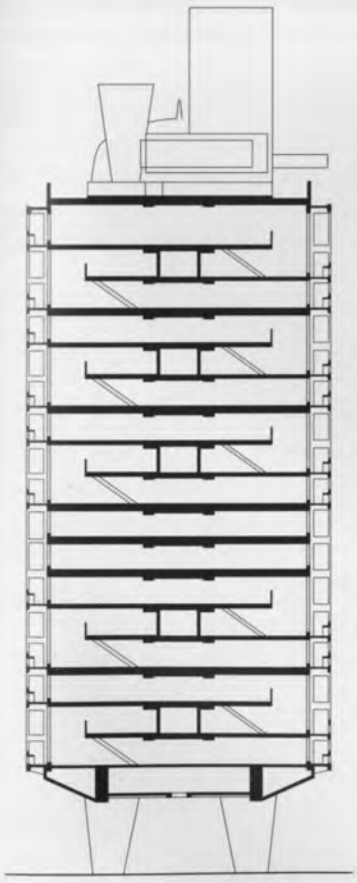
Unité d'Habitation in Marseille, completed in 1952, is one of the great buildings of the twentieth century – radical in concept, bold in execution and enormously influential. It is an apartment block with communal facilities, and as such owes something to Russian housing projects of the 1930s by Moisei Ginzburg and Ivan Nikolaev (see Chapter 11). But whereas they were designed to promote a communist reordering of society, the Unité, as Le Corbusier was at pains to point out, was designed to support traditional family life. Its apartments are like houses – most of them two storeys high, facing in two directions, with double-height living rooms, and balconies on both sides of the block. It is an idea that goes back to the Immeubles Villas project of 1925 (see page 114). Fitting such dwellings into an economical 18-storey slab was not easy. They are rather narrow, their bedrooms like minimal ship's cabins, and the access corridors have no daylight. But these sacrifices were necessary to achieve double height and double orientation – the key features that make these apartments feel like individual homes rather than mere allocations of horizontal space. Each enjoys both morning and evening sun, and a sense of orientation in relation to the distant hills and the sea. A cross-section through the block shows how this is possible, with interlocking apartments and wide access corridors on every third floor. It is ingenious, though not entirely original. Ginzburg made a partial version of it in the Narkomfin Building (see page 136).

Le Corbusier, c.1947. Le Corbusier contemplates a model of the Unité d'Habitation roof.

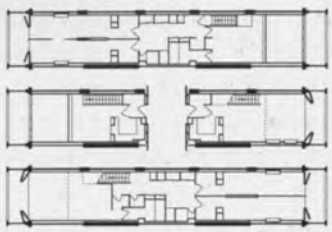
The Unité, then, is a vertical stack of houses, a village for 1,600 people, and like a village it provides for other aspects of daily life. There is a row of shops on the seventh floor, and a small hotel. The roof is like a park with a paddling pool, an exercise area and two freestanding communal buildings, one of them like an upturned boat, all surrounded by a running track. Engineering necessities like air vents and lift motor rooms are treated like concrete sculpture. There is continuity here with Le Corbusier's earlier architectural and urban ideas – for example the flat, usable roof and the pilotis, which are now thick and muscular, like a weightlifter's thighs – but a transformation has taken place. Whereas the Purist villas were abstract compositions of uncertain material constitution (were they reinforced concrete or plastered blockwork?) the Unité is made of coarse concrete, marked for ever by the grainy wooden boards against which it was cast. What architects often call 'materiality' is now the most important determinant of the building's character. Le Corbusier called his concrete '*béton brut*', which means simply 'raw concrete', but the phrase was later anglicized and incorporated in the name of a stylistic movement: 'New Brutalism' (see Chapter 21). The surface texture of the material is matched by the larger, formal texture of the building's exterior. Elevations are gridded like crates, the glass walls of the apartments set well back in balconies that serve as *brises-soleil* or sun breakers. Later Brutalist concrete buildings were criticized for their dull greyness but the Unité is painted in primary colours, albeit carefully framed and limited to the flank walls of the balconies.

The Unité had its origins in pre-war visionary projects like the Ville Contemporaine and the Ville Radieuse, and in more specific proposals such as Le Corbusier's post-war plan for the reconstruction of Saint-Dié in eastern France.

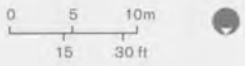
Unité d'Habitation, Marseille, France. Le Corbusier, 1952. An enormously influential building, though it owes something to Russian housing projects of the 1930s.



Section: two typical units



Typical unit plans



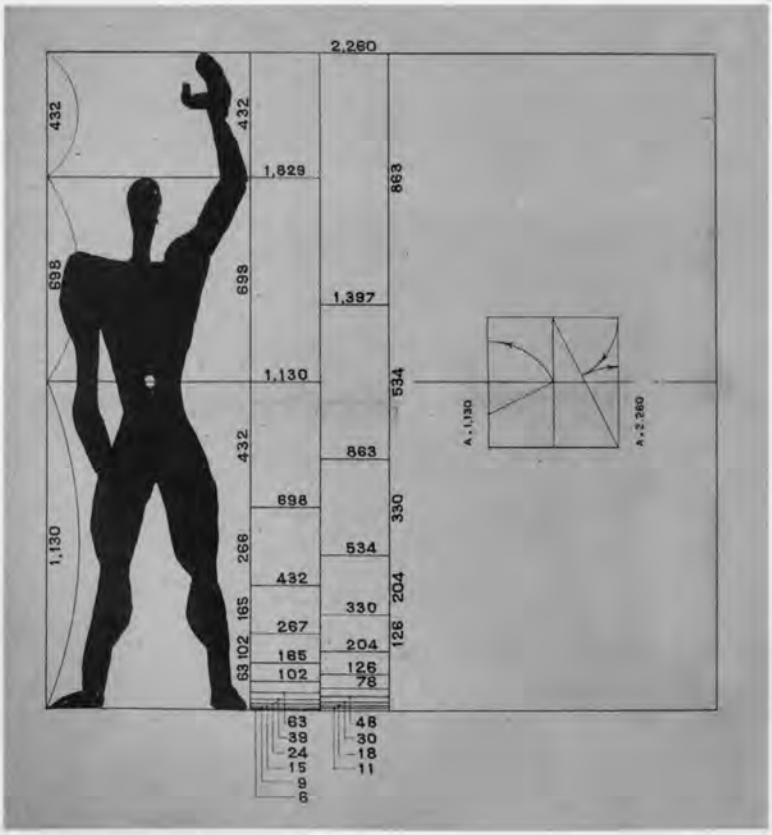
A larger urban plan is implied – not one Unité but several Unités standing in parkland like a fleet of ships on the ocean – but the idea was never realized. Other Unités were built – three elsewhere in France and one in Berlin – but always as single buildings. It was left to Le Corbusier's followers to realize the Utopian vision in a thousand watered-down versions, many of which were technical and social failures. The original Marseille Unité, however, is well preserved, the fame of its architect guaranteeing its appeal to artistic and professional tenants – painters, photographers, academics, journalists and, of course, architects. In a word, it has been 'gentrified'.

There is another, half-hidden characteristic of the Unité that reveals Le Corbusier's almost limitless artistic ambition: the building was designed according to a proportional system called the Modulor, which he invented and made available to architects all over the world. Once again it was the continuation of an old preoccupation. In *Vers une architecture*, his best-selling book first published in 1923, photographs of old buildings such as the Cathedral of Notre-Dame in Paris and the Petit Trianon in Versailles appear overlaid with diagonal lines indicating repeated proportions. Proportion in architecture is a complicated

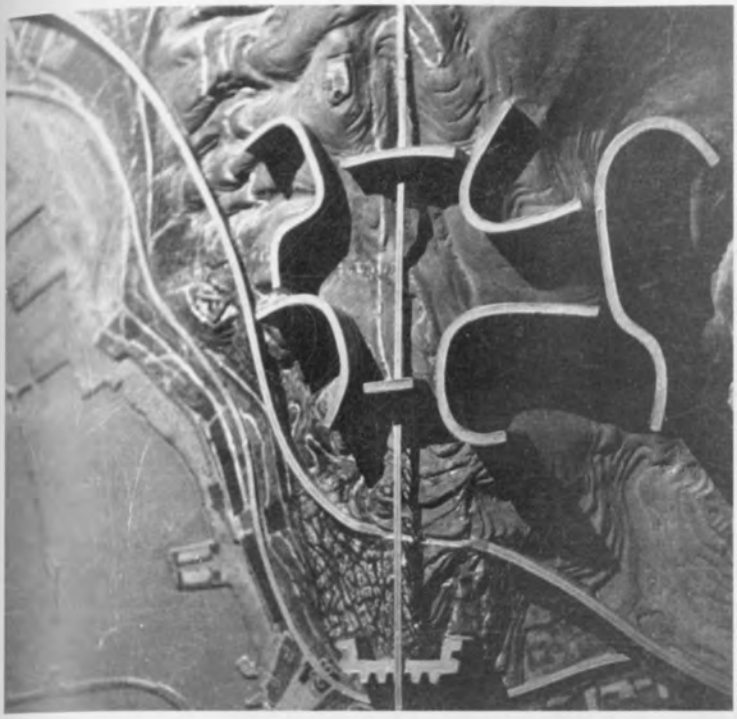
subject. Theorists distinguish different types of proportional system – commensurate (using whole numbers) and irrational (using figures like the so-called Golden Section), arithmetical and geometrical, relative and absolute. Le Corbusier's system combines all of these to arrive at a set of standard dimensions (actually two sets, designated Red and Blue) that, when used by a sensitive architect, would in theory result in beautiful, perfectly scaled buildings. The system was symbolized by the figure of 'Modulor Man' (Le Corbusier's answer to Leonardo's 'Vitruvian Man') embodying three special dimensions: 1.13 metres, 1.629 metres and 2.26 metres (3 feet 8½ inches, 5 feet 4 inches and 7 feet 5 inches) – the heights respectively of his navel, the top of his head and his upstretched hand. The system was only ever adopted by a handful of Le Corbusier's most fervent admirers, and there were fundamental objections to it (where is Modulor Woman?). Nevertheless, it possibly accounts for the confident poise of the Unité, combining roughness with precision, and order with a kind of calculated casualness.

Objets à réaction poétique

In a cursory view of Le Corbusier's career it seems obvious that the shift from a rational to a poetic approach was caused by the Second World War, but in fact the Unité is only the consolidation of a change that had taken place at least 20 years earlier. In his paintings, for example, the *objets-types* of Purism had been supplanted by what he called *objets à réaction poétique* – natural objects like shells, bones, pebbles and tree bark as well as the human figure, especially the naked female human figure. His unbuilt Plan Obus for Algiers of 1933, with its continuous, curvaceous, inhabited viaduct sweeping along the coast, reflects this new freedom. In 1934 he built a little weekend house at La Celle-Saint-Cloud, 16 kilometres (10 miles) west of Paris, for the director of a bank. Single storey, with rubble walls and an arched concrete roof covered with turf, it is the opposite of pure or machine-like. More than 20 years later this primitive style was revived in a pair of houses called the Maisons Jaoul at Neuilly-sur-Seine in the Paris suburbs. The houses stand at right angles to one another and are similar but not identical. Their coarse brick walls – discontinuous, with small windows, often full height – support concrete floors and roofs cast on traditional Catalan vaults of clay tiles. A spine wall divides the space unequally, allowing a variety of room proportions, and ends are in-filled with panels of plywood and glass. The materials are natural (if plywood can be considered natural) and the technology adapted from vernacular traditions, but the flow of space internally and the open-ended, indeterminate forms are modern, and modern in a new way. Le Corbusier's architect followers found it hard to adapt to this new primitive modernity. It seemed a betrayal of the principles that had originally inspired their loyalty. The British architect James Stirling, for example, who was later to become a leading Postmodernist (see Chapter 24), said it was 'disturbing to find little reference to the rational



Modulor Man, Le Corbusier, 1943. A system that combines the Fibonacci Series with the proportions of the (male) human figure.



(Left) Plan Obus for Algiers. Le Corbusier, 1933. Visionary project for a serpentine inhabited viaduct sweeping along the coast.

(Below) Maisons Jaoul, Neuilly-sur-Seine, France. Le Corbusier, 1955. A new acceptance of natural materials and traditional form: brick and wood with 'Catalan' vaults.

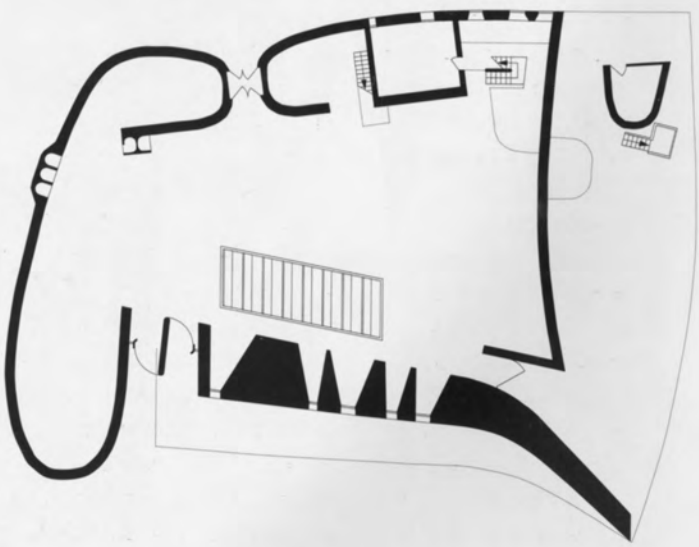
Maisons Jaoul interior. Traditional materials but modern space – open-ended and indeterminate.

principles which are the basis of the Modern Movement'.[1] The disturbance was evidently a creative one. Rough brickwork walls and exposed concrete floors showing an obvious influence of the Maisons Jaoul soon appeared in his own small housing scheme at Ham Common in west London.

Ronchamp

The chapel at Ronchamp, in eastern France near the Swiss border, completed in 1954, was not so easily absorbed. Stirling's article about it in the *Architectural Review* of March 1956 offers a hesitant description followed by a brief, baffled analysis, weakly concluding that it is a 'Mannerist' work. The building still seems weird and inexplicable, yet it has a kind of logic and even conforms to certain traditional patterns: the entrance is on the south side at the west end, there is a nave with an altar to the east, there are side chapels for quiet contemplation and worship, and there are towers, the tallest of which is visible from afar. There is stained glass too, in the deep-set, apparently randomly distributed windows in the south wall, and though the symbols in the colourful enamelled steel panels that adorn the main door (clouds, a river, an open hand, a pyramid) seem more personal than conventional, they are nevertheless open to religious interpretation in the broad sense.

This is a pilgrimage chapel on top of a hill. According to Le Corbusier, its forms respond 'acoustically' to 'the four horizons'. It is as though the three towers and the welcoming concave surface of the south wall are transmitters and receivers of spiritual messages heard faintly in the surrounding countryside like the sound of bells. With this in mind, the physical forms of the architecture begin to make sense. On the east side of the building, where a concave wall and overhanging roof shelter an outdoor altar and a pulpit to address a hillside



Notre-Dame du Haut, Ronchamp, France. Le Corbusier, 1954. Inexplicable to contemporary critics. Stirling called it 'Mannerist'.

Chapel interior. The slot between roof and wall betrays the presence of a frame.

Ground floor plan

0 5 10m
15 30 ft

congregation, the acoustic analogy becomes literal. And there is yet another dished receiver/transmitter in the concrete roof like an inverted crab shell or, when viewed from inside, a sagging tent. In the hands of a more rational architect – Eero Saarinen, perhaps – this roof would be recognizable as an engineering solution, but Le Corbusier treats it like a natural object of mysterious origin, separating it slightly from the walls to admit a narrow beam of daylight. More than a mere shelter, it lies ready to receive the blessing of rain, which it gathers and pours forth through a two-nostrilled gargoyle into a sculpted concrete basin.

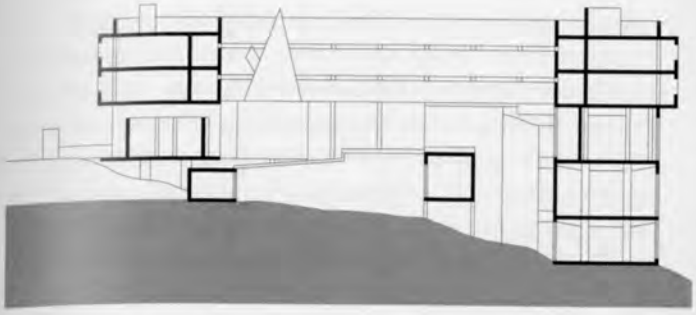
The construction of the building is irrational too. The original intention had been to erect a steel-framed mesh and spray it with concrete, like a sculptor's plaster maquette, but in the event a mixture of materials was used, including reinforced concrete and loadbearing masonry covered in rough-textured, white-painted render. This willingness to abandon the Modernist principle of 'truth to materials' was another reason for general scepticism and bafflement in the Modernist architectural community. Such was Le Corbusier's prestige, however, that his followers eventually accepted the building, cautiously admiring it but without ever absorbing it into any developing tradition. It remains a unique and inexplicable work of art.

Monastery of La Tourette

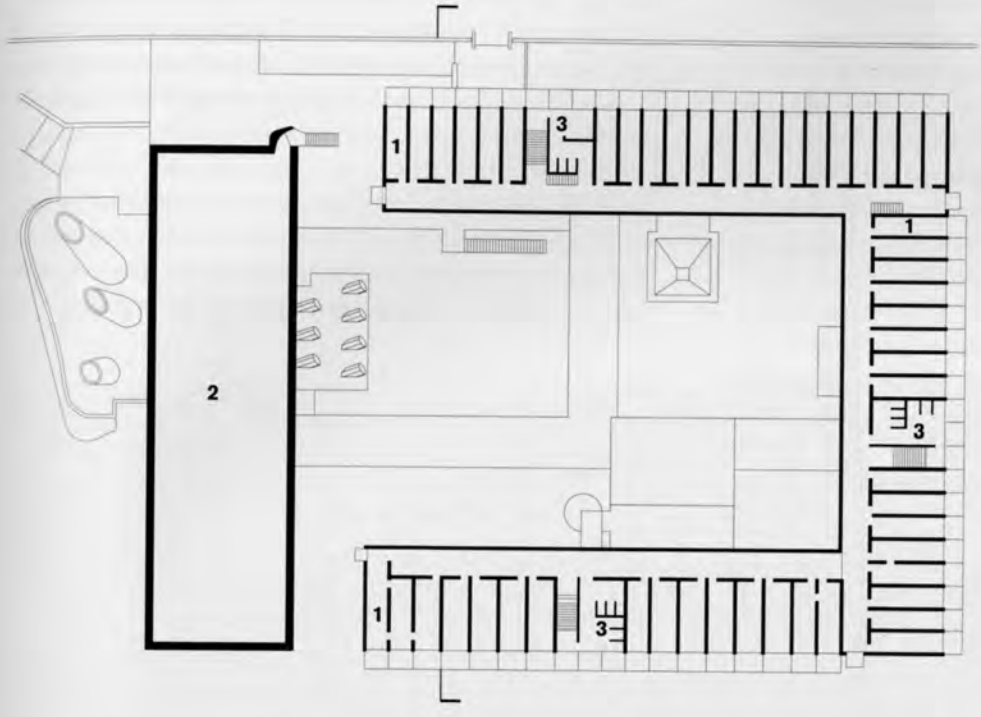
Le Corbusier's second major commission from the Catholic Church was for a new monastery, Sainte-Marie de La Tourette, at Eveux near Lyons. The brief called for 100 cells, a church, a library, a refectory and all the ancillary accommodation necessary to support a community of Dominican friars. There was, however, another element to the brief. The client's representative, Father Marie-Alain Couturier, had visited the medieval Cistercian abbey at Le Thoronet, near Toulon, and had especially admired its secluded cloister.

A similar element was therefore to be included in the proposed new monastery. Such requests often fall on deaf architectural ears and so it was at La Tourette. Le Corbusier's first move was to choose a steep hillside site, which would make a traditional cloister prohibitively expensive. The 'cloister', he decided, would be a rooftop walkway. This was part of a bigger idea: to turn the conventional monastery upside down. Instead of a level

Monastery of La Tourette, Lyons, France. Le Corbusier, 1957. An inverted composition: walls and columns descend from a level roof line.



Section



Level 5 plan
1. Rows of cells
2. Church
3. Sanitary offices

groundline from which buildings rose to different heights, the buildings would instead 'hang', conceptually if not structurally, from a level roofline, leaving the sloping ground relatively undisturbed. The result in the finished building is an aggressively assertive form, more like a fortification than a religious community. Two floors of monks' cells are ranged along three sides of a square, their heavily concrete-framed windows staring out over the landscape as if on the look-out for approaching enemies. The fourth side of the square is occupied by the plain concrete box of the church. Further accommodation – the refectory, the library, the oratory, conference rooms and so on – is slotted in under the beetling brow of the cell ranges. Circulation across what, on a level site, would have been the courtyard is made possible by a cross-shaped corridor, ramped to accommodate changes of level. The client having unsurprisingly rejected the rooftop cloister idea, this corridor is designated 'the cloister', though it hardly deserves the name. Contemporary critics showered praise on La Tourette, assuming it to be mature work by an acknowledged master. However, its authorship has been called into question.[2] There is nothing unusual in this. The attribution of large buildings to single authors, though normal in architectural histories (including this one), is always questionable. Often it is the titular head of an architectural practice rather than the actual designer whose name appears in the credits. There is ample historical evidence that Le Corbusier closely supervised the development of the design of La Tourette, but it is equally clear that many of its most striking features were the product of a different mind, that of Iannis Xenakis, a Greek refugee who later became a world-famous composer. By his own account, Xenakis was responsible for the invention of the '*ondulatoires*', a glazed curtain-wall system used on the lower floors of the building, with concrete mullions spaced

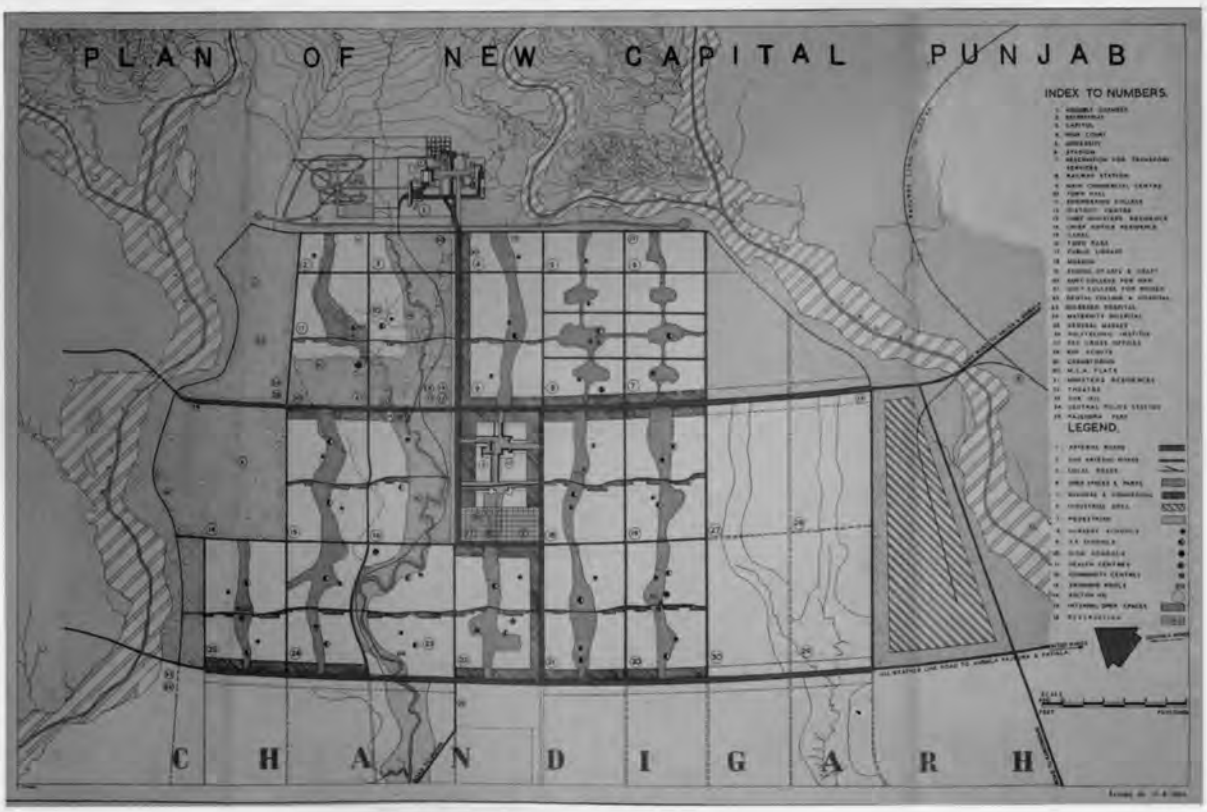
according to the geometrical equivalent of shifting musical intervals. The array of roof lights called '*mitrailleuses*', or machine guns, which light the sacristy can also be confidently attributed to Xenakis, as can the grand-piano-shaped chapel with its 'cannons of light' on the other side of the church. Critics often see what they want to see and make their interpretations accordingly. It is often said, for example, that the rough concrete that is the main visible material at La Tourette is the architectural equivalent of a friar's coarse woollen habit. The fact is, however, that the original specification of smooth cement to cover the concrete was cut for cost reasons. The same applies to Xenakis's plan to improve the acoustics of the church by fitting pyramid-shaped sound absorbers to the walls and ceiling. La Tourette is of mixed authorship and is nobody's masterpiece. Nevertheless, it has become a place of architectural as well as religious pilgrimage.

Chandigarh

One reason for Le Corbusier's rather loose hold on the design of La Tourette might have been that he was preoccupied by an even bigger and more important project in India: the new city of Chandigarh, state capital of the eastern Punjab. It was a project of enormous political importance, symbolizing post-independence India's determination to become a modern industrial power. Prime Minister Nehru took a close interest and himself suggested that the American architect Albert Mayer should draw up the master plan. Mayer was very ably assisted by the Polish-born architect Matthew Nowicki. Since 1946 Nowicki had worked in the United States, where he designed what is now the J. S. Dorton Arena at Raleigh, North Carolina (see page 216) and acted as Polish representative on the United Nations headquarters project (see page 235). His death in a plane crash in 1950 forced a rethink in the constitution of the Chandigarh design team. British Modernists Maxwell Fry and Jane Drew were approached to join the team and they in turn suggested Le Corbusier. Nowicki had himself been an admirer of Le Corbusier and this may have added weight to the suggestion. In February 1951, Le Corbusier travelled to India with his cousin and collaborator Pierre Jeanneret and for the first time saw the full potential of the project. Here was a chance to realize his ambition to design a government centre and align his architecture with the prestige of political authority. The League of Nations, the Palace of the Soviets, the Mundaneum and the UN headquarters had all been disappointments. Chandigarh promised satisfaction at last.

Mayer's master plan drew on the garden city tradition, with curving, picturesque streets. Le Corbusier's first task was to straighten it out, make it less domestic and supply it with a grand axis. It could never be as grand, or as traditional,

Plan for Chandigarh, Le Corbusier, 1951. The master plan, though based on Mayer's design, was nevertheless influenced by the Ville Radieuse plan of 1933.



as Lutyens's New Delhi but the comparison was inevitable and Le Corbusier accepted the challenge. Surprisingly, the most distinctive feature of this new plan – the siting of the Capitol complex of government buildings on the north-eastern edge of the city, 1½ kilometres (1 mile) from the centre – had already been established by Mayer and Nowicki. But this may be a case of Le Corbusier influencing himself through Nowicki, who would certainly have been familiar with the Ville Radieuse plan of 1933, which shows a similar arrangement.

The point of a grand axis is usually to focus visual attention on a single building – the Viceroy's Palace in Delhi, say, or the Arc de Triomphe in Paris. This is not the effect at Chandigarh, partly because the governor's palace that might have dominated the Capitol complex was never built. Nehru considered its symbolism inappropriate to the new democracy. So this is an incomplete plan. Even so, its composition seems so loose as not to be a composition at all. There are three main buildings: the Palace of Assembly and the Secretariat, which are close enough to engage in a formal dialogue, and the High Court, which is fully half a kilometre (550 yards) away to the south east – too far to walk even in a temperate climate. The siting of these buildings seems to obey some mysterious sacred geometry, like the pyramids of Egypt, rather than ordinary human convenience. A security fence now divides the vast, featureless plain on which they stand. Individually, however, the buildings are more powerful than anything else that post-war Modernism has to offer. They express simple architectural ideas bluntly and loudly, but in a strange, haunting accent.

The High Court, for example, is a shoe box when viewed from a distance (from the Secretariat Building, perhaps). Closer up it turns out to be a giant canopy, like the remains of a viaduct, under which the courtrooms shelter from the sun. But as in so many Le Corbusier buildings, the appearance of functional design is more important than actual effectiveness. The courts are entered not via the full-height entrance hall as one might assume, but directly from the plaza, and here there is no protection from the sun. An additional low, flat canopy had to be built to shelter the queues.

Secretariat Building, Chandigarh, India. Le Corbusier, 1953. The facade is episodic, changing its character abruptly to suit different internal functions.

The Secretariat Building is simple and unified in outline, like the High Court, but extraordinary in its proportions: eight storeys high and more than 250 metres (275 yards) long. Le Corbusier's first proposal was for a tower, a recycling of his 1942 design for an office block in Algiers, but there were some doubts about the quality of local concrete and the client insisted on a relatively low building. Its facade is episodic, changing its character to suit different functions. For example, the location of the ministers' double-height offices is signalled by an abrupt change of facade pattern over all floors, almost as if it were a different building. It is, however, a variation on a theme, the standard version of which consists of fixed glazing with separate fly-screened ventilators set well back in crate-like concrete *brises-soleil* with freestanding, sill-height upstands. It is an arrangement that Le Corbusier used on other Indian buildings including ordinary office blocks in the centre of Chandigarh. The long facades are further enlivened by projecting stacks of enclosed switch-back concrete ramps. Le Corbusier loved ramps – we only have to think of the ramp at the heart of the Villa Savoye (see page 117) or in the entrance hall of the Tsentrosoyuz building (see page 120) – but in a large office building they are an architectural indulgence. Conventional corridors, lift lobbies and escape stairs are provided for everyday use.

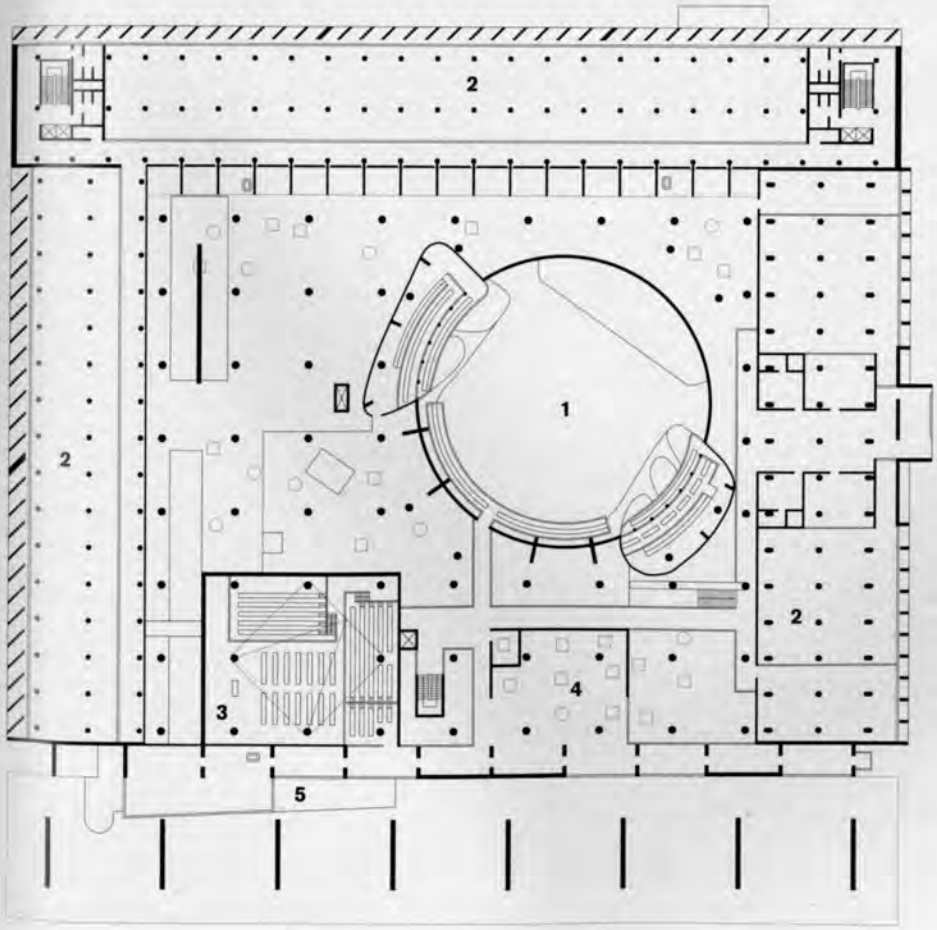
Of the three realized Capitol buildings, the Legislative Assembly is the strangest and most radical. Its full-width entrance canopy is both an enormous gutter to collect the monsoon rain and a symbolic sculptural form, a formal echo, perhaps, of the nearby 'Open Hand' monument. Three- and four-storey administrative offices with regular *brises-soleil* form the other three sides of the perfectly square plan. The courtyard that one might reasonably expect to find inside turns out to be a hypostyle (many-columned) hall with a flat concrete roof. In it stands the great 'cooling tower' of

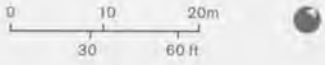
Legislative Assembly, Chandigarh, India. Le Corbusier, 1963. The canopy is both an enormous gutter to receive the monsoon rain and a symbolic sculptural form.

the General Assembly chamber, bursting up through the ceiling, and the smaller, pyramid-roofed Governors' Council chamber, raised on pilotis. If building plans can have political meanings, then the meaning of this plan is that the decision makers in the two enclosed chambers must eventually emerge and face the people who surround them in the free space of the atrium. In practice, circulation in the atrium space is carefully controlled but the symbolism is powerful nevertheless, and equally visible in the distant view, when cooling tower and pyramid rise above the flat roof into the sunlight. There is political but also cosmic symbolism in this building. The path of the sun is depicted in the brightly coloured enamel picture on the big, pivoted main door, and up on the sloping top of the cooling tower there is an array of mysterious solar tracking devices calling to mind the eighteenth-century astronomical observatories at Delhi and Jaipur. On another symbolic level, the cooling tower might represent the technological and industrial ambitions of the new democracy. As a debating chamber, unfortunately, it is an acoustical nightmare.

Last years

Le Corbusier's work is not well represented in the United States, a country that fascinated but also disappointed him. Arriving for the first time in Manhattan in 1935 he declared that its skyscrapers were 'too small'. He was excited by their picturesque effect but could not approve of the unplanned commercialism that produced them. Immediately after the war he hoped to dominate the design team for the United Nations headquarters, but his disciple Oscar Niemeyer produced a better scheme and ultimately he was side-lined by the project co-ordinator, Wallace Harrison. It wasn't until 1963 that Le Corbusier at last built an important building in the US, the Carpenter Center for the Visual Arts at Harvard University in Cambridge, Massachusetts. It is like a catalogue of all the architectural devices he ever invented. In it the contrasting pre-war and post-war styles are reconciled. The Five Points are all present, including the pilotis, the roof garden and the free facade, but the *ondulatoires* and the *brises-soleil* also make an appearance. There is a ramp, naturally, that rises and falls, passing right through the building. Not all the ideas are recycled. The curvaceous, lung-like studio wings, for example, bulge out of their rational, rectilinear container in a new way, and the exposed concrete is smooth, not rough and board marked. It is as if Le Corbusier, at last invited to build in a country to which he felt hostile, decided to go in with all guns blazing.





Second floor plan
1. Assembly chamber
2. Office
3. Senate chamber
4. Journalists' lounge
5. Balcony

Ceremonial door of the Legislative Assembly, Chandigarh, India. Le Corbusier, 1963. Earth and sky, nature and astronomy – Le Corbusier's themes were never less than universal.

Le Corbusier was an artist of strong will and boundless ambition. But he was also obsessive and insecure. A strange story might offer some insight into the nature of the man and the source of his creativity. When he visited Algiers for the first time in 1931 he was taken to the Casbah, where he met two beautiful young girls and made sketches of them nude in their room. According to the architectural theorist Beatriz Colomina he continually traced and retraced these sketches at intervals for the rest of his life.[3] In 1938 his friend the architectural critic Jean Badovici allowed him to paint a series of murals in the now famous house known as E1027 on the coast at Roquebrune-Cap-Martin in the south of France. The house had been designed by Badovici's ex-partner, the pioneer Modernist architect Eileen Gray. One of the murals was based on the Algiers sketches. According to Le Corbusier it depicted Badovici and Gray with their unborn child. When Gray found out about the painting of the murals, she was furious, regarding it as a symbolic act of rape. In 1952, Le Corbusier built a little cabin for himself – Colomina describes it as an 'observation platform' – on the site immediately above E1027, effectively destroying its privacy. In 1965, while swimming in the sea close to the house, Le Corbusier suffered a heart attack and died.

Carpenter Center for the Visual Arts, Harvard University, Cambridge, Massachusetts, USA. Le Corbusier, 1963.
Le Corbusier's only building in the USA is a catalogue of his formal inventions: pilotis, ramps, *brises-soleil*, *ondulatoires* and so on.