

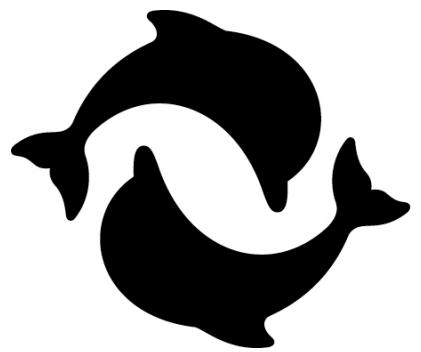
World of Art



Modern  
Architecture

Thames  
& Hudson

Kenneth Frampton





**1** Engraving of Paris showing the newly erected Arc de Triomphe, completed in 1836 and designed by Jean Chalgrin, and in the foreground workers demolishing C.-N. Ledoux's Barrière de l'Etoile of 1785-89.

World of Art

Modern Architecture  
A Critical History  
Kenneth Frampton

Fifth edition

## About the author

**Kenneth Frampton** was born in 1930 and trained as an architect at the Architectural Association School of Architecture, London. He has taught at a number of leading institutions in the field, including the Royal College of Art in London, the ETH in Zürich, the Berlage Institute in Amsterdam, EPFL in Lausanne and the Accademia di Architettura in Mendrisio. From 1972 to 2019 he served as Ware Professor of Architecture at the Graduate School of Architecture, Planning and Preservation, Columbia University, New York. He is the author of numerous essays on modern and contemporary architecture, has served on many international juries for architectural awards and building commissions, and is a member of the American Academy of Arts and Letters. In 2018 he was awarded the Golden Lion of the Venice Biennale. His publications include *Studies in Tectonic Culture* (1992), *Labour, Work and Architecture* (2005), *American Masterworks* (2008), *Kengo Kuma: Complete Works* (2012) and *A Genealogy of Modern Architecture* (2013).

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# Introduction

*It is indeed unfortunate that human society should encounter such burning problems just when it has become materially impossible to make heard the least objection to the language of the commodity; just when power - quite rightly because it is shielded by the spectacle from having to take responsibility for its delirious decisions - believes that it no longer needs to think; and indeed can no longer think.<sup>1</sup>*

To attempt to expand on an account of the evolution of the Modern Movement in architecture at the time of writing is a contradictory and disturbing experience. While the level of professional talent and skill in the field is higher today, worldwide, than at any other moment in history, at the same time the world enters ever more deeply into a confused state of total political paralysis, so much so that one is reluctantly drawn to conclude that the human species no longer has the capacity to act in its own best interests. At the micro-level, the techno-scientific division of labour is such that we are able to penetrate ever more deeply into the mysteries of nature, but simultaneously we are the perennial victims of a triumphant globalized capitalism through which, at the macro-level, we are locked in a titanic struggle with a rebarbative nature, which is now already beyond our control.

The impasse of escalating climate change, which was already a fact when the fourth edition of this history was published in 2007, is ever more apparent today as we encounter the worldwide crisis of democracy and the

accompanying hysteria of populist political reaction. Given that this was already essentially the state of things at the millennium, I have elected to eliminate the penultimate chapter of the fourth edition and to expand its content into a new Part IV, under virtually the same title, 'World Architecture and the Modern Movement'. Accordingly, the last chapter of the fourth edition, entitled 'Architecture in the Age of Globalization', has been kept in place as a coda to the fifth edition, carrying essentially the same content save for certain material that has been absorbed into Part IV.

I began work on this history in 1970, when the idea of the Modern Movement was still current on the London architectural scene despite the fact that, unknown at the time, the term 'Modern Movement' (*Moderne Bewegung*) had first appeared in Otto Wagner's book *Moderne Architektur* (1896). While the term appears throughout the various editions of his book, the title of the last edition, of 1914, was discreetly changed to *Die Baukunst unserer Zeit* (*The Architecture of our Time*). Throughout the numerous accounts of the evolution of the Modern Movement in architecture, there is a divide between authors who prefer to allude to a specific time period and others, like myself, who, possibly because they have had an architectural formation, prefer to allude to the Modern Movement in the same way as the Italian architect-historian Leonardo Benevolo, whose two-volume *Storia dell'architettura moderna* of 1960, which was first published in English a decade later, specifically alluded to the Modern Movement in the subtitle of his second volume. Nevertheless, as we pass from Gustav Adolf Platz's pioneering *Die Baukunst der neuesten Zeit* (*Building in our Time*) of 1927 to Sigfried Giedion's *Space, Time and Architecture* of 1941, to Arnold Whittick's *European Architecture in the 20th Century* of 1950 and finally to Reyner Banham's *Theory and Design in the First Machine Age* of 1960, we notice that the

association of architecture with modernity is discreetly avoided, and likewise there is no reference to the Modern Movement in an avant-gardist sense of that term. In this fifth edition, however, I have frequently had to return to the idea of the Modern Movement by alluding to the beginnings of a discernibly modern architecture in various parts of the world, under the decidedly open-ended title of 'World Architecture'.

The term 'World Architecture' was first coined by the China Architecture and Building Press in 2000, when it published its ambitious project of 1,000 significant buildings worldwide for the entire 20th century, which had been critically selected by ten regional committees. The work was published in ten volumes, one for each region, with the subtitle *A Critical Mosaic 1900–2000*. Something similar was attempted for the period of the millennium alone through Luis Fernández-Galiano's four-volume publication *Atlas: Global Architecture circa 2000*, issued in 2007 by the BBVA Foundation in Spain.

In the new Part IV of my unduly ambitious account, I have attempted to assemble, under the rubric of 'World Architecture', a synthesis between these two editorial operations. I have adopted Fernández-Galiano's approach of audaciously dividing the world into four transcontinental regions – Europe, the Americas, Africa and the Middle East, and Asia and the Pacific – while at the same time moving across the entire span of the 20th century to touch, however provisionally, not only on the beginnings of the Modern Movement in various parts of the world, but also on relatively recent developments where these appear to merit inclusion. I feel it is necessary to add that, however dated this may seem, the Modern Movement was once inseparable from the liberative modern project in the sense in which this was defined by the German philosopher and sociologist Jürgen Habermas, implying an ultimately socialist welfare

state irrespective of the political ideology at a given instant in time and at a specific place.

Here an effort has been made to widen the scope of the book in order to redress the Eurocentric and transatlantic bias of previous editions of this history. However, it has not proved possible to be as comprehensive as the title of the new Part IV would suggest. One explanation is that there is a physical limit, beyond which the book becomes so thick and cumbersome that it no longer fulfils its fundamental role as a convenient reference work or textbook. The other limit is the embarrassing fact that, despite the best intentions of the author, no single person can possibly hope to cover the vast breadth and complexity of contemporary architecture as it exists today, irrespective of whether the focus is on the largely forgotten pioneering essays of the Modern Movement of the 1920s and 1930s, or the various socio-political and cultural developments that have taken place throughout the world over the last half-century.

While the material covered in Parts I and II of *Modern Architecture: A Critical History* remain largely unaltered, separate chapters dealing with developments in France and Czechoslovakia between the two world wars have been inserted. At the same time, new lacunae have arisen in as much as modern architecture in Russia after 1932 has been wilfully excluded from this account, as has Eastern European architecture in general. My sole justification for this draconian omission is partly owing to the fact that, as Akos Moravansky has argued, after the collapse of the Soviet Union and the fall of the Berlin Wall in 1989, the inherently destructive power of free-market capitalism led to the general adoption of the so-called Moscow Style. This judiciously combined international Post-Modernism with a certain nostalgia for the Russian Art Nouveau in order to produce an appropriate setting for the banks and shopping malls built during the presidency of Boris Yeltsin (1991–99). Thus, despite talented forays here and there on the part of

Eastern European architects, it has proved difficult until now to discern any indications of an emerging regional culture of consequence.

Despite the fact that the fifth edition makes a concerted effort to address large parts of the non-Eurocentric world, or, let us say, the post-colonial world, Europe nonetheless still appears in Part IV as a continental sector because I feel that in following Fernández-Galiano's taxonomy it is necessary to pick up certain canonical works by prominent architects, particularly some Scandinavians, who had previously been inexplicably overlooked in earlier editions. Nevertheless, there remain many omissions that are categorically difficult to justify, above all in Southeast Asia: Taiwan, Thailand, Vietnam, Malaysia and Singapore.

All of this begs the question as to what do we mean by a culture of architecture and how do we begin to perceive it in the first place? We surely have to concede that the Modern Movement in architecture has had, and continues to have, a decidedly wave-like character: it comes into being, somewhat unannounced, rises to its maturity and then eventually declines, possibly arising again in virtually the same place but at an entirely different time and in a different form, to begin the cycle all over again. Throughout this history I have made an effort to reveal this cyclical character not only with regard to the movement's Eurocentric beginnings, but also its manifestation in contemporary architecture in the world at large. To this end I have indicated from time to time the way in which certain political and socio-economic transformations have had an impact not only on the lifecycle of a given cultural momentum, but also on the programme and the character of an emerging environmental form.

All of this has now shaped my approach to documenting the dissemination of the Modern Movement across time. In dealing with each vast continental sector and the national subsets of which it is necessarily comprised, I have

attempted to adopt the same procedure throughout: beginning with a brief documentation of the Modern Movement and then passing abruptly to more recent manifestations of a similar impulse. This constant double-take across large lapses of time has meant that I have had to rely on illustrations to a much greater extent than in earlier editions of this history, because it is difficult to convey the often highly inflected nature of recent architecture, which, while not in any way Post-Modern, nonetheless incorporates a tactile, microcosmic character that is difficult to convey in words.

One of the challenges of writing an account over such a broad front is the quandary of the criteria by which one decides to include or exclude a particular work. Despite a constant attempt to maintain a certain level of objectivity, there is an inescapable subjectivity determining one's choices. Perhaps this is the ultimate meaning of the term 'a critical history' inasmuch as the historical account fuses with both criticism and theory, serving to justify expansion on a particular work or subject matter that one values, at the expense of the others that, because of time, space and polemical prejudices, one elects to ignore. Of course, there is no absolute history, for, as E.H. Carr made clear in his book *What is History?*, each age writes its own history and in this sense creates a purview with which we may hopefully proceed in a culturally significant way.

It is ironic that the first edition of this history, written by an architect, committed to 'the unfinished modern project', to coin Jürgen Habermas's memorable phrase, should have been published in the same year as the first architectural biennale, staged in Venice in 1980. This exhibition, curated by Paolo Portoghesi, was dedicated to celebrating the historicizing pastiche of Post-Modern architecture, under the slogan, 'The End of Prohibition and the Presence of the Past'.

Since this time, subsequent editions of this history, of which this is the greatly expanded fifth edition, have been

dedicated, in one way or another, to the continuation of the modern project in terms of a liberative architecture. However, it has become increasingly clear that under the aegis of an anti-ecological, neo-liberal consumerism, continually exacerbating the the maldistribution of wealth, the prospects for any kind of rational land settlement, let alone urbanism, are extremely limited, if not totally unavailable. At best what is left for the critical practice of architecture at a large scale are predominantly horizontal megaforms designed as artificial landscapes in order to encapsulate some vestige of the civic and to stand against the universal placelessness of the environment as a whole.

# Part I

# Cultural Developments and Predisposing Techniques 1750-1939



**2** Soufflot, Ste-Geneviève (now the Panthéon), Paris, 1755–90; crossing piers strengthened by Rondelet in 1806.

# Chapter 1

## Cultural Transformations: Neo-Classical Architecture 1750-1900

*The Baroque system had operated as a kind of double intersection. It had often contrasted with rationalized gardens, building façades decorated with plant motifs. The reign of man and the reign of nature had certainly remained distinct but they had exchanged their characteristics, merging into each other for the sake of ornamentation and prestige. On the other hand the 'English style' park, in which man's intervention was supposed to remain invisible, was intended to offer the purposefulness of nature; while within, but separate from the actual park, the houses constructed by Morris or Adam manifested the will of man, isolating clearly the presence of human reason in the midst of the irrational domains of freely growing vegetation. The Baroque interpenetration of man and nature was now replaced by a separation, thus establishing the distance between man and nature which was a prerequisite for nostalgic contemplation. Now ... this contemplative separation arose as a compensatory or expiatory reaction against the growing attitude of practical men towards nature. While technical exploitation tended to wage war on nature, houses and parks attempted a reconciliation, a local armistice, introducing the dream of an impossible peace: and to this end man had continued to retain the image of untouched natural surroundings.*

Jean Starobinski

*L’Invention de la liberté*, 1964<sup>1</sup>

The architecture of Neo-Classicism seems to have emerged out of two different but related developments which radically transformed the relationship between man and nature. The first was a sudden increase in man's capacity to exercise control over nature, which by the mid-17th century had begun to advance beyond the technical frontiers of the Renaissance. The second was a fundamental shift in the nature of human consciousness, in response to major changes taking place in society, which gave birth to a new cultural formation that was equally appropriate to the lifestyles of the declining aristocracy and the rising bourgeoisie. Whereas technological changes led to a new infrastructure and to the exploitation of an increased productive capacity, the change in human consciousness yielded new categories of knowledge and a historicist mode of thought that was so reflexive as to question its own identity. Where the one, grounded in science, took immediate form in the extensive road and canal works of the 17th and 18th centuries and gave rise to new technical institutions, such as the Ecole des Ponts et Chaussées, founded in 1747, the other led to the emergence of the humanist disciplines of the Enlightenment, including the pioneer works of modern sociology, aesthetics, history and archaeology – Montesquieu's *De l'esprit des lois* (1748), Baumgarten's *Aesthetica* (1750), Voltaire's *Le Siècle de Louis XIV* (1751) and J. J. Winckelmann's *Geschichte der Kunst des Altertums* of 1764.

The over-elaboration of architectural language in the Rococo interiors of the Ancien Régime and the secularization of Enlightenment thought compelled the architects of the 18th century, by now aware of the emergent and unstable nature of their age, to search for a true style through a precise reappraisal of antiquity. Their motivation was not

simply to copy the ancients but to obey the principles on which their work had been based. The archaeological research that arose from this impulse soon led to a major controversy: to which, of four Mediterranean cultures – the Egyptians, the Etruscans, the Greeks and the Romans – should they look for a true style?

One of the first consequences of reassessing the antique world was to extend the itinerary of the traditional Grand Tour beyond the frontiers of Rome, so as to study at its periphery those cultures on which, according to Vitruvius, Roman architecture had been based. The discovery and excavation of Roman cities at Herculaneum and Pompeii, during the first half of the 18th century, encouraged expeditions further afield and visits were soon being made to ancient Greek sites in both Sicily and Greece. The received Vitruvian dictum of the Renaissance – the catechism of Classicism – was now to be checked against the actual ruins. The measured drawings that were published in the 1750s and 1760s, Julien-David Le Roy's *Ruines des plus beaux monuments de la Grèce* (1758), James Stuart and Nicholas Revett's *Antiquities of Athens* (1762), and Robert Adam and Charles-Louis Clérisseau's documentation of Diocletian's palace at Split (1764), testify to the intensity with which these studies were pursued. It was Le Roy's promotion of Greek architecture as the origin of the 'true style' that raised the chauvinist ire of the Italian architect-engraver Giovanni Battista Piranesi.

Piranesi's *Della Magnificenza ed Architettura de' Romani* of 1761 was a direct attack on Le Roy's polemic: he asserted not only that the Etruscans had antedated the Greeks but that, together with their successors the Romans, they had raised architecture to a higher level of refinement. The only evidence that he could cite in support of his claim was the few Etruscan structures that had survived the ravages of Rome – tombs and engineering works – and these seem to have orientated the remainder of his career in a remarkable

way. In one set of etchings after another he represented the dark side of that sensation already classified by Edmund Burke in 1757 as the Sublime, that tranquil terror induced by the contemplation of great size, extreme antiquity and decay. These qualities acquired their full force in Piranesi's work through the infinite grandeur of the images that he portrayed. Such nostalgic Classical images were, however, as Manfredo Tafuri has observed, treated 'as a myth to be contested ... as mere fragments, as deformed symbols, as hallucinating organisms of an "order" in a state of decay'.

Between his *Parere su i'Architettura* of 1765 and his Paestum etchings, published only after his death in 1778, Piranesi abandoned architectural verisimilitude and gave his imagination full rein. In one publication after another, culminating in his extravagantly eclectic work on interior ornamentation of 1769, he indulged in hallucinatory manipulations of historicist form. Indifferent to Winckelmann's pro-Hellenic distinction between innate beauty and gratuitous ornament, his delirious inventions exercised an irresistible attraction on his contemporaries, and the Adam brothers' Graeco-Roman interiors were greatly indebted to his flights of imagination.

In England, where the Rococo had never been fully accepted, the impulse to redeem the excess of the Baroque found its first expression in the Palladianism initiated by the Earl of Burlington, though something of a similar purgative spirit may be detected in the last works of Nicholas Hawksmoor at Castle Howard. By the end of the 1750s, however, the British were already assiduously pursuing instruction in Rome itself where, between 1750 and 1765, the major Neo-Classical proponents could be found in residence, from the pro-Roman and pro-Etruscan Piranesi to the pro-Greek Winckelmann and Le Roy, whose influence had yet to take effect. Among the British contingent were James Stuart, who was to employ the Greek Doric order as early as 1758, and the younger George Dance, who soon

after his return to London in 1765 designed Newgate Gaol, a superficially Piranesian structure whose rigorous organization may well have owed something to the Neo-Palladian proportional theories of Robert Morris. The final development of British Neo-Classicism came first in the work of Dance's pupil John Soane, who synthesized to a remarkable degree various influences drawn from Piranesi, Adam, Dance and even from the English Baroque. The Greek Revival cause was then popularized by Thomas Hope, whose *Household Furniture and Interior Decoration* (1807) made available a British version of the Napoleonic 'Style Empire', then in the process of being created by Charles Percier and Pierre-François-Léonard Fontaine.

Nothing could have been further from the British experience than the theoretical development that attended the emergence of Neo-Classicism in France. An early awareness of cultural relativity in the late 17th century prompted Claude Perrault to question the validity of the Vitruvian proportions as these had been received and refined through Classical theory. Instead, he elaborated his thesis of *positive* beauty and *arbitrary* beauty, giving to the former the normative role of standardization and perfection and to the latter such expressive function as may be required by a particular circumstance or character.

This challenge to Vitruvian orthodoxy was codified by the Abbé de Cordemoy in his *Nouveau Traité de toute l'architecture* (1706), where he replaced the Vitruvian attributes of architecture, namely *utilitas*, *firmitas* and *venustas* (utility, solidity and beauty) by his own trinity of *ordonnance*, *distribution* and *bienséance*. While the first two of his categories concerned the correct proportioning of the Classical orders and their appropriate disposition, the third introduced the notion of fitness, with which Cordemoy warned against the inappropriate application of Classical or honorific elements to utilitarian or commercial structures. Thus, in addition to being critical of the Baroque, which was

the last rhetorical, public manner of the Ancien Régime, Cordemoy's *Traité* anticipated Jacques-François Blondel's preoccupation with appropriate formal expression and with a differentiated physiognomy to accord with the varying social *character* of different building *types*. The age was already having to confront the articulation of a much more complex society.

Apart from insisting on the judicious application of Classical elements, Cordemoy was concerned with their geometrical purity, in reaction against such Baroque devices as irregular columniation, broken pediments and twisted columns. Ornamentation too had to be subject to propriety, and Cordemoy, anticipating Adolf Loos's *Ornament und Verbrechen* (*Ornament and Crime*) by two hundred years, argued that many buildings required no ornament at all. His preference was for astylar masonry and orthogonal structures. For him, the free-standing column was the essence of a pure architecture such as had been made manifest in the Gothic cathedral and the Greek temple.

The Abbé Laugier in his *Essai sur l'architecture* (1753) reinterpreted Cordemoy, to posit a universal 'natural' architecture, the primordial 'primitive hut' consisting of four tree trunks supporting a rustic pitched roof. After Cordemoy, he asserted this primal form as the basis for a sort of classicized Gothic structure in which there would be neither arches nor pilasters nor pedestals nor any other kind of formal articulation, and where the interstices between the columns would be as fully glazed as possible.

Such a 'translucent' structure was realized in Jacques-Germain Soufflot's church of Ste-Geneviève in Paris [2], begun in 1755. Soufflot, who in 1750 had been one of the first architects to visit the Doric temples at Paestum, was determined to recreate the lightness, the spaciousness and the proportion of Gothic architecture in Classical (not to say Roman) terms. To this end he adopted a Greek cross plan, the nave and aisles being formed by a system of flat domes

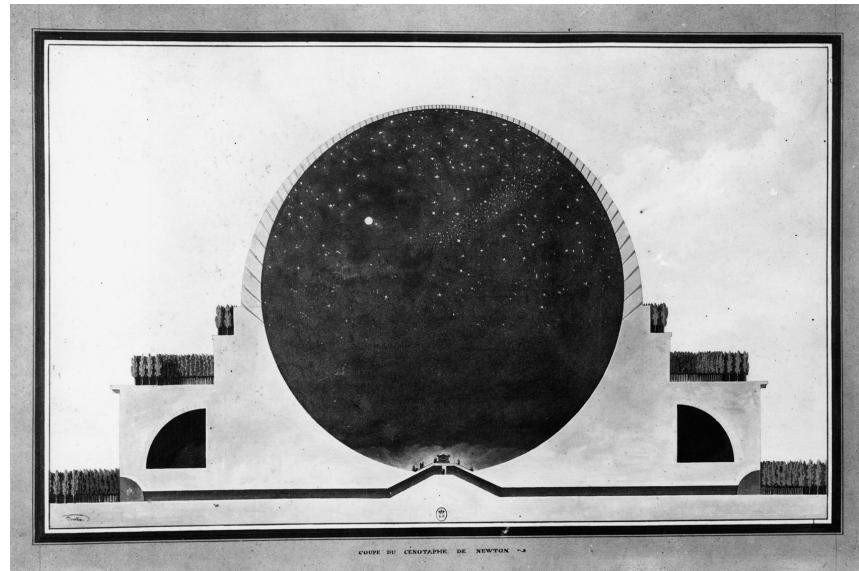
and semicircular arches supported on a continuous internal peristyle.

The task of integrating the theory of Cordemoy and the magnum opus of Soufflot into the French academic tradition fell to Blondel, who, after opening his architectural school in Rue de la Harpe in 1743, became the master of that so-called 'visionary' generation of architects that included Etienne-Louis Boullée, Jacques Gondoin, Pierre Patte, Marie-Joseph Peyre, Jean-Baptiste Rondelet and, probably the most visionary of all, Claude-Nicolas Ledoux. Blondel set out his main precepts, concerning *composition*, *type* and *character*, in his *Cours d'architecture*, published from 1750 to 1770. His ideal church design, published in the second volume of his *Cours*, was related to Ste-Geneviève and prominently displayed a representational front, while articulating each internal element as part of a continuous spatial system whose infinite vistas evoked a sense of the Sublime. This church project hints at the simplicity and grandeur that were to inform the work of many of his pupils, most notably Boullée, who after 1772 devoted his life to the projection of buildings so vast as to preclude their realization.

In addition to representing the social character of his creations in accordance with the teachings of Blondel, Boullée evoked the sublime emotions of terror and tranquillity through the grandeur of his conceptions.

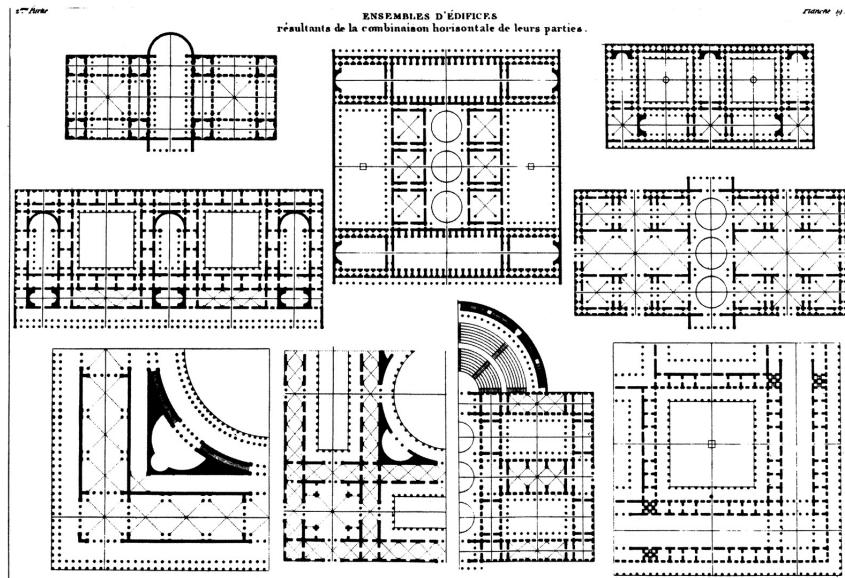
Influenced by Le Camus de Mézières' *Génie de l'architecture, ou l'analogie de cet art avec nos sensations* (1780), he began to develop his *genre terrible*, in which the immensity of the vista and the unadorned geometrical purity of monumental form are combined in such a way as to promote exhilaration and anxiety. More than any other Enlightenment architect, Boullée was obsessed with the capacity of light to evoke the presence of the divine. This intention is evident in the sunlit diaphanous haze that illuminates the interior of his 'Métropole', modelled partly on Ste-Geneviève. A similar light is portrayed in the vast

masonry sphere of his projected cenotaph for Isaac Newton [3], where by night a fire was suspended to represent the sun, while by day it was extinguished to reveal the illusion of the firmament produced by the daylight shining through the sphere's perforated walls.



3 Boullée, project for a cenotaph for Isaac Newton, c. 1785. Section by 'night'.

While Boullée's political sentiments were solidly republican, he remained obsessed with imagining the monuments of some omnipotent state dedicated to the worship of the Supreme Being. Unlike Ledoux, he was unimpressed by the rural decentralized utopias of Morelly or Jean-Jacques Rousseau. Despite this, his influence in post-Revolutionary Europe was considerable, primarily through the activity of his pupil Jean-Nicolas-Louis Durand, who reduced his extravagant ideas to a normative and economic building typology, set out in the *Précis des leçons données à l'Ecole Polytechnique* (1802–09) [4].

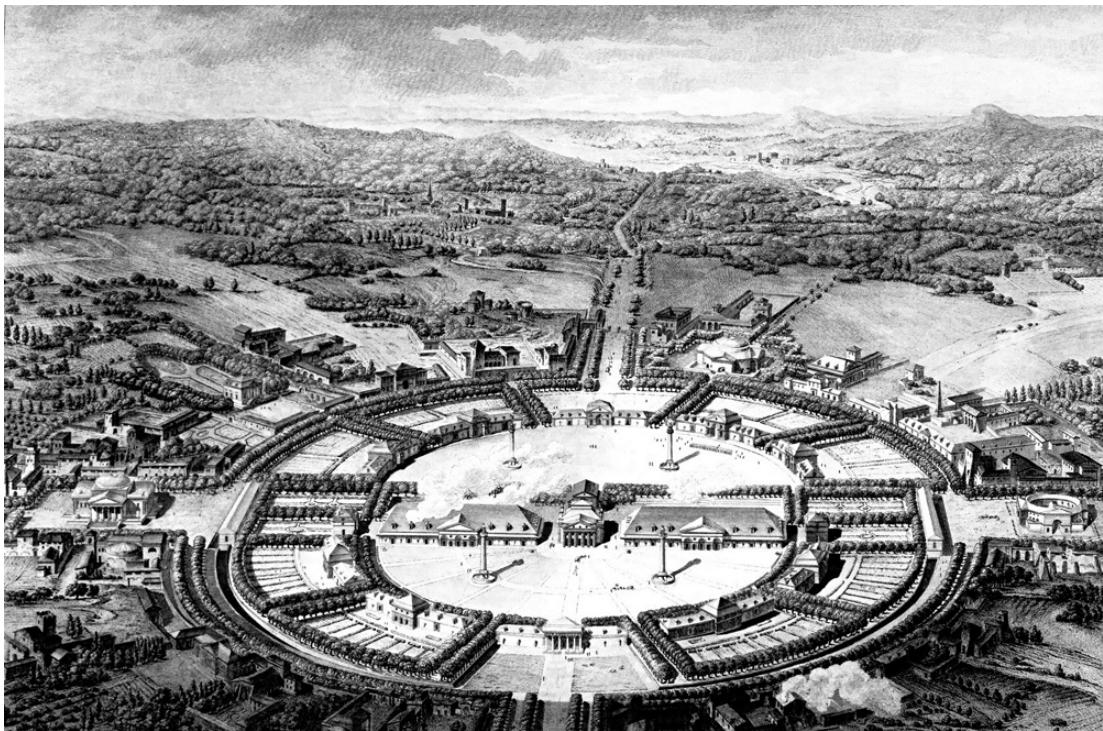


**4** Durand, possible combinations and permutations of plan forms, from his *Précis*, 1802–09.

After fifteen years of millennial disarray the Napoleonic era required useful structures of appropriate grandeur and authority, on the condition that they be achieved as cheaply as possible. Durand, the first tutor in architecture at the Ecole Polytechnique, sought to establish a universal building methodology, an architectural counterpart to the Napoleonic Code, by which economic and appropriate structures could be created through the modular permutation of fixed plan types and alternative elevations. Thus Boullée's obsession with vast Platonic volumes was exploited as a means to achieve an appropriate character at a reasonable cost. Durand's criticism of Ste-Geneviève, for example, with its 206 columns and 612 metres (2,008 feet) of wall, involved him in making a counter-proposal for a circular temple of comparable area that would require only 112 columns and 248 metres (814 feet) of wall – a considerable economy, with which, according to him, one would have achieved a far more impressive aura.

Ledoux, after his career had been terminated by the Revolution, returned during his imprisonment to develop the

scheme of the salt works that he had built for Louis XVI at Arc-et-Senans in 1773–79. He expanded the semicircular form of this complex into the representational core of his ideal city of Chaux [5], published in 1804 under the title *L'Architecture considérée sous le rapport de l'art, des moeurs et de la législation*. The semicircular salt works itself (which he developed into the oval centre of his city) may be seen as one of the first essays in industrial architecture, inasmuch as it consciously integrated productive units with workers' housing. Each element in this physiocratic complex was rendered according to its character. Thus the salt evaporation sheds on the axis were high-roofed like agricultural buildings and finished in smooth ashlar, with rusticated dressings, while the director's house in the centre was low-roofed and pedimented, rusticated throughout and embellished with Classical porticos. Here and there the walls of the salt sheds and the workers' houses were relieved by grotesque 'spouts' of petrified water, which not only symbolized the saline solution on which the enterprise was based but also suggested that the productive system and the labour force had an equally processual status.



5 Ledoux, ideal city of Chaux, 1804.

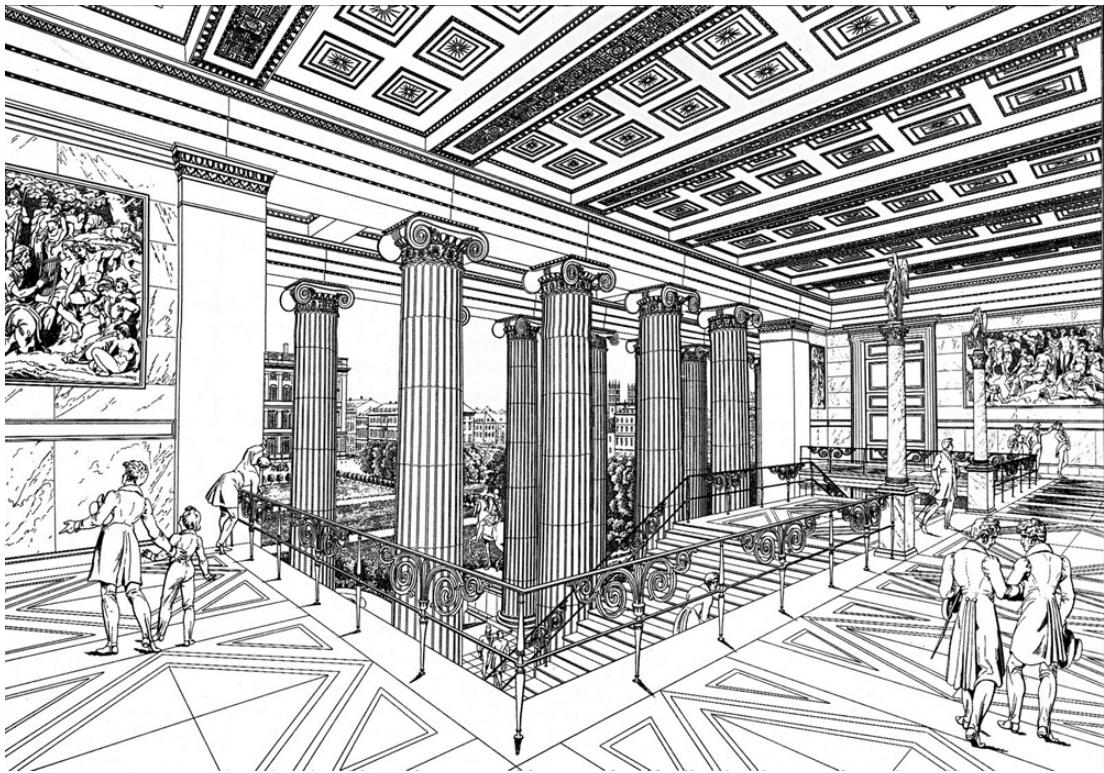
In fictitiously developing this limited typology to include all the institutions of his ideal city, Ledoux extended the idea of an architectural ‘physiognomy’ to symbolize the social intention of his otherwise abstract forms. The meanings are established either by conventional symbols, such as the fasces evoking justice and unity on the courthouse, the so-called *Pacifère*, or by isomorphism, as in the case of the *Oikema*, planned in the shape of a penis. This last structure was dedicated to libertinage, whose curious social purpose was to induce virtue through sexual satiety.

A whole world separates Durand’s rational permutation of received Classical elements from Ledoux’s arbitrary but purgative reconstitution of fragmented Classical parts demonstrated in the toll-gates that he designed for Paris between 1785 and 1789. These *barrières* were just as disconnected from the culture of their time as the idealized institutions of Chaux. With their gradual demolition after

1789 they suffered the same fate as the abstract and unpopular customs boundary that they were intended to administer, the Enceinte des Fermiers Généraux, of which it was said, ‘Le mur murant Paris rend Paris murmurant.’

After the Revolution, the evolution of Neo-Classicism was largely inseparable from the need to accommodate the new institutions of bourgeois society and to represent the emergence of the new republican state. That these forces were initially resolved in the compromise of constitutional monarchy hardly detracted from the role that Neo-Classicism played in the formation of the bourgeois imperialist style. The creation of Napoleon’s ‘Style Empire’ in Paris and Frederick II’s Francophile ‘Kulturnation’ in Berlin are but separate manifestations of the same cultural tendency. The former made an eclectic use of antique motifs, be they Roman, Greek or Egyptian, to create the instant heritage of a republican dynasty – a style that revealed itself significantly in the theatrical tented interiors of the Napoleonic campaigns and in the solid Roman embellishments of the capital city, such as Percier and Fontaine’s Rue de Rivoli and Arc du Carrousel and Gondoin’s Place Vendôme column dedicated to the Grande Armée. In Germany the tendency was first manifested in Carl Gotthard Langhans’s Brandenburg Gate, built as the western entry to Berlin in 1793, and in Friedrich Gilly’s design for a monument to Frederick the Great, of 1797. Ledoux’s primary forms inspired Gilly to emulate the severity of the Doric, thereby echoing the ‘archaic’ power of the Sturm und Drang movement in German literature. Like his contemporary Friedrich Weinbrenner, he projected a spartan Ur-civilization of high moral value, with which to celebrate the myth of the ideal Prussian state. His remarkable monument would have taken the form of an artificial acropolis on the Leipzigerplatz. This temenos would have been entered from Potsdam through a squat triumphal arch capped by a quadriga.

Gilly's colleague and successor, the Prussian architect Karl Friedrich Schinkel, acquired his early enthusiasm for Gothic not from Berlin or Paris, but from his own first-hand experience of Italian cathedrals. Yet after the defeat of Napoleon in 1815, this Romantic taste was largely eclipsed by the need to find an appropriate expression for the triumph of Prussian nationalism. The combination of political idealism and military prowess seems to have demanded a return to the Classic. In any event this was the style that linked Schinkel not only to Gilly but also to Durand, in the creation of his masterpieces in Berlin: his Neue Wache of 1816, his Schauspielhaus of 1821 and his Altes Museum of 1830 [6]. While both the guard-house and the theatre show characteristic features of Schinkel's mature style, the massive corners of the one and the mullioned wings of the other, the influence of Durand is most clearly revealed in the museum, which is a prototypical museum plan taken from the *Précis* and split in half – a transformation in which the central rotunda, peristyle and courtyards are retained and the side wings eliminated (see [p. 269](#)). While the wide entry steps, the peristyle and the eagles and Dioscuri on the roof symbolized the cultural aspirations of the Prussian state, Schinkel departed from the typological and representational methods of Durand to create a spatial articulation of extraordinary delicacy and power, as the wide peristyle gives way to a narrow portico containing a symmetrical entry stair and its mezzanine (an arrangement which would be remembered by Mies van der Rohe).



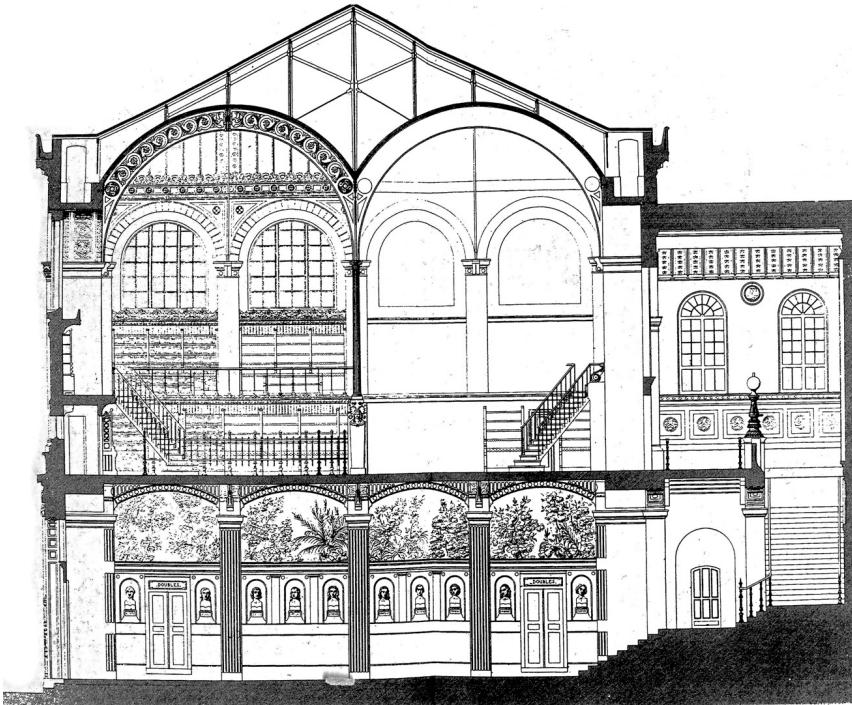
6 Schinkel, Altes Museum, Berlin, 1828-30.

The main line of Blondel's Neo-Classicism was continued in the mid-19th century in the career of Henri Labrouste, who had studied at the Ecole des Beaux-Arts (the institution that succeeded the Académie Royale d'Architecture after the Revolution) with Antoine-Laurent-Thomas Vaudoyer, who had been a pupil of Peyre. After winning the Prix de Rome in 1824 Labrouste spent the next five years at the French Academy, devoting much of his time in Italy to a study of the Greek temples at Paestum. Inspired by the work of Jakob-Ignaz Hittorff, Labrouste was among the first to argue that such structures had originally been brightly coloured. This, and his insistence on the primacy of structure and on the derivation of all ornament from construction, brought him into conflict with the authorities after the opening of his own atelier in 1830.

In 1840 Labrouste was named architect of the Bibliothèque Ste-Geneviève in Paris which had been created

to house part of the library impounded by the French state in 1789. Based apparently on Boullée's project for a library in the Palais Mazarin, of 1785, Labrouste's design consists of a perimeter wall of books enclosing a rectilinear space and supporting an iron-framed, barrel-vaulted roof which is divided into two halves and further supported in the centre of the space by a line of iron columns.

Such Structural Rationalism was further refined in the main reading room and book stack that Labrouste built for the Bibliothèque Nationale in 1860–68 [7]. This complex, inserted into the courtyard of the Palais Mazarin, consists of a reading room covered by an iron and glass roof carried on sixteen cast-iron columns and a multi-storey wrought- and cast-iron book stack. Dispensing with the last trace of historicism, Labrouste designed the latter as a top-lit cage, in which light filters down through iron landings from the roof to the lowest floor. Although this solution was derived from Sydney Smirke's cast-iron reading room and stack built in the courtyard of Robert Smirke's Neo-Classical British Museum in 1854, the precise form of its execution implied a new aesthetic whose potential was not to be realized until the Constructivist work of the 20th century.

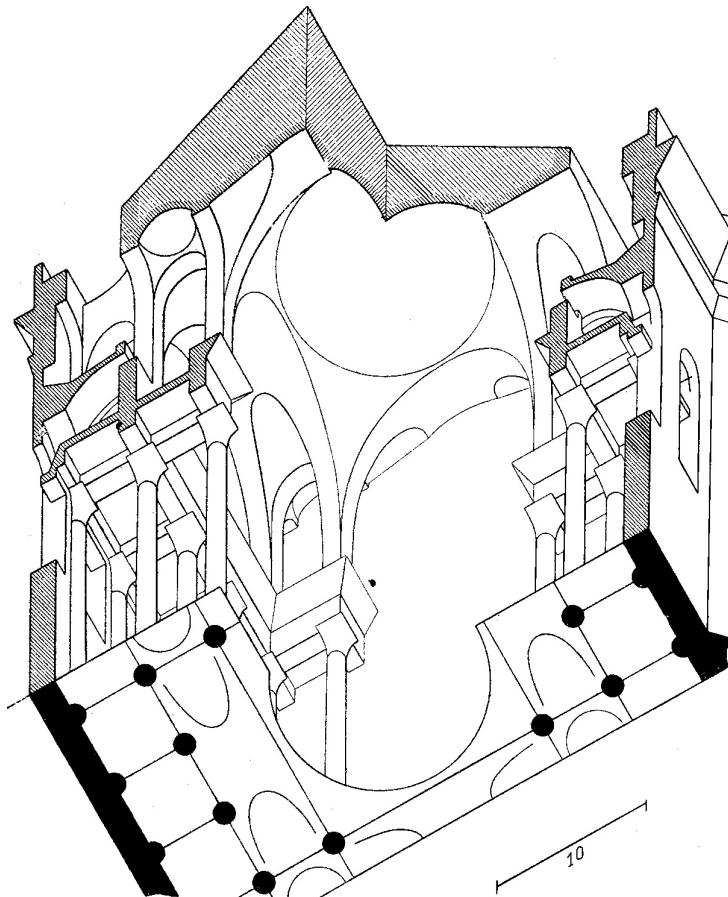


7 Labrouste, book stack of the Bibliothèque Nationale, Paris, 1860–68.

The middle of the 19th century saw the Neo-Classical heritage divided between two closely related lines of development: the Structural Classicism of Labrouste and the Romantic Classicism of Schinkel. Both ‘schools’ were confronted by the same 19th-century proliferation of new institutions and had to respond equally to the task of creating new building types. They differed largely in the manner in which they achieved these representative qualities: the Structural Classicists tended to emphasize structure – the line of Cordemoy, Laugier and Soufflot; while the Romantic Classicists tended to stress the physiognomic character of the form itself – the line of Ledoux, Boullée and Gilly. Where one ‘school’ seems to have concentrated on such types as prisons, hospitals and railway stations, in the work of men like Emile-Jacques Gilbert and François-Alexandre Duquesney (designer of the Gare de l’Est, Paris, in 1852), the other addressed itself more to representational structures, such as the university museum and library of Charles Robert Cockerell in England or the more grandiose

monuments erected by Leo von Klenze in Germany – above all the latter's highly Romantic Walhalla, completed at Regensburg in 1842.

In terms of theory, Structural Classicism began with Rondelet's *Traité de l'art de bâtir* (1802) and culminated at the end of the century in the writing of the engineer Auguste Choisy, particularly his *Histoire de l'architecture* (1899). For Choisy the essence of architecture is construction, and all stylistic transformations are merely the logical consequence of technical development: 'To parade your Art Nouveau is to ignore the whole teaching of history. Not so did the great styles of the past come into being. It was in the suggestion of construction that the architect of the great artistic ages found his truest inspiration.' Choisy illustrated the structural determination of his *Histoire* with axonometric projections [8] which revealed the essence of a type of form in a single graphic image, comprising plan, section and elevation. As Reyner Banham has observed, these objective illustrations reduce the architecture that they represent to pure abstraction, and it was this, plus the amount of the information they synthesized, that endeared them to the pioneers of the Modern Movement after the turn of the century.



8 Choisy, axonometric projection of part of the Panthéon, Paris (fig. 2), from his *Histoire de l'architecture*, 1899.

The emphasis that Choisy's history placed on Greek and Gothic architecture was a late 19th-century rationalization of that Graeco-Gothic ideal which had first been formulated over a century before by Cordemoy. This 18th-century projection of Gothic structure into Classical syntax found its parallel in Choisy's characterization of the Doric as wooden structure transposed into masonry. Just such a transposition was to be practised by Choisy's disciple, Auguste Perret, who insisted on detailing his reinforced-concrete structures after the manner of traditional wood framing.

A Structural Rationalist to the core, Choisy was nonetheless capable of responding to the Romantic sensibility when he wrote of the Acropolis: 'The Greeks never visualized a building without the site that framed it

and the other buildings that surrounded it ... each architectural motif, on its own, is symmetrical, but every group is treated like a landscape where the masses alone balance out.'

Such a Picturesque notion of partially symmetrical balance would have been as foreign to the teaching of the Beaux-Arts as it was to the polytechnical approach of Durand. Certainly it would have had a limited appeal for Julien Guadet, who sought, in his lecture course *Eléments et théorie de l'architecture* (1902), to establish a normative approach to the composition of structures from technically up-to-date elements, arranged as far as possible according to the tradition of axial composition. It was through Guadet's teaching at the Beaux-Arts, and his influence on his pupils Auguste Perret and Tony Garnier, that the principles of Classical 'Elementarist' composition were handed down to the pioneer architects of the 20th century.

# Chapter 2

## Territorial Transformations: Urban Developments 1800-1909

*[With] the development of increasingly abstract means of communication the continuity of rooted communication is replaced by new systems which continue to perfect themselves throughout the 19th century, allowing the population greater mobility and providing information that is more precisely synchronized with the accelerating rhythm of history. Railway, daily press and telegraph will gradually supplant space in its previous informative and formative role.*

Françoise Choay

*The Modern City: Planning in the 19th Century, 1969*<sup>1</sup>

The finite city, as it had come into being in Europe over the previous 500 years, was totally transformed in the space of a century by the interaction of a number of unprecedented technical and socio-economic forces, many of which first emerged in England during the second half of the 18th century. Prominent among them from a technical point of view must be counted such innovations as Abraham Darby's mass production of cast-iron rails, from 1767, and Jethro Tull's seed-drill cultivation of crops in rows, generally adopted after 1731. Where Darby's invention led to Henry Cort's development of the puddling process for the

simplified conversion of cast to wrought iron in 1784, Tull's drill was essential to the perfection of Charles Townshend's four-crop rotational system – the principle of 'high farming' that became general towards the end of the century.

Such productive innovations had multiple repercussions. In the case of metallurgy, English iron production increased forty-fold between 1750 and 1850 (rising to two million tons a year by 1850); in the case of agriculture, after the Enclosures Act of 1771 inefficient husbandry was replaced by the four-crop system. Where the one was boosted by the Napoleonic Wars, the other was motivated by the need to feed a rapidly growing industrial population.

At the same time the cottage-weaving industry, which had helped to sustain the agrarian economy of the first half of the 18th century, was rapidly changed, first by James Hargreaves's spinning jenny of 1764, which greatly increased the individual's spinning capacity, and then by Edmund Cartwright's steam-powered loom, first used for factory production in 1784. This last event not only established textile production as a large-scale industry, but also led immediately to the invention of the multistorey fireproof mill. Thus traditional textile manufacturing was forced to abandon its predominantly rural base and to concentrate both labour and plant, first next to watercourses and then, with the advent of steam power, close to coal deposits. With 24,000 power looms in production by 1820, the English mill town was already an established fact.

This process of uprooting – *enracinement*, as Simone Weil has called it – was further accelerated by the use of steam traction for transport. Richard Trevithick first demonstrated the locomotive on cast-iron rails in 1804. The opening of the first public rail service between Stockton and Darlington in 1825 was followed by the rapid development of a completely new infrastructure, Britain having some 10,000 miles of track in place by 1860. The advent of long-distance

steam navigation after 1865 greatly increased European migration to the Americas, Africa and Australia. While this migration brought the populations needed to expand the economy of colonial territories and to fill the growing grid-plan cities of the New World, the military, political and economic obsolescence of the traditional European walled city led, after the liberal-national revolutions of 1848, to the wholesale demolition of ramparts and to the extension of the formerly finite city into its already burgeoning suburbs.

These general developments, accompanied by a sudden drop in mortality due to improved standards in nutrition and medical techniques, gave rise to unprecedented urban concentrations, first in England and then, at differing rates of growth, throughout the developing world. Manchester's population grew eight-fold in the course of the century, from 75,000 in 1801 to 600,000 by 1901, as compared to London's six-fold increase over the same period, from around one million in 1801 to six and a half million by the turn of the century. Paris grew at a comparable rate but had a more modest beginning, expanding from 500,000 in 1801 to 3 million by 1901. Even these six- to eight-fold increases are modest compared with New York's growth over the same period. New York was first laid out as a gridded city in 1811, in accordance with the Commissioners' Plan of that year, and grew from its 1801 population of 33,000 to 500,000 by 1850 and 3½ million by 1901. Chicago grew at an even more astronomical rate, rising from 300 people at the time of Thompson's grid of 1833 to around 30,000 (of whom something under half had been born in the States) by 1850, and going on to become a city of two million by the turn of the century.

The accommodation of such volatile growth led to the transformation of old neighbourhoods into slums, and also to jerry-built new houses and tenements whose main purpose, given the general lack of municipal transport, was to provide as cheaply as possible the maximum amount of

rudimentary shelter within walking distance of the centres of production. Naturally such congested developments had inadequate standards of light, ventilation and open space and poor sanitary facilities, such as communal outside lavatories, wash-houses and refuse storage. With primitive drainage and inadequate maintenance, this pattern could lead to the piling up of excrement and garbage and to flooding, and these conditions naturally provoked a high incidence of disease – first tuberculosis and then, more alarmingly for the authorities, a number of outbreaks of cholera in both England and Continental Europe in the 1830s and 1840s.

These epidemics had the effect of precipitating health reform and of bringing about some of the earliest legislation governing the construction and maintenance of dense conurbations. In 1833 the London authorities instructed the Poor Law Commission, headed by Edwin Chadwick, to make enquiries about the origins of a cholera outbreak in Whitechapel. This led to Chadwick's report, *An Inquiry into the Sanitary Conditions of the Labouring Population in Great Britain* (1842), to the Royal Commission on the State of Large Towns and Populous Districts of 1844 and, eventually, to the Public Health Act of 1848. This Act, in addition to others, made local authorities legally responsible for sewerage, refuse collection, water supply, roads, the inspection of slaughter-houses and the burial of the dead. Similar provisions were to occupy Haussmann during the rebuilding of Paris between 1853 and 1870.

The result of this legislation in England was to make society vaguely aware of the need to upgrade working-class housing; but as to the models and means by which this should be achieved there was little initial agreement. Nonetheless, the Chadwick-inspired Society for Improving the Conditions of the Labouring Classes sponsored the erection of the first working-class flats in London in 1844 to the design of the architect Henry Roberts, and followed this

resolute beginning with its Streatham Street flats of 1848–50 and a prototypical two-storey worker's cottage containing four flats, again to the design of Roberts, for the Great Exhibition of 1851. This generic model for the stacking of apartments in pairs around a common staircase was to influence the planning of working-class housing for the rest of the century.

The American-backed philanthropic Peabody Trust and various English benevolent societies and local authorities attempted, after 1864, to upgrade the quality of working-class housing, but little of significance was achieved until the slum clearance Acts of 1868 and 1875 and the Housing of the Working Classes Act of 1890, under which local authorities were required to provide public housing. In 1893, when the London County Council (established in 1890) began to build workers' flats under the auspices of this Act, its Architects' Department made a remarkable effort to deinstitutionalize the image of such housing by adapting the Arts and Crafts domestic style (see p. 53) to the realization of six-storey blocks of flats. Typical of this development is the Millbank Estate, begun in 1897.

Throughout the 19th century the effort of industry to take care of its own assumed many forms, from the 'model' mill, railway and factory towns to projected utopian communities intended as prototypes for some future enlightened state. Among those who manifested an early concern for integrated industrial settlements one must acknowledge Robert Owen, whose New Lanark in Scotland (1815) was designed as a pioneering institution of the co-operative movement, and Sir Titus Salt, whose Saltaire, near Bradford in Yorkshire (founded in 1850), was a paternalistic mill town, complete with traditional urban institutions such as a church, an infirmary, a secondary school, public baths, almshouses and a park.

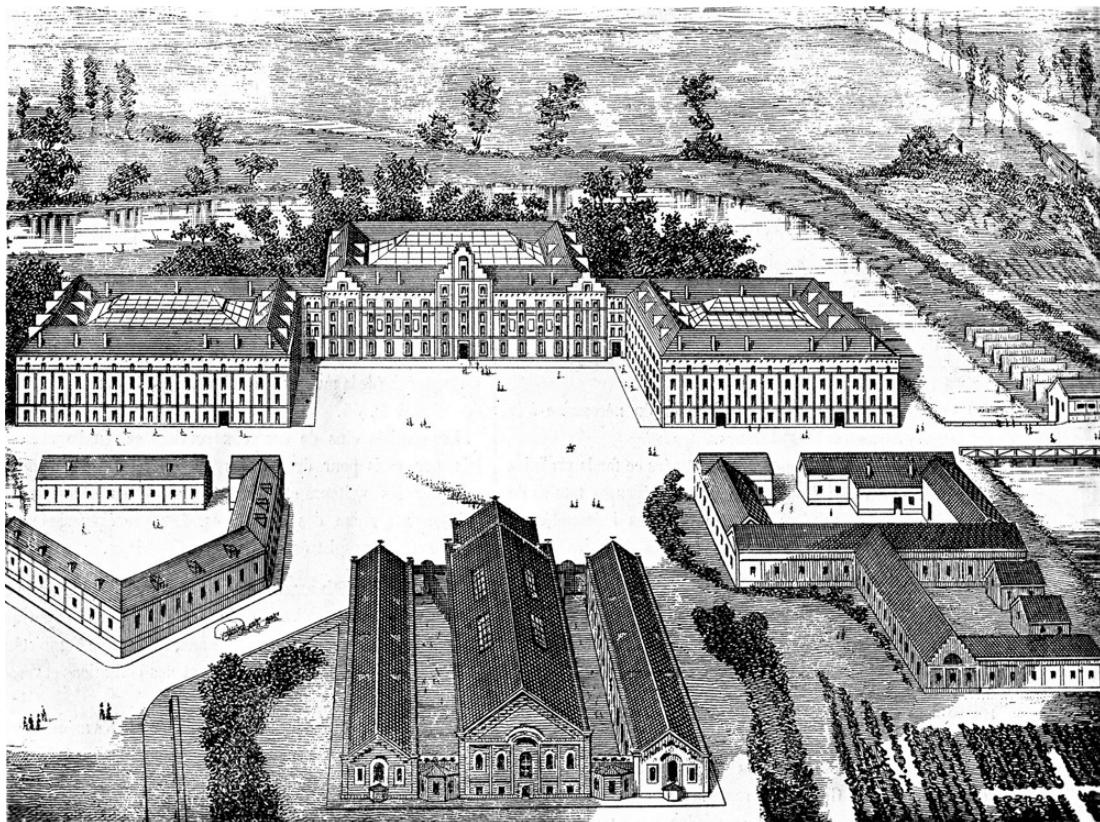
Neither of these realizations could match in scope and liberating potential the radical vision of Charles Fourier's

'new industrial world', as formulated in his essay of that title (*Le Nouveau Monde industriel*) published in 1829. Fourier's non-repressive society was to depend on the establishment of ideal communities or 'phalanxes', housed in *phalanstères*, where people were to be related in accordance with Fourier's psychological principle of 'passional attraction'. Since the phalanstery was projected as being in open country, its economy was to be predominantly agricultural, supplemented by light manufacturing. In his earliest writings Fourier outlined the physical attributes of his communal settlement; it was modelled on the layout of Versailles, its central wing being given over to public functions (dining hall, library, winter-garden, etc.), while its side wings were devoted to the workshops and the *caravanseray*. In his *Traité de l'association domestique agricole* (1822) Fourier wrote of the phalanstery as being a miniature town whose streets would have the advantage of not being exposed to the weather. He saw it as a structure whose grandeur, if generally adopted, would replace the petit-bourgeois squalor of the small individual free-standing houses that were, by then, already filling the outer interstices of towns.

Fourier's disciple Victor Considérant, writing in 1838, mixed the metaphor of Versailles with that of the steamship and questioned whether it was 'easier to house 1,800 men right in the middle of the ocean, six hundred leagues from every shore, ... than to house in a unitary construction some 1,800 good peasants in the heart of Champagne or firmly on the soil of Beauce?' This particular conflation of commune and ship was to be returned to by Le Corbusier, over a century later, in his self-contained commune or Unité d'Habitation, realized with Fourierist overtones at Marseilles in 1952 (see p. 259).

The enduring importance of Fourier lies in his radical criticism of industrialized production and social organization, for, despite numerous attempts to create phalansteries in

both Europe and America, his new industrial world was fated to remain a dream. Its closest realization was the *Familistère* [9], built by the industrialist Jean-Baptiste André Godin next to his factory at Guise in 1859–70. This complex comprised three residential blocks, a crèche, a kindergarten, a theatre, schools, public baths and a laundry. Each residential block enclosed a top-lit central courtyard which took the place of the elevated corridor streets of the phalanstery. In his book *Solutions sociales* (1870) Godin absorbed the more radical aspects of Fourierism by showing how the system could be adapted to co-operative family living without resorting to the eccentric theories of ‘passional attraction’.



9 Godin, *Familistère*, Guise, 1859–70.

Aside from accommodating the labouring masses, London’s 18th-century matrix of streets and squares was extended throughout the 19th century to meet the

residential requirements of a growing urban middle class. No longer satisfied, however, with the scale and texture of the occasional green square – delimited on all sides by streets and continuous terraces – the English Park Movement, founded by the gardener Humphry Repton, attempted to project the ‘landscaped country estate’ into the city. Repton himself succeeded in demonstrating this, in collaboration with the architect John Nash, in their layout of Regent’s Park in London (1812–27). After the victory over Napoleon in 1815, the proposed development enclosing the park was augmented, under royal patronage, by a continuous ‘display’ façade, penetrating into the existing urban fabric and extending as a more or less uninterrupted ribbon of terraced accommodation from the aristocratic vistas of Regent’s Park in the north to the palatial urbanity of St James’s Park and Carlton House Terrace in the south.

The squirearchical concept of the Neo-Classical country house set in an irregular landscape (an image derived from the Picturesque work of Capability Brown and Uvedale Price) was thus translated by Nash to the provision of terraced housing on the perimeter of an urban park. This model was first systematically adapted to general use by Sir Joseph Paxton, at Birkenhead Park, built outside Liverpool in 1844. Frederick Law Olmsted’s Central Park in New York, inaugurated in 1857, was directly influenced by Paxton’s example, even down to its separation of carriage traffic from pedestrians. The concept received its final elaboration in the Parisian parks created by Jean Charles Adolphe Alphand, where the circulation system totally dictated the manner in which the park was to be used. With Alphand, the park becomes a civilizing influence for the newly urbanized masses.

The irregular lake that Nash created in St James’s Park in 1828 out of the rectangular basin that the Mollet brothers had made in 1662 may be taken to symbolize the victory of the English Picturesque over the French Cartesian

conception of landscape dating from the 17th century. The French, who had hitherto regarded greenery as another order of architecture and had rendered their avenues as colonnades of trees, were to find the romantic appeal of Repton's irregular landscape irresistible. After the Revolution they remodelled their aristocratic parks into Picturesque sequences.

Yet, for all the power of the Picturesque, the French impulse towards rationality remained, first in the *percements* (wholesale demolition in a straight line to create an entirely new street) of the Artists' Plan for Paris, drawn up in 1793 by a committee of revolutionary artists under the leadership of the painter Jacques-Louis David; and then in Napoleon's arcaded Rue de Rivoli, built after 1806 to the designs of Percier and Fontaine. Where the Rue de Rivoli was to serve as the architectural model not only for Nash's Regent Street but also for the scenographic 'façade' of Second Empire Paris, the Artists' Plan demonstrated the instrumental strategy of the *allée*, which was to become the prime tool for the rebuilding of Paris under Napoleon III.

Napoleon III and Baron Georges Haussmann left their indelible mark not only on Paris [10] but also on a number of major cities in France and Central Europe which underwent Haussmann-like regularizations throughout the second half of the century. Their influence is even present in Daniel Burnham's 1909 plan for the gridded city of Chicago, of which Burnham wrote: 'The task which Haussmann accomplished for Paris corresponds with the work which must be done for Chicago in order to overcome the intolerable conditions which invariably arise from a rapid growth in population.'



**10** The regularization of Paris: streets cut by Haussmann are shown in black.

In 1853 Haussmann, as the newly appointed Prefect for the Seine, saw these conditions in Paris as being polluted water supply, lack of an adequate sewer system, insufficient open space for both cemeteries and parks, large areas of squalid housing and last, but by no means least, congested circulation. Of these, the first two were undoubtedly the most critical for the everyday welfare of the population. As a consequence of drawing the bulk of its water from the Seine, which also served as the main collector sewer, Paris had suffered two serious outbreaks of cholera in the first half of the century. At the same time, the existing street system was no longer adequate for the administrative centre of an expanding capitalist economy. Under the brief autocracy of Napoleon III Haussmann's radical solution to the physical aspect of this complex problem was *percement*. His broad purpose was, as Françoise Choay has written, 'to give unity and transform into an operative whole the "huge consumer market, the immense workshop" of the Parisian agglomerate'. Although the Artists' Plan of 1793 and before

that Pierre Patte's plan of 1765 had clearly anticipated the axial and focal structure of Haussmann's Paris, there is, as Choay points out, a discernible shift in the actual location of the axes, from a city organized around traditional *quartiers*, as in the plan made under David, to a metropolis united by the 'fever of capitalism'.

Saint-Simonian economists and technocrats, mostly from the Ecole Polytechnique, influenced Napoleon III's views as to the economic means and the systematic ends to be adopted in the rebuilding of Paris, emphasizing the importance of rapid and efficient systems of communication. Haussmann converted Paris into a regional metropolis, cutting through its existing fabric with streets whose purpose was to link opposing cardinal points and districts, across the traditional barrier of the Seine. He gave top priority to the creation of more substantial north-south and east-west axes, to the building of the Boulevard de Sébastopol and the easterly extension of the Rue de Rivoli. This basic cross, which served the main railway termini to the north and south, was encircled by a 'ring' boulevard which in turn was tied into Haussmann's major traffic distributor, his Etoile complex built around Chalgrin's Arc de Triomphe.

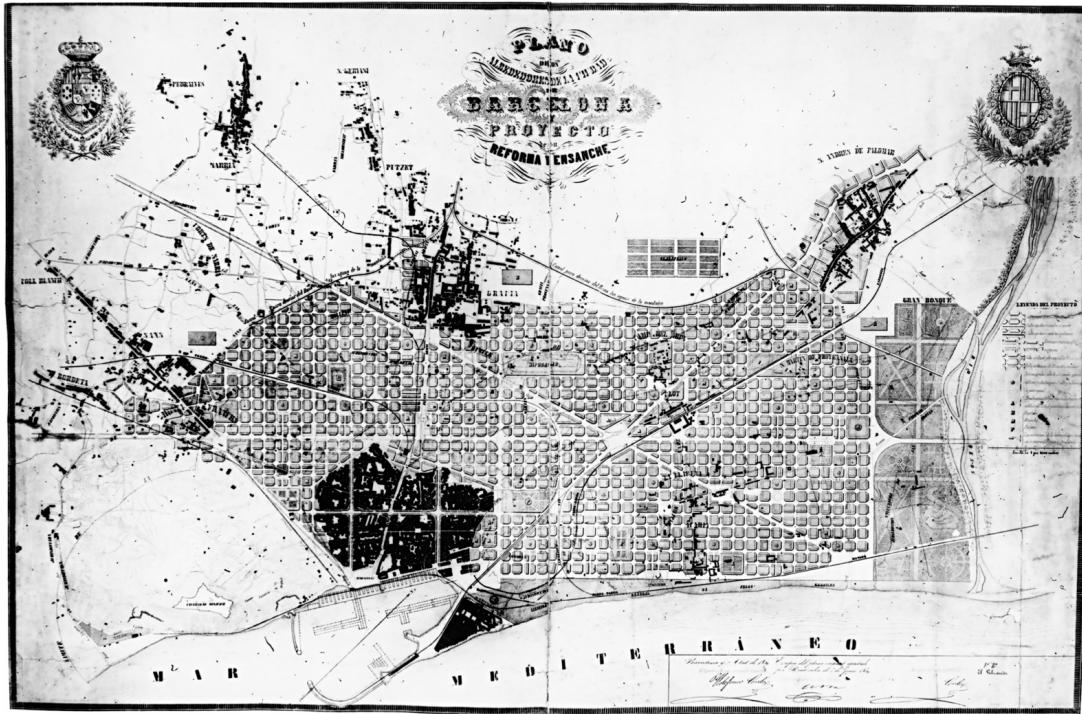
During Haussmann's tenure the city of Paris built some 137 kilometres (85 miles) of new boulevards, which were considerably wider, more thickly lined with trees and better lit than the 536 kilometres (333 miles) of old thoroughfare they replaced. With all this came standard residential plan types and regularized façades, and equally standard systems of street furniture – the *pissoirs*, benches, shelters, kiosks, clocks, lamp-posts, signs, etc., designed by Haussmann's engineers Eugène Belgrand and Alphand. This entire system was 'ventilated' whenever possible by large areas of public open space, such as the Bois de Boulogne and the Bois de Vincennes. In addition, new cemeteries and many small parks, such as the Parc des Buttes Chaumont

and the Parc Monceau, were either created or upgraded within the extended boundaries of the city. Above all, there was an adequate sewer system and fresh water piped into the city from the Dhuis valley. In achieving such a comprehensive plan, Haussmann, the apolitical administrator par excellence, refused to accept the political logic of the régime he served. He was finally broken by an ambivalent bourgeoisie, who throughout his tenure supported his ‘profitable improvements’ while at the same time defending their proprietorial rights against his intervention.

Prior to the collapse of the Second Empire, the principle of ‘regularization’ was already being practised outside Paris, particularly in Vienna, where the replacement of demolished fortifications by a display boulevard was taken to its logical extreme in the ostentatious Ringstrasse, built around the old centre between 1858 and 1914. The free-standing monuments of this ‘open’ city expansion, structured around a cranked thoroughfare of enormous width, provoked the critical reaction of the architect Camillo Sitte, who in his influential *Der Städtebau nach seinen künsterlerischen Grundsätzen (City Planning According to Artistic Principles)* of 1889 argued for the enclosure of the major Ringstrasse monuments by buildings and arcades. Sitte’s remedial concern cannot be better characterized than in his critical comparison of the traffic-ridden ‘open’ city of the late 19th century with the tranquillity of the medieval or Renaissance urban core:

*During the Middle Ages and Renaissance public squares were often used for practical purposes ... they formed an entirety with the buildings which enclosed them. Today they serve at best as places for parking vehicles, and they have no relation to the buildings which dominate them .... In brief, activity is lacking precisely in those places where, in ancient times, it was most intense, near public structures.<sup>2</sup>*

Meanwhile, in Barcelona, the regional implications of urban regularization were being developed by the Spanish engineer Ildefonso Cerdá, the inventor of the term *urbanización*. In 1859 Cerdá projected the expansion of Barcelona as a gridded city [11], some twenty-two blocks deep, bordered by the sea and intersected by two diagonal avenues. Driven by industry and overseas trade, Barcelona filled out this American-scale grid plan by the end of the century. In his *Teoría general de la urbanización* ('General Theory of Urbanization') of 1867 Cerdá gave priority to a system of circulation and, in particular, to steam traction. For him transit was, in more ways than one, the point of departure for all scientifically based urban structures. Léon Jaussely's plan for Barcelona of 1902, derived from Cerdá's, incorporated this emphasis on movement into the form of a protolinear city where the separate zones of accommodation and transportation are organized into bands. His design anticipated in certain respects the Russian linear city proposals of the 1920s.

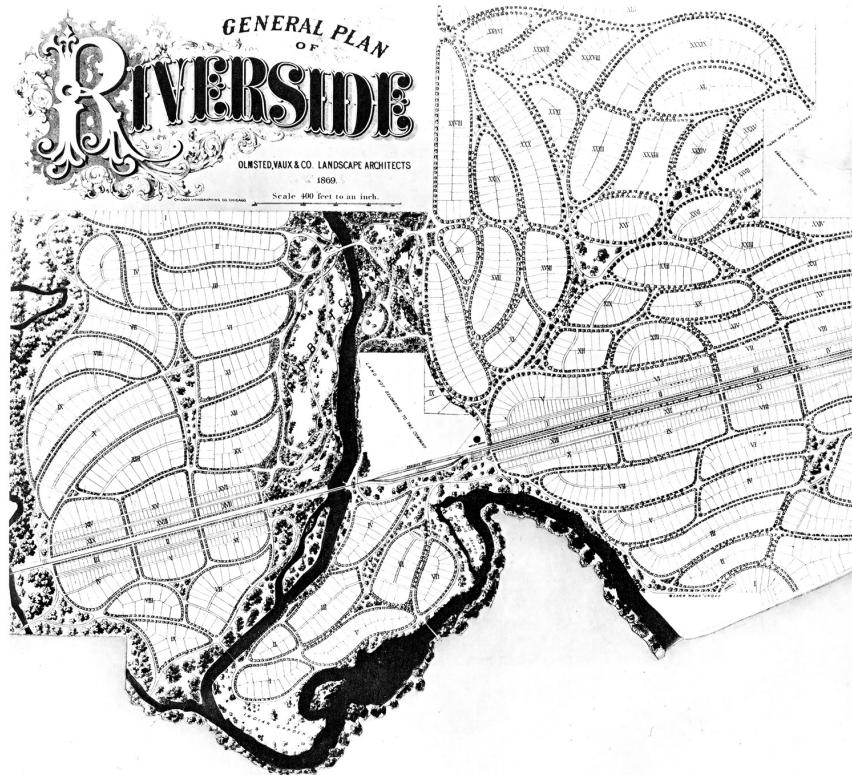


**11** Cerdá, project for the expansion of Barcelona, 1858. The old city appears in black.

By 1891 intensive exploitation of the city centre was possible, due to two developments essential to the erection of high-rise buildings: the invention in 1853 of the passenger lift, and the perfection in 1890 of the steel frame. With the introduction of the underground railway (1863), the electric tram (1884) and commuter rail transit (1890), the garden suburb emerged as the 'natural' unit for future urban expansion. The complementary relationship of these two American forms of urban development - the high-rise downtown and the low-rise garden suburb - was demonstrated in the building boom that followed the great Chicago fire of 1871.

The process of suburbanization had already started around Chicago with the layout in 1869 of the suburb of Riverside, to the Picturesque designs of Olmsted [12]. Based in part on the mid-19th-century garden cemetery and

in part on the early East Coast suburb, it was linked to downtown Chicago by both a railway and a bridle path.



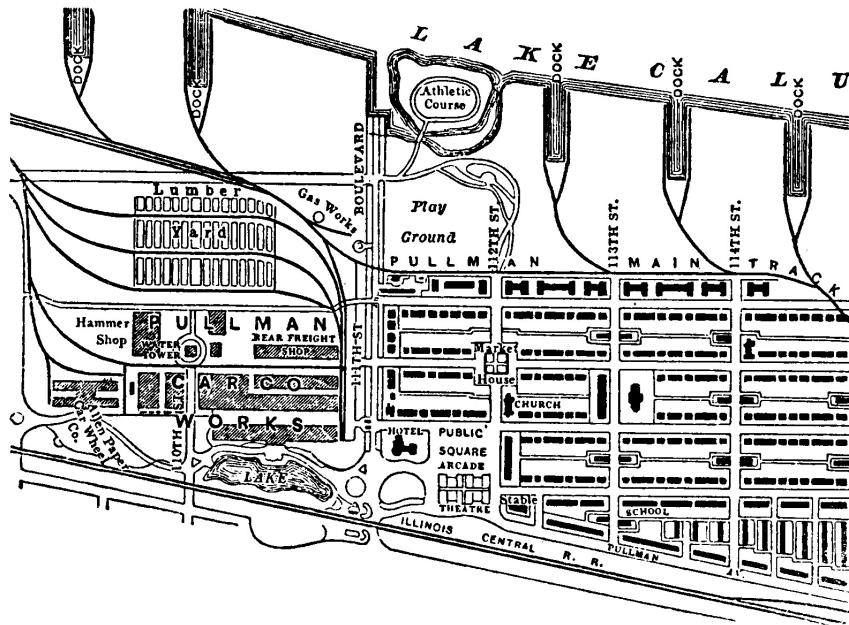
12 Olmsted, plan of Riverside, Chicago, 1869.

With the entry into Chicago in 1882 of the steam-powered cable car, the way became open to further expansion. The immediate beneficiary was Chicago's South Side. Yet suburban growth did not really prosper until the 1890s, when, with the introduction of the electric streetcar, suburban transit greatly extended its range, speed and frequency. This led at the turn of the century to the opening up of Chicago's Oak Park suburb, which was to be the proving ground for the early houses of Frank Lloyd Wright. Between 1893 and 1897 an extensive elevated railway was superimposed on the city, encircling its downtown area. All these forms of transit were essential to Chicago's growth. Most important of all for the city's prosperity was the railway, for it brought the first piece of modern agricultural

equipment to the prairie – the essential McCormick mechanical reaper invented in 1831 – and collected in return both grain and cattle from the great plains, trans-shipping them to the lakeside silos and stockyards which had begun to be built on Chicago's South Side in 1865. It was the railway that redistributed this abundance from the 1880s on, in Gustavus Swift's refrigerated packing cars, and the corresponding growth in trade greatly augmented the extensive passenger traffic centring on Chicago. Thus the last decade of the century saw radical changes in both the methods of town building and the means of urban access – changes which, in conjunction with the grid plan, were soon to transform the traditional city into an ever-expanding metropolitan region where dispersed homestead and concentrated core are linked by continual commuting.

The puritanical entrepreneur George Pullman, who helped to rebuild Chicago after the fire, had been one of the first to appreciate the expanding market in long-distance passenger travel, bringing out his first Pullman sleeping car in 1865. After the achievement of the transcontinental rail link in 1869, Pullman's Palace Car Company prospered, and in the early 1880s he established his ideal industrial town of Pullman [13], south of Chicago, a settlement that combined workers' residences with a full range of communal facilities, including a theatre and a library as well as schools, parks and playgrounds, all in close proximity to the Pullman factory. This well-ordered complex went far beyond the facilities provided by Godin at Guise some twenty years earlier. It also far exceeds, in its comprehensiveness and clarity, the Picturesque model towns founded in England by the confectioner George Cadbury at Bournville, Birmingham, in 1879 and by the soap manufacturer W.H. Lever at Port Sunlight, near Liverpool, in 1888. The paternalistic, authoritarian precision of Pullman bears a closer resemblance to Saltaire or to the workers' settlements first

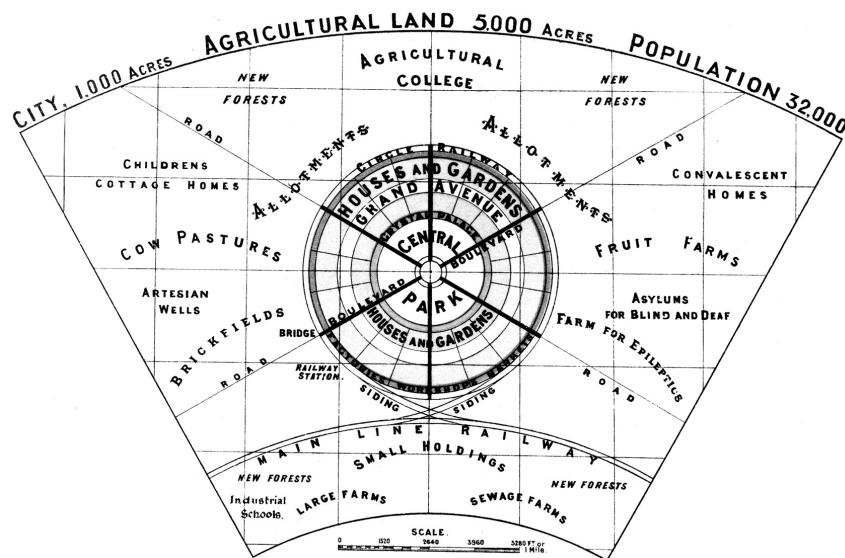
established as company policy by Krupp at Essen in the late 1860s.



13 Solon S. Berman, factory and town of Pullman, Chicago, illustrated in 1885.

Rail transit on a much smaller scale, by tram or by train, was to be the main determinant of the two alternative models of the European garden city. One was the axial structure of the Spanish linear garden city, first described by its inventor Arturo Soria y Mata in the early 1880s, and the other was the English concentric garden city, shown as circumnavigated by rail in Ebenezer Howard's *Tomorrow: A Peaceful Path to Real Reform* of 1898. Where Soria y Mata's dynamic interdependent *ciudad lineal* comprised, in his own words of 1882, 'A single street of some 500 metres [1,640 feet] width and of the length that may be necessary ... [a city] whose extremities could be Cadiz or St Petersburg or Peking or Brussels', Howard's static yet supposedly independent 'Rurisville' [14] was encircled by its rail transit and thereby fixed at an optimum size of between 32,000 and 58,000 people. Where the Spanish model was inherently regional, undetermined and Continental, the English version was self-contained, limited and provincial.

Soria y Mata described his ‘locomotion vertebrae’ as incorporating, in addition to transit, the essential services of the 19th-century city – water, gas, electricity and sewerage – compatible with the distribution needs of 19th-century industrial production.



**14** Howard, ‘Rurisville’, schematic garden city from his *Tomorrow*, 1898.

Apart from being an antithesis to the radially planned city, the linear city was a means for building along a triangulated network of pre-existing routes connecting a set of traditional regional centres. While the diagrammatic projection of Howard’s city as a satellite town in open country was equally regional, the form of the city itself was less dynamic. On the model of Ruskin’s ill-fated St George’s Guild of 1871, Howard conceived of his city as an economically self-sufficient mutual aid community, producing little beyond its own needs. The difference between these city models lay finally in the fundamentally different attitudes they adopted to rail transit. Whereas Howard’s Rurisville was intended to eliminate the journey to work – the railway being reserved for objects rather than men – the *ciudad lineal* was expressly designed to facilitate communication.

It was, however, the English garden city in its modified form that came to be widely adopted, rather than the linear model sponsored by Soria y Mata's Compañía Madrileña de Urbanización, which only built some 22 kilometres (14 miles) of the 55-kilometre (34-mile) long 'necklace' originally projected for the encirclement of Madrid. The failure of this sole example condemned the linear city to a theoretical rather than practical future, and at this level it persisted from the Russian linear cities of the late 1920s to Le Corbusier's ASCORAL planning thesis, first published as *Les Trois Etablissements humains* in 1945.

The radical reinterpretation of Howard's original diagrams, reflected in the layout of the first garden city, Letchworth in Hertfordshire (started in 1903), inaugurated the neo-Sittesque phase in the English garden city movement. That the engineer-planner Raymond Unwin was impressed by Sitte is evident from his highly influential book *Town Planning in Practice*, published in 1909. The preoccupation of Unwin and his colleague Barry Parker with 'imaginary irregular towns' - of a kind exemplified for them by such medieval German towns as Nuremberg and Rothenburg-ob-der-Tauber - clearly lies behind their picturesque layout for Hampstead Garden Suburb, designed in 1907. Yet for all his contempt for 'bye-law' architecture, Unwin remained as conditioned as any other planner by the constraints imposed by modern standards of hygiene and circulation. Thus, despite the renowned 'empirical' success of these pioneering garden cities, the debilitating environment produced subsequently by the English school of town planning stems, at least in part, from Unwin's failure to resolve this implacable dichotomy, that is to reconcile medieval nostalgia with bureaucratic control. The 'train-accident' block layouts of the 20th century are among the enduring formal legacies of this failure.

# Chapter 3

## Technical Transformations: Structural Engineering 1775-1939

*With iron, an artificial building material appeared for the first time in the history of architecture. It went through a development whose tempo accelerated during the course of the century. This received its decisive impulse when it turned out that the locomotive, with which experiments had been made since the end of the twenties, could only be utilized on iron rails. The rail was the first unit of construction, the forerunner of the girder. Iron was avoided for dwelling-houses, and made use of for arcades, exhibition halls, railway stations, buildings which served transitory purposes. Simultaneously the architectonic areas in which glass was employed were extended. But the social conditions for its increased utilization as a building material only came into being a hundred years later. In Scheerbart's 'Glasarchitektur' (1914) it still appeared in the context of a Utopia.*

Walter Benjamin

*Paris: Capital of the 19th Century*, 1930<sup>1</sup>

Rotary steam power and the iron frame came into being at around the same time through the interdependent efforts of three men: James Watt, Abraham Darby and John Wilkinson. Of these, the last was the 'iron-master' of his day, whose

invention of the cylinder boring machine in 1775 was essential to the perfection of Watt's steam engine of 1789. Wilkinson's experience in working iron was to prove equally indispensable to the first structural use of iron, since he assisted Darby and his architect, Thomas Farnolls Pritchard, in designing and erecting the first cast-iron bridge, a 30.5-metre (100-foot) span built over the Severn near Coalbrookdale in 1779. The Coalbrookdale achievement aroused considerable interest, and in 1786 the Anglo-American revolutionary, Tom Paine, designed a monument to the American Revolution in the form of a cast-iron bridge spanning the Schuylkill River. Paine had the parts for this bridge made in England, where they were exhibited in 1791, just a year before he was charged with treason and forced into exile in France. In 1796 a 71-metre (236-foot) cast-iron bridge was built across the Wear at Sunderland to the designs of Thomas Wilson, who adopted Paine's 'voussoir' method of assembly. About the same time Thomas Telford made his débüt as a bridge builder with his 39.5-metre (130-foot) Buildwas Bridge erected over the Severn, a design which employed only 176 tonnes (173 tons) of iron, as opposed to the 384 tonnes (378 tons) used at Coalbrookdale.

Over the next thirty years Telford went on to prove his unparalleled stature as a road and bridge builder and as the last great canal engineer of the waning waterway era. His pioneer career was brought to a close with his brick-encased, iron-framed warehouses at St Katharine Dock in London, designed with the architect Philip Hardwick and erected in 1829. They were based on the system of fireproof multi-storey mill construction developed in the Midlands during the last decade of the 18th century. The main structural antecedents for St Katharine's were William Strutt's six-storey calico mill, built at Derby in 1792, and Charles Bage's flax-spinning mill erected at Shrewsbury in 1796. While both of these structures employed cast-iron

columns, the pressing need to perfect a fireproof system for mill buildings led, in the space of four years, to the replacement of the timber beams used at Derby by T-section iron beams. In each instance the beams carried shallow brick vaults, the whole assembly being stiffened by an outer shell and by wrought-iron tie rods restraining the structure in a lateral direction. This use of vaulting seems to have derived directly from the 18th-century development of the Roussillon or Catalonian vault in France, which was first adopted there as a means of achieving a fireproof structure in Château Bizy, built at Vernon by Pierre Contant d'Ivry in 1741.

Aside from its use in 13th-century cathedrals, wrought-iron masonry reinforcement in France had its origins in Paris, in Perrault's east façade of the Louvre (1667) and Soufflot's portico of Ste-Geneviève (1772). Both works anticipate the development of reinforced concrete. In 1776 Soufflot proposed a wrought-iron trussed roof for part of the Louvre that prepared the way for the pioneering work of Victor Louis, that is for Louis's wrought-iron roof for the Théâtre Français of 1786 and his theatre in the Palais-Royal of 1790. This last combined an iron roof with a hollow-pot, fireproof floor structure, a system that once again was derived from the Roussillon vault. That fire was a growing urban hazard can be seen from the Halle au Blé, Paris, whose burnt-out roof was replaced in 1808 by an iron-ribbed cupola, designed by the architect François-Joseph Bélanger and the engineer François Brunet – incidentally, one of the first instances of a clear division of labour between architect and constructor. In the meantime the earliest French application of iron to bridge construction had occurred with the building of the elegant Pont des Arts over the Seine, erected to the designs of Louis-Alexandre de Cessart in 1803.

With the foundation of the Ecole Polytechnique in 1795, the French strove towards establishing a technocracy appropriate to the achievement of the Napoleonic Empire.

While this emphasis on applied technique only served to reinforce the growing specialization of architecture and engineering (a division already institutionalized through Perronet's Ecole des Ponts et Chaussées), architects such as Jean-Baptiste Rondelet, who had supervised the completion of Ste-Geneviève after Soufflot's death, began to record the pioneering work of Soufflot, Louis, Brunet, de Cessart and others. And while Rondelet documented the 'means' in his *Traité de l'art de bâtir* (1802), Jean-Nicolas-Louis Durand, lecturer in architecture at the Ecole Polytechnique, catalogued the 'ends' in his *Précis des leçons données à l'Ecole Polytechnique* (1802–09). Durand's book disseminated a system whereby Classical forms, conceived as modular elements, could be arranged at will for the accommodation of unprecedented building programmes, i.e. the market halls, libraries and barracks of the Napoleonic Empire. First Rondelet and then Durand codified a technique and a design method whereby a rationalized Classicism could be brought to accommodate not only new social demands but also new techniques. This comprehensive programme influenced Schinkel who, at the beginning of his architectural career in 1816, began to incorporate elaborate iron elements into his Neo-Classical embellishments for the city of Berlin.

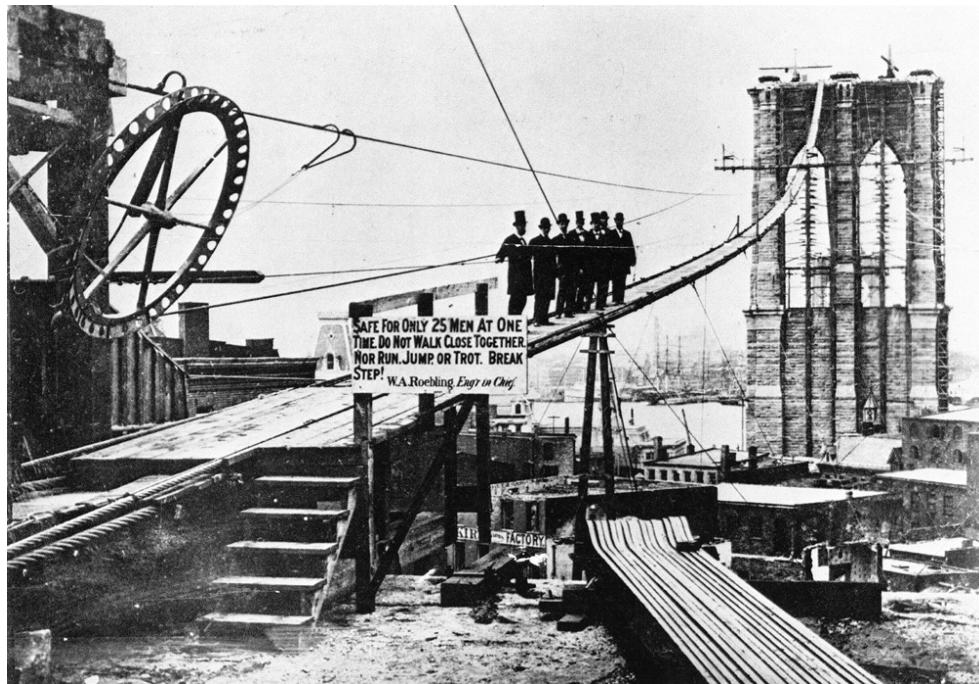
Around this time the technique of iron suspension construction underwent an independent evolution, beginning with the American James Finley's invention of the stiffened, flat-deck suspension bridge in 1801, an achievement that was disseminated by Thomas Pope's *Treatise on Bridge Architecture* published in 1811. The climax of Finley's brief but critical career was his 74.5-metre (244-foot) span iron-chain suspension bridge across the Merrimack River at Newburyport, Massachusetts, in 1810.

Finley's work, as documented by Pope, had an immediate influence on the application of chain suspension technique in Britain, where Samuel Brown and Telford became involved

in its development. Brown's wrought-iron flat bar links were patented in 1817 and applied with lasting success to his 115-metre (378-foot) span Union Bridge, built over the Tweed in 1820. Telford and Brown collaborated briefly on a chain bridge for Runcorn, and this collaboration no doubt informed Telford's design for his 177-metre (580-foot) span Menai Straits bridge, which after eight years of arduous work was finally opened in 1825. British wrought-iron suspension construction culminated in Isambard Kingdom Brunel's 214-metre (702-foot) span Clifton Bridge, Bristol, designed in 1829 but not completed until 1864, five years after Brunel's death. Since the manufacture of wrought-iron links capable of withstanding tension was always an expensive and hazardous affair, the idea of using cables of drawn wire instead of chains seems to have suggested itself, first in 1816 to White and Hazard, in their footbridge over the Schuylkill Falls in Pennsylvania, and then to the Séguin brothers, who constructed a wire bridge over the Rhône at Tain-Tournon in 1825. The Séguins' work formed the subject for an exhaustive analytical study carried out for the Ecole des Ponts et Chaussées by Louis-Joseph Vicat, and the publication of this work in 1831 inaugurated the golden age of the suspension bridge in France, where some hundred such structures were built in the next decade. Vicat recommended that all future suspension members should be fabricated out of wire rather than bar iron, and to this end he invented a method for spinning wire cable in place.

A similar device was eventually used by the American engineer John Augustus Roebling, whose own patent for the manufacture of wire cable was taken out in 1842, just two years before he used this material for the suspension of an aqueduct over the Allegheny River at Pittsburgh. Roebling's cables were spirally wrapped like those of Vicat, and he used this basic suspension material for the rest of his heroic career, from his 243.5-metre (800-foot) span Niagara Falls railway viaduct of 1855 to his 487-metre (1600-foot) span

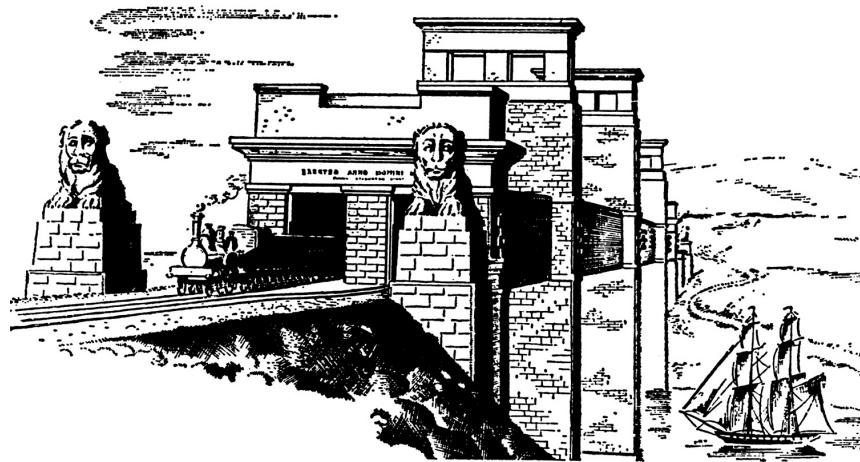
Brooklyn Bridge, New York [15], completed, after his death, by his son Washington Roebling in 1883.



**15** J.A. and W.A. Roebling, Brooklyn Bridge, New York, under construction, c. 1877. Initial cable-spinning in progress.

With the virtual completion of the British railway infrastructure by 1860, British structural engineering entered a fallow period that lasted for the rest of the century. Few works of outstanding brilliance and ingenuity remained to be built after the middle of the century: these included the Stephenson and Fairbairn Britannia Tubular Bridge of 1852 over the Menai Straits [16] and Brunel's Saltash Viaduct of 1859. Both made use of plated wrought iron, that is to say of riveted rolled sheet, a technique which had been greatly advanced by the studies of Eton Hodgkinson and the experimental work of William Fairbairn. Robert Stephenson had already utilized the findings of Hodgkinson and Fairbairn in his development of the plate girder in 1846, a system that was to be fully demonstrated in the Britannia Bridge. This structure comprised two independent, single-track, iron-plated box tunnels which

bridged the straits in two spans of 70 metres (230 feet) each and one main span of 140 metres (460 feet). Stephenson's stone towers had been intended for the anchorage of supplementary suspension members, but the plated 'tubes' acting alone proved more than adequate for the span. Comparable spans were achieved in the Saltash Viaduct, where a single track is carried over the Tamar River on two bowstring trusses each spanning 138.5 metres (455 feet). Rolled, riveted plates were again used to form the hollow elliptical chords, measuring 4.9 by 3.7 metres (16 by 12 feet) across their respective axes. These chords interacted with underslung iron chain catenaries to carry vertical standards from which the road-bed was finally suspended. In its imaginative stature Brunel's last work equalled the great viaducts which Gustave Eiffel was to build in the Massif Central over the next thirty years, and its use of hollow plated sections anticipated the gigantic tubular steel framing to be employed by John Fowler and Benjamin Baker in the 213-metre (700-foot) cantilevers of their Forth Bridge, completed in 1890.



**16** Stephenson and Fairbairn, Britannia Tubular Bridge over the Menai Straits, 1852.

The railway development that had begun with George Stephenson's trial run from Stockton to Darlington in 1825

expanded over the second quarter of the century at a formidable rate. In England there were over 3,200 kilometres (2,000 miles) of track after less than twenty years, while in North America 4,600 kilometres (3,000 miles) had been laid by 1842. In the interim, the materials of the railway, cast and wrought iron, gradually became integrated into the general building vocabulary, where they constituted the only available fireproof elements for the multi-storey warehouse space required by industrial production.

From the time of Boulton and Watt's 33-centimetre (13-inch) cast-iron beam, used in their Salford Mill, Manchester, of 1801, a continual effort was made to improve the spanning capacity of both cast- and wrought-iron beams and rails. The typical section of the 'railway' evolved during the first decades of the century, and from this section the standard structural I-beam eventually emerged. Jessop's cast-iron rail of 1789 gave way to Birkenshaw's wrought-iron T-rail of 1820, and this led in turn to the first American rail, rolled in Wales in 1831, with a section in the form of an I broader at the base than at the top. This form became gradually adopted for the permanent way, but did not come into general structural use until after 1854, when heavier versions with greater spanning capacity were successfully rolled. Meanwhile, engineers tried various ways to increase the spanning capacity of the material by building up deep members from the standard wrought-iron angles and plates that were then being used in ship building. Fairbairn reputedly made and tested such composite I-beams as early as 1839.

These ingenious attempts to produce wide-span elements through reinforcing or assembling iron components were more or less eclipsed at mid-century by the successful rolling of a wrought-iron beam 17.8 centimetres (7 inches) deep. Fairbairn's book *On the Application of Cast and Wrought Iron to Building Purposes* (1854) presented an improved system of mill construction,

consisting of rolled iron beams 40.6 centimetres (16 inches) deep that supported shallow vaults made of sheet iron, the whole topped out with concrete. Since the wrought-iron tie rods, still used to stabilize the structure, were cast into the concrete floor, this proposal brought Fairbairn fortuitously close to the principles of reinforced concrete.

In a similar vein, a remarkable four-storey cast- and wrought-iron framed building was erected in the Naval Dockyard at Sheerness. This boat store, clad in corrugated iron, was designed by Colonel Greene and erected in 1860, some twelve years before the pioneering all-iron, skeleton-framed Menier chocolate factory was built by Jules Saulnier at Noisiel-sur-Marne. In its systematic use of iron I-sections throughout (cast in the case of the columns and wrought in the case of the beams) the Sheerness boat store anticipated both the standard section and the assembly method of modern steel-frame construction.

By mid-century, cast-iron columns and wrought-iron rails, used in conjunction with modular glazing, had become the standard technique for the rapid prefabrication and erection of urban distribution centres – market halls, exchanges and arcades. This last type was developed in Paris. Fontaine's Galerie d'Orléans, built in the Palais-Royal in 1829, was the earliest arcade to have a glass barrel vault. The prefabricated nature of these cast-iron systems guaranteed not only a certain speed of assembly but also the possibility of transporting building 'kits' over large distances: from mid-century onwards the industrialized countries began to export prefabricated cast-iron structures all over the world.

The sudden expansion in urban growth and trade on the eastern American seaboard in the 1840s encouraged men such as James Bogardus and Daniel Badger to open casting shops in New York for the manufacture of multistorey architectural fronts in iron. Up to the late 1850s, however, their 'packaged' structures relied on the use of large timber beams to span the internal space, iron being reserved for

the internal columns and the façades. One of the finest works of Badger's extensive career is his Haughwout Building, New York, of 1859, built to the designs of the architect John P. Gaynor. This was the first building to be served by a passenger elevator, just five years after Elisha Graves Otis had made his historic demonstration of the device in 1854.

The fully glazed structure, whose environmental attributes were exhaustively discussed by J.C. Loudon in his *Remarks on Hot Houses* (1817), had little chance of having a more general application, at least in England, until the repeal of the excise duty on glass in 1845. Richard Turner and Decimus Burton's Palm House at Kew Gardens, built in 1845–48, was one of the first structures to take advantage of the sudden availability of sheet glass. The first large permanent enclosures to be significantly glazed thereafter were the railway termini that were built during the second half of the 19th century, a development that began with Turner and Joseph Locke's Lime Street Station, Liverpool, of 1849–50.

The railway terminus presented a peculiar challenge to the received canons of architecture, since there was no type available to express and articulate adequately the junction between the head building and the train shed. This problem, which saw its earliest architectural resolution in Duquesney's Gare de l'Est, Paris, of 1852, was of some concern since these termini were effectively the new gateways into the capital city. The engineer Léonce Reynaud, designer of the first Gare du Nord in Paris (1847), was aware of this issue of 'representation' when he wrote in his *Traité d'architecture* (1850):

*Art does not have the rapid progress and sudden developments of industry, with the result that the majority of buildings today for the service of railroads leave more or less to be desired, be it in relation to form or arrangement.*

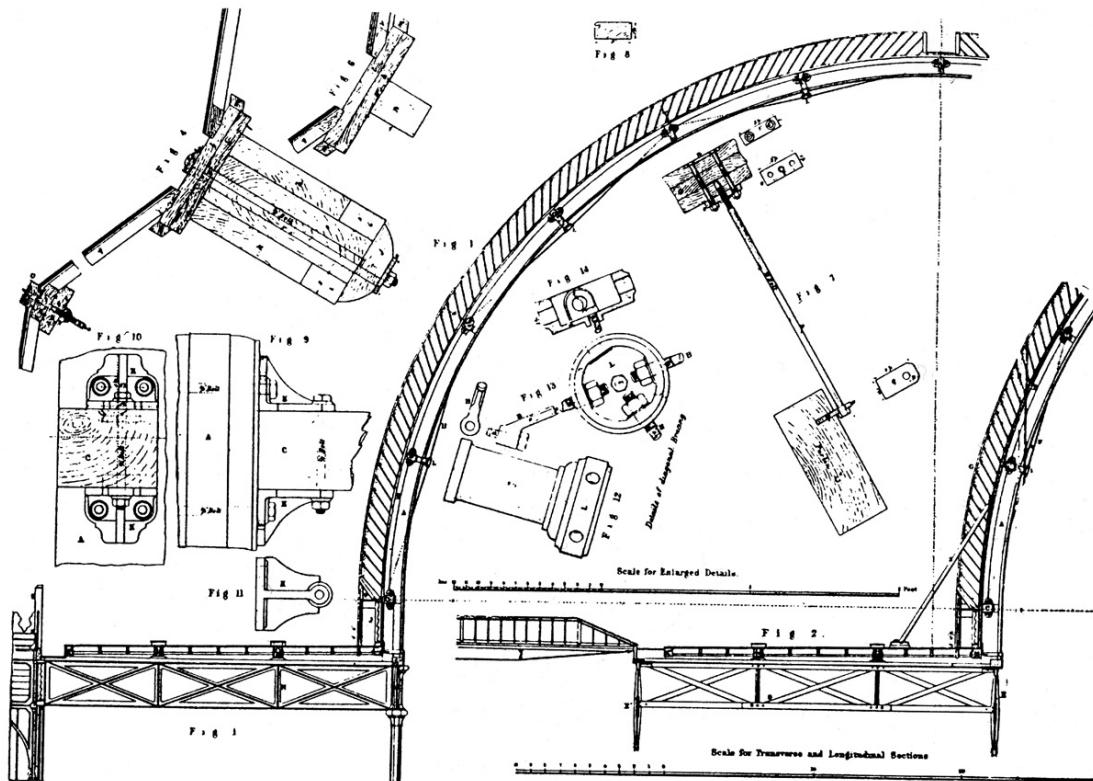
*Some stations appear to be appropriately arranged but having the character of industrial or temporary construction rather than that of a building for public use.<sup>2</sup>*

Nothing could be more exemplary of this predicament than St Pancras Station in London, where the vast shed, 74 metres (243 feet) in span, built in 1863–65 to the designs of William Henry Barlow and Rowland Mason Ordish, was totally divorced from the Gothic Revival hotel-cum-head building completed in 1874 to the designs of George Gilbert Scott. And what was true for St Pancras also applied to Brunel's designs for Paddington in London (1852), where once again, despite the conscientious efforts of the architect Matthew Digby Wyatt, the rather rudimentary station building was left inadequately related to the vaulted profiles of the shed.

The free-standing exhibition structure presented none of the problems of the terminus, for where the issues of cultural context could scarcely arise the engineer reigned supreme. This was never more so than in the case of the Crystal Palace in London, built for the Great Exhibition of 1851, where the gardener Joseph Paxton was given a free hand to design in accordance with a method for the fabrication of glasshouses that he had developed through a rigorous application of Loudon's hothouse principles. Paxton had developed his method in a series of glasshouses built for the Duke of Devonshire at Chatsworth. When commissioned at the eleventh hour to design the Crystal Palace, Paxton was able to produce, in just eight days, an enormous orthogonal three-tiered glasshouse, whose components were virtually identical to those of the giant lily house that he had built at Chatsworth in the previous year. Except for three entrance porches, symmetrically disposed, its glazed perimeter was uninterrupted. During its development, however, a revised scheme had to be prepared in order to retain a group of mature trees. Since

the remaining public opposition to the Great Exhibition of 1851 turned on this question of tree preservation, Paxton was quick to realize that these troublesome items could easily be accommodated by a central transept with a high curved roof, and thus the double symmetry of the final form emerged.

The Crystal Palace was not so much a particular form as it was a building process made manifest as a total system, from its initial conception, fabrication and trans-shipment, to its final erection and dismantling. Like the railway buildings, to which it was related, it was a highly flexible kit of parts [17]. Its overall form was structured around a basic 2.44-metre (8-foot) cladding module, assembled into a hierarchy of structural spans varying from 7.31 to 21.95 metres (24 to 72 feet). Its realization, which took barely four months, was a simple matter of mass production and systematic assembly. As Konrad Wachsmann has remarked in his book *Wendepunkt im Bauen (The Turning Point of Building)* of 1961, 'Its production requirements included studies which indicated that for easy handling no part should weigh more than one ton and that the greatest economies could be obtained by using glass panels of the largest possible size.'



**17** Paxton, Crystal Palace, London, 1851. Component parts.

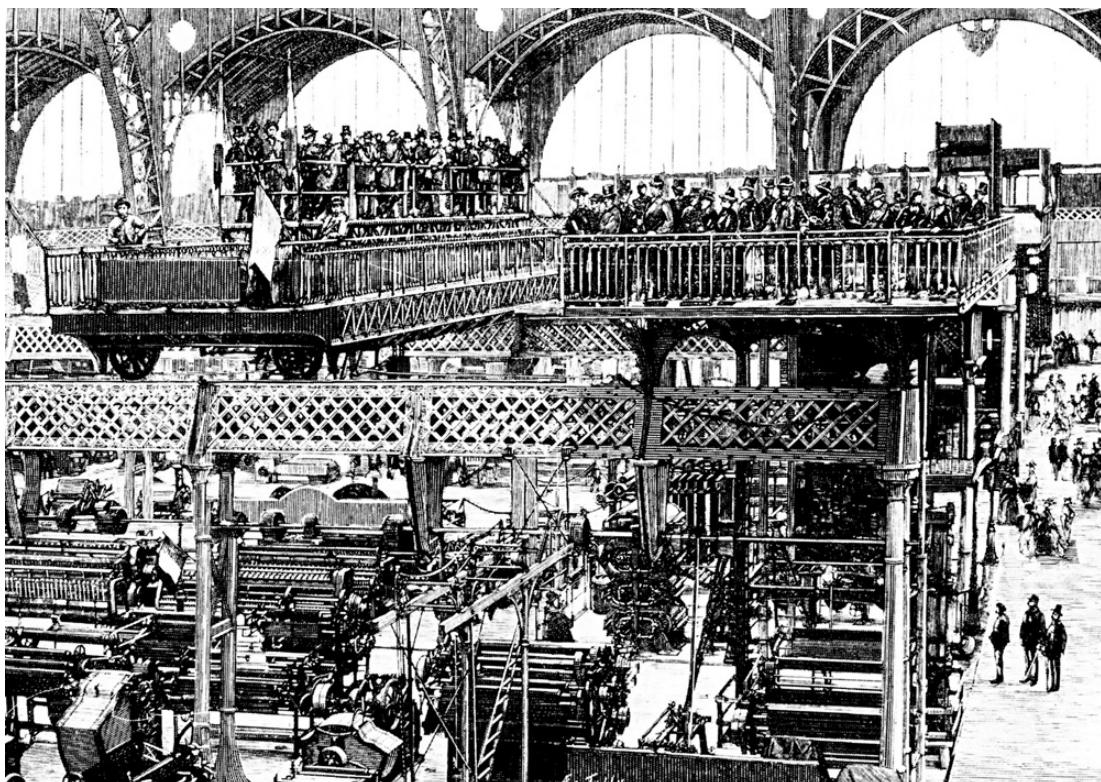
While the Crystal Palace engendered through its open lattice work spectacular parallel and oblique perspectives whose lines diminished into a diaphanous haze of light, its total envelope, comprising nearly 93,000 square metres (a million square feet) of glass, presented a climatic problem of unprecedented scale. The desirable environmental conditions, however, remained the same as they had been in Loudon's curvilinear hothouses – to maintain comfortable air movement and to moderate the heat of the sun. While the elevation of the building off the ground and the provision of a slatted floor, together with adjustable louvres in the walls, provided satisfactory ventilation, the accumulation of solar heat constituted a problem to which the railway engineer Charles Fox, who was responsible for the detailing of the structure, could find no adequate solution. The eventual ad hoc use of canvas awnings to shade the roof could hardly be regarded as an integral part

of the system, and many of the international exhibitors chose to shield themselves from the ‘greenhouse’ effect by canopies of festooned draperies, which were no doubt hung as much against the unacceptable ‘objectivity’ of the structure as they were against the sun.

The British abandonment of the international exhibition field, after the triumph of 1851 and a further exhibition in 1862, was at once exploited by the French, who mounted five major international exhibitions between 1855 and 1900. The degree to which these displays were regarded as national platforms from which to challenge the British command over industrial production and trade may be judged from the emphasis placed each time on the structure and content of the ‘Galerie des Machines’. The young Gustave Eiffel worked with the engineer Jean-Baptiste Krantz on the most significant exhibition building to be erected after 1851, that for the Paris World Exhibition of 1867. This collaboration revealed not only Eiffel’s expressive sensibility but also his capacity as an engineer, since in detailing the Galerie des Machines, with its 35-metre (114-foot) span, he was able to verify the validity of Thomas Young’s modulus of elasticity of 1807, a hitherto solely theoretical formula for determining the elastic behaviour of material under stress. The whole oval complex, of which the Galerie des Machines was merely the outer ring, was itself a testament to the conceptual genius of Pierre Guillaume Frédéric Le Play, who had suggested that the building be arranged as concentric galleries exhibiting machinery, clothing, furniture, liberal arts, fine arts and the history of labour.

After 1867 the sheer size and diversity of the objects produced, and the independence demanded by international competition, seem to have demanded multiple exhibition structures. By the time of the International Exhibition of 1889 no pretence was made of housing the exhibits in one self-contained building. This penultimate exhibition of the

century was dominated by two of the most remarkable structures that French engineering was ever to achieve – Victor Contamin’s vast Galerie des Machines [18], 107 metres (350 feet) in span, designed with the architect Charles Louis Ferdinand Dutert, and Eiffel’s tower, 300 metres (984 feet) high, designed in collaboration with the engineers Nouguier and Koechlin and the architect Stephen Sauvestre. Contamin’s structure, based on statical methods perfected by Eiffel in his hinged viaducts of the 1880s, was one of the first to use the three-hinged arch form in the achievement of a large span. Contamin’s shed not only exhibited machines: it was itself an ‘exhibiting machine’, in which mobile viewing platforms, running on elevated tracks, passed over the exhibition space on either side of the central axis, affording the visitor a fast and comprehensive view of the entire show.



**18** Dutert and Contamin, Galerie des Machines at the Paris Exhibition, 1889, showing the mobile viewing platform.

In the last half of the 19th century the Massif Central had been found to be sufficiently rich in minerals to justify the considerable expense of equipping it with a railway network. The railway viaducts that Eiffel designed there between 1869 and 1884 exemplify a method and an aesthetic that found their ultimate celebration in the design of the Eiffel Tower. The boat-shaped base and the parabolic vertical section of the tubular iron pylon that Eiffel evolved for these viaducts is formally indicative of his constant attempt to resolve the dynamic interaction of water and wind.

The need to make wider river crossings led Eiffel and his associates to devise an ingenious system of viaduct support. The spur to such a solution came in 1875, with the commission to construct a railway viaduct over the river Douro in Portugal. The availability of cheap steel after 1870 afforded a material in which a wide-span solution might be readily achieved. A decision was therefore made to cross the ravine in five spans, two short spans supported on pylons on either side and a central longer span of 160 metres (524 feet) carried on a two-pinned arch. The procedure of erection, to be repeated a few years later at Garabit, was to construct the flanking spans with their supporting pylons and then to erect the central section from these continuous structures on either side. Truss extensions were cantilevered out at track level, and the hinged arch was simultaneously constructed, in two halves, from the water below. The initial hinged sections were floated and jacked into position and then maintained at a correct incline during their final assembly by cables suspended from the caps of the adjacent pylons. The outstanding success of the Douro Viaduct, completed in 1878, immediately brought Eiffel a commission to build the Garabit Viaduct over the River Truyère in the Massif Central.

Just as the Douro Viaduct provided the necessary experience to build Garabit, so the achievement of Garabit was essential to the design and conception of the Eiffel

Tower. Like the Crystal Palace, the tower was designed and erected under considerable pressure, but at a slower rate. First exhibited as a design in the spring of 1885, it was in the ground by the summer of 1887 and well over 200 metres (654 feet) high by the winter of 1888. As in Contamin's Galerie des Machines, the structure had to be provided with an access system for the rapid movement of visitors. Speed was essential, since there was no way of gaining access to the tower except via lifts that ran on inclined tracks within its hyperbolic legs and rose vertically from first platform to pinnacle. The guide rails for these lifts were exploited during erection as tracks for climbing cranes, an economy in working method reminiscent of the mounting technique used in the case of the hinged viaducts. As much a by-product of the railway as the Crystal Palace, the tower was, in effect, a 300-metre (974-foot) high viaduct pylon, whose type-form had originally been evolved out of the interaction of wind, gravity, water and material resistance. It was a hitherto unimaginable structure that could not be experienced except by traversing the aerial matrix of the space itself. Given the futuristic affinity of the tower to aviation – celebrated by the aviator Alberto Santos-Dumont, when he circled the structure with his dirigible in 1901 – it is hardly surprising that thirty years after its erection it should have been appropriated and reinterpreted as the prime symbol of a new social and technical order, in Vladimir Tatlin's monument to the Third International, projected in 1919–20.

As iron technology developed through the exploitation of the earth's mineral wealth, so concrete technology, or at least the development of hydraulic cement, seems to have arisen out of traffic on sea. In 1774, John Smeaton established the base of his Eddystone Lighthouse using a 'concrete' compound of quicklime, clay, sand and crushed iron slag, and similar concrete mixes were used in England in bridge,

canal and harbour works throughout the last quarter of the 18th century. Despite Joseph Aspdin's pioneering development of Portland cement for use as imitation stone in 1824, and various other English proposals for metal-reinforced concrete construction, such as that made by the ever-inventive Loudon in 1792, the initial English lead in the pioneering of concrete gradually passed to France.

In France the economic restrictions that followed the Revolution of 1789, the synthesis of hydraulic cement by Vicat around 1800 and the tradition of building in *pisé* (rammed earth) combined to create the optimum circumstances for the invention of reinforced concrete. The first consequential use of the new material was made by François Coignet, who was already familiar with the *pisé* building method of the Lyons district. In 1861 he developed a technique for strengthening concrete with metal mesh, and on the basis of this established the first limited company to specialize in ferroconcrete construction. Coignet worked in Paris under Haussmann's direction, building sewers and other public structures in ferroconcrete – including, in 1867, a remarkable series of six-storey apartment blocks. Despite these commissions, Coignet failed to uphold his patent and by the end of the Second Empire his company was dissolved.

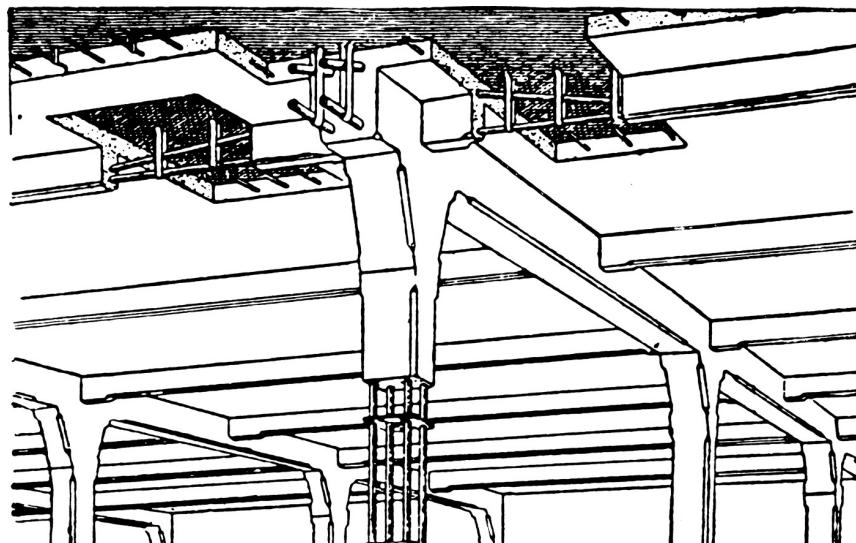
Another French pioneer of concrete was the gardener Joseph Monier, who, following his successful production of concrete flower pots in 1850, took out, after 1867, a series of patents for metal-reinforced applications, the partial rights of which he ill-advisedly sold in 1880 to the engineers Schuster and Wayss. Further rights were obtained from Monier in 1884 by the firm of Freytag, and soon afterwards the large German civil engineering concern of Wayss and Freytag came into being. Their monopoly over the Monier system was consolidated by Gustav Adolf Wayss's standard work on the Monier method (*Monierbau*), published in 1887. The publication of important theoretical studies on

differential stress in reinforced concrete by the German theorists Neumann and Koenen served to consolidate the German lead in this type of construction.

The period of most intense development in reinforced concrete occurred between 1870 and 1900, with pioneering work being carried on simultaneously in Germany, America, England and France. In building his reinforced-concrete Hudson River home in 1873, the American William E. Ward became the first constructor to take full advantage of the tensile strength of steel by situating bars below the neutral axis of the beam. The inherent structural advantage of this was almost immediately confirmed by the concrete beam experiments conducted in England by Thaddeus Hyatt and Thomas Rickets, whose joint results were published in 1877.

Despite these international developments, the systematic exploitation of modern reinforced-concrete technique was to wait upon the inventive genius of François Hennebique. Hennebique, a self-educated French builder, first used concrete in 1879. He then conducted an extensive programme of private research before patenting his own uniquely comprehensive system in 1892. Before Hennebique the great problem in ferroconcrete had been the provision of a monolithic joint. The compound concrete and steel systems that had been patented by Fairbairn in 1845 were far from being monolithic, and the same restrictions applied to the work of Hyatt and Rickets. Hennebique overcame this difficulty through the use of bars of cylindrical section which could be bent round and hooked together. Integral to his system alone was the cranking up of reinforcement bars and the binding of joints with stirrup hoops in order to resist local stress. With the perfection of the monolithic joint [19], the monolithic frame could be realized, leading promptly to the first large-scale application of such a system to three spinning mills that Hennebique built in the region of Tourcoing and Lille in 1896. The results were at once acclaimed as a success, and Hennebique's

firm immediately prospered. His partner, Louis Gustave Mouchel, took the system to England in 1897, building the first concrete road bridge there in 1901 and exhibiting a spectacular free-standing, helical, reinforced-concrete stair at the Franco-British exhibition of 1908.



19 Hennebique, monolithic reinforced-concrete joint, patented in 1892.

The wide success of the Hennebique firm dates from around 1898, with the regular publication of its house magazine *Le Béton armé* ('Reinforced Concrete') and the extensive use of its system in the eclectic structures of the Paris Exhibition of 1900. Despite the false façades of the Château d'Eau, constructed out of ferroconcrete by François Coignet's son, the Paris Exhibition of 1900 gave an enormous boost to concrete construction, and by 1902, a decade after its foundation, the Hennebique firm had grown into a large international concern. By then innumerable works were being constructed in concrete throughout Europe, with Hennebique acting as the main contractor. In 1904 he built his own reinforced-concrete villa at Bourg-la-Reine, complete with roof garden and minaret. Its solid walls were formed out of ferroconcrete poured in place between permanent pre-cast concrete shuttering, and its almost

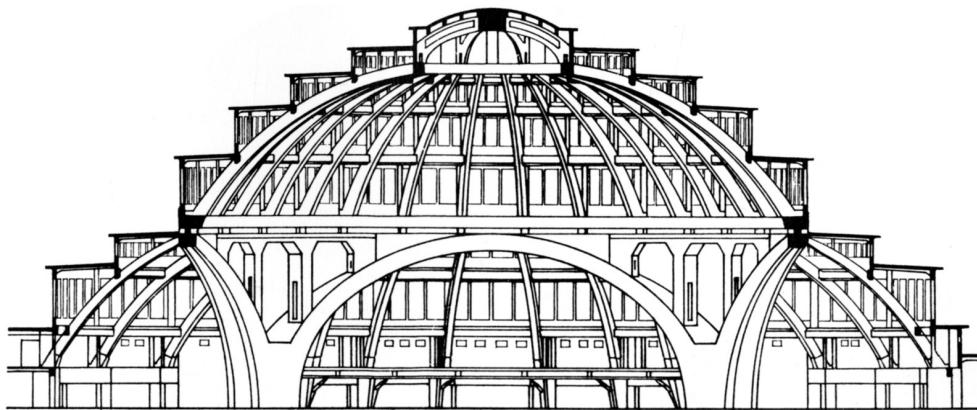
totally glazed façade was dramatically cantilevered out from the main plane of the building. By the turn of the century, Hennebique's monopoly over his system began to wane, although his patents still had a number of years to run. In 1902 his chief assistant, Paul Christophe, popularized the system by publishing *Le Béton armé et ses applications*. Four years later Armand-Gabriel Considéré, who had already carried out concrete research for the department of Ponts et Chaussées, headed the national committee that established the French code for reinforced-concrete practice.

In 1890 the engineer Paul Cottancin patented his own system of *ciment armé*, which depended on the combined reinforcement of concrete and brick, the bricks being bonded into the concrete with wire reinforcement. In this hybrid system the main function of the ferroconcrete element was to maintain structural continuity in areas of high tension. In areas of compression brick naturally predominated. The system had a strong appeal for the rationalist architect Anatole de Baudot who, as a pupil of the great French 'structural' theorist Eugène Viollet-le-Duc, was preoccupied with revealed structure as the only valid basis for expression in architecture. On these grounds, de Baudot consigned monolithic *béton armé* to the field of engineering, while reserving for the architect the statically more explicit and articulate technique of *ciment armé*, a technology whose expressive qualities were most fully demonstrated in his church of St-Jean-de-Montmartre in Paris (begun in 1894).

The intricate vaulting there was closely related to a whole sequence of *grande salle* projects which de Baudot designed between 1910 and 1914. After Viollet-le-Duc, he was concerned with the problem of the great space as the necessary proving ground for any architectural culture. In this context his *grande salle* series, which commenced with a vast project for the 1900 Exhibition, may be seen as anticipating the reticulated flat slabs and prefabricated

folded shells that were to be achieved half a century later by the Italian engineer Pier Luigi Nervi, most typically in the Turin Exhibition Hall of 1948 and the Gatti Wool Factory, built outside Rome in 1953.

In opposition to de Baudot's principle of reticulated form, the challenge of the great space was answered by Max Berg through the use of reinforced-concrete elements of enormous size, in his Jahrhunderthalle [20] built by Konwiarz and Trauer for the Breslau Exhibition of 1913. Inside this vast, centralized hall, 65 metres (213 feet) in diameter, the concrete ribs of the cupola sprang from a perimeter ring beam which was in its turn supported by massive pendentive arches. This awkward Herculean structure was concealed on the outside by concentric tiers of glazing, the organic plan and dynamic structure being suppressed by the superimposition of Neo-Classical elements.

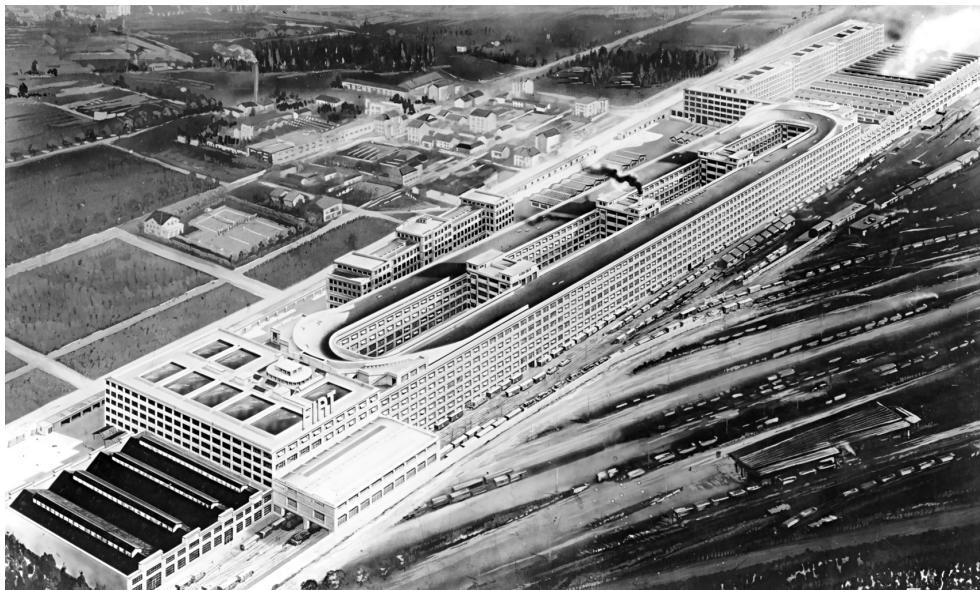


20 Berg, Jahrhunderthalle, Breslau (Wrocław), 1913.

Up to 1895, ferroconcrete work in North America was inhibited by its dependence on the importation of cement from Europe. Soon after, however, the epoch of the grain silo and the flatted factory commenced, first in Canada, with the reinforced-concrete silo structures of Max Toltz, and then, from 1900 onwards, in the United States, in the work of Ernest L. Ransome, who was the inventor of twisted

reinforcement. With the building in 1902 of his 91-metre (300-foot) machine shop at Greensburg, Pennsylvania, Ransome became the pioneer of the monolithic concrete frame in the United States. Here he applied for the first time the principle of spiral column reinforcement in accordance with the theories of Considér . It says something for the technical precociousness of Frank Lloyd Wright that he began to design reinforced-concrete structures at around the same time: his unrealized Village Bank project of 1901, and the E-Z Polish factory and Unity Temple, completed in Chicago in 1905 and 1906 respectively.

Meanwhile, in Paris, Perret Fr res had begun to design and build their first all-concrete structures, beginning with Auguste Perret's seminal Rue Franklin apartment block of 1903 and his Th âtre des Champs-Elys es of 1913. At about the same time, Henri Sauvage explored the expressive 'plastic' potential of this new monolithic material in his set-back apartments in the Rue Vavin, completed in 1912. By this date the reinforced-concrete frame had become a normative technique, and from now on most of the development was to lie in the scale of its application and in its assimilation as an expressive element. While its first use on a megastructural scale was in Matt  Trucco's 40-hectare (100-acre) Fiat Works, begun in Turin in 1915 [21], its appropriation as the primary expressive element of an architectural language came with Le Corbusier's 'Maison Dom-Lno' proposal of around the same date. Where the one clearly demonstrated that flat concrete roofs could sustain the vibration of dynamic moving loads - the Fiat factory has a test track on its roof - the other postulated the Hennebique system as a 'patent' primal structure to which, after the manner of Laugier's primitive hut, the development of the new architecture would have to refer.

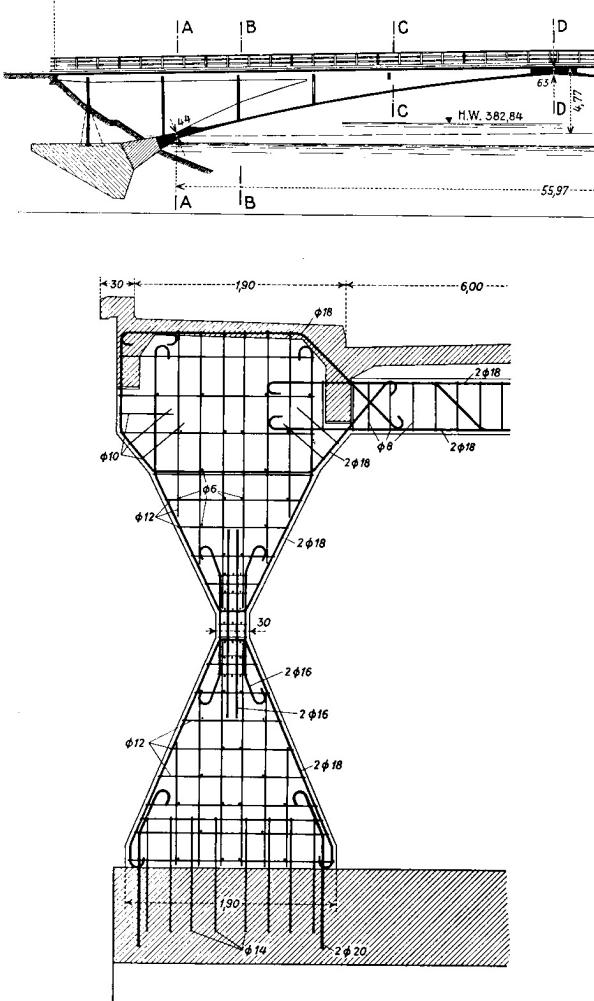


21 Trucco, Fiat Works, Turin, 1915-21.

From an engineering standpoint, this period was to reach its most sublime expression in the early work of the engineers Robert Maillart and Eugène Freyssinet. By 1905 in his Rhine Bridge at Tavanasa, the great Swiss engineer Maillart had already arrived at his characteristic bridge form - a three-hinged arch of hollow box section, with triangular openings cut into its sides to reduce unnecessary weight and to impart a light and expressive character to the overall form. By 1912, Maillart had achieved the first beamless floor slab in Europe, in a five-storey warehouse that he built in Altdorf. His beamless system seems to have been an advance over the mushroom slab construction developed slightly earlier by the American engineer Claude Allen Porter Turner. In Turner's 'four-way' reinforcement, as opposed to Maillart's 'two-way' system, the bars were required to pass over all column heads, with the consequence that the steel could not be accommodated within an economic depth if the tendency of the column to punch through the slab was to be resisted. The floor structure in the Turner system was, in effect, a network of heavily reinforced flat beams with large column heads to resist the resulting shear. The beamless

'two-way' Maillart system was lighter and generated far less shear, with a corresponding reduction in the dimensions of both the slab and the column heads.

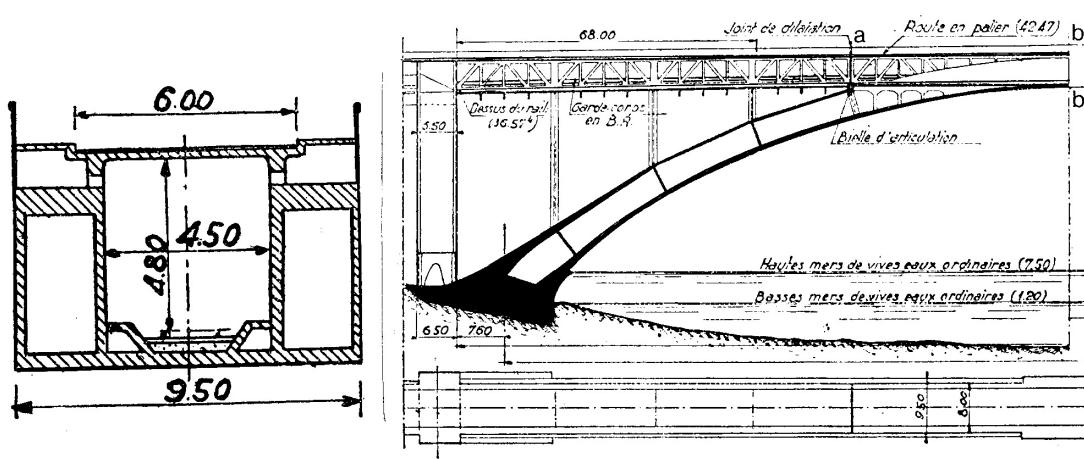
In his Aare Bridge at Aarburg (1911) Maillart succeeded in articulating the bridge platform from its supporting arch while stiffening the platform through transverse frames set into the haunch of the arch. He had still to articulate the abutments of the bridge in relation to its overall form. In almost all his bridges, even where supported by ribbed arches, Maillart designed the platform as a box section so that as far as possible the road bed was made to support itself. He reached the height of his powers as a bridge builder with his 90-metre (295-foot) span Salginatobel Bridge, erected in the Alps in 1930, but the formula that he had first worked out at Aarburg received its finest expression in the Arve Bridge [22], built at Vessey near Geneva in 1936.



**22** Maillart, Arve Bridge, Vessey, 1936. Half-section of bridge and section through transverse 'haunch', with reinforcement layout.

The high twin airship hangars that the French engineer Freyssinet realized at Orly between 1916 and 1924, each 62.5 metres high and 300 metres long (205 by 984 feet), were one of first attempts, after the projects of de Baudot, to design monolithic structures whose assembled elements were capable of supporting themselves. These pioneer prefabricated folded slab constructions influenced a remarkable series of aircraft hangars designed by Nervi in the latter half of the 1930s. While still at work at Orly, Freyssinet designed for the concrete contractor Limousin a series of reinforced-concrete 'bowstring' warehouse

structures, including a number of hangars and factory buildings lit through monitor lights in the shell roof. The culmination of all this work was two large bowstring bridges in reinforced concrete, at St-Pierre-du-Vauvray (1923) and at Plougastel (1926-29) [23], the latter crossing the Elorn estuary in Brittany in three spans with a total length of 975 metres (3,200 feet).



**23** Freyssinet, Plougastel Bridge, Brittany, 1926-29. Half-section of one span and transverse section at apex (b-b), showing the railway at lower level with roadway above. Where arch and railway diverge, in the half-section, a deflection joint is introduced (a).

The problem of the intense compressive and tensile stresses induced in the curing and loading of large parabolic arches led Freyssinet by the mid-1920s to experiment with the artificial inducement of stress in the reinforcement before casting. Within a few years prestressed concrete as we now know it had been invented. This extremely economical system for large spans – reducing the beam depth by about half for the same concrete section – was first patented by Freyssinet in 1939.

Part II

# **A Critical History 1836-1967**



**24** Terragni, Casa del Fascio, Como, 1932–36, during a demonstration (see p. 234).

# Chapter 1

## News from Nowhere: England 1836-1924

*The enthusiasm of the Gothic revivalists died out when they were confronted by the fact that they form part of a society which will not and cannot have a living style, because it is an economical necessity for its existence that the ordinary everyday work of its population shall be mechanical drudgery, and because it is the harmony of the ordinary everyday work of the population which produces Gothic, that is living architectural art, and mechanical drudgery cannot be harmonized into art.*

*The hope of our ignorance has passed away, but it has given place to the hope of fresh knowledge. History taught us the evolution of architecture, it is now teaching us the evolution of society; and it is clear to us (and even to many who refuse to acknowledge it) that ... the new society will not be hagridden as we are by the necessity for producing ever more and more market-wares for a profit, whether any one needs them or not; that it will produce to live and not live to produce, as we do.*

William Morris  
*The Revival of Architecture, 1888<sup>1</sup>*

Prefigured in the Puritan and apocalyptic works of Milton and Blake, the Scottish *philosophe* Thomas Carlyle and the English architect A.W.N. Pugin separately called forth the spiritual and cultural discontents of the second half of the

19th century. The former was atheistic and consciously aligned to the radical Chartist movement of the late 1830s; the latter was a Catholic convert who advocated a direct return to the spiritual values and architectural forms of the Middle Ages. After the publication, in 1836, of his *Contrasts; or a parallel between the noble edifices of the 14th and 15th centuries and similar buildings of the present day*, Pugin's influence was immediate and extensive. To him we owe largely the homogeneity of the Gothic Revival, which profoundly affected English building in the 19th century. Carlyle, on the other hand, was in many respects in opposition to Pugin. His *Past and Present* of 1843 was an implicit critique of Catholicism in its decadence, presenting the case for a brand of paternalistic socialism on the model of Saint-Simon's New Christianity, of 1825. Whereas Carlyle's radicalism was politically and socially progressive, even if ultimately authoritarian, Pugin's reformism was essentially conservative and related to the right-wing, High Church Oxford Movement, whose foundation preceded by two years his conversion to Catholicism in 1835. What Carlyle and Pugin had in common was distaste for their materialistic age: through this shared antagonism they were to influence that mid-19th-century prophet of cultural doom and redemption, John Ruskin, who in his prime in 1868 became the first Slade Professor of Fine Art at the University of Oxford.

Ruskin, who acquired his intellectual following in 1846 with the appearance of the second volume of his *Modern Painters*, did not begin to declare himself unequivocally and extensively on socio-cultural and economic matters until 1853, when he published *The Stones of Venice*. There, in a whole chapter devoted to the place of the craftsman in relation to the work of art, Ruskin first spoke out against the industrialist 'division of labour' and the 'degradation of the operative into a machine' – a text that was to be reissued as a pamphlet by the first Working Men's College, at which

Ruskin subsequently taught. In it, after Adam Smith, Ruskin compared traditional craftsmanship with the mechanical labour of mass production. He wrote, 'It is not, truly speaking, the labour that is divided; but the men ... so that all the little piece of intelligence that is left in a man is not enough to make a pin or a nail, but exhausts itself in making the point of a pin or the head of a nail.' This was an extension of his attitude to ornament, already outlined in *The Seven Lamps of Architecture* (1849), where he wrote that 'the right question to ask, respecting all ornament, is simply this: was it done with enjoyment?' With this brand of radicalism, Ruskin began to move away from his earlier High Anglican sympathies to a position much closer to that of Carlyle. On the publication in 1860 of his essays in political economy, *Unto this Last*, Ruskin finally revealed himself as an uncompromising socialist.

Through their influence on the English cultural climate via Pugin, Friedrich Overbeck – whom Pugin described as 'that prince of Christian painters' – and the German Nazarenes became the moral and artistic model for the short-lived, Chartist-inspired, Pre-Raphaelite brotherhood, formed at the instigation of the brothers Dante Gabriel and William Michael Rossetti, and Holman Hunt and John Everett Millais in 1848.

In 1851 Ruskin became spiritually affiliated to this movement, which had as its aim the foundation of a school of painting which would be expressive of profound ideas and emotions. The ideal was to create an art form derived directly from nature and not from artistic conventions of Renaissance origin. This eminently anti-Classical, Romantic attitude was propagated in 1850 in the Pre-Raphaelite magazine, *The Germ*. Yet the brotherhood lacked the monastic strictness and conviction of the Nazarenes. Both it and its magazine were too individualistic to last for long, and by 1853 Pre-Raphaelitism as a collective movement was defunct.

The second, craft-orientated, phase of Pre-Raphaelite activity turns upon the meeting of William Morris and Edward Burne-Jones when undergraduates at Oxford, in 1853. Oxford exposed them to the lectures of Ruskin and to the all-pervasive influence of Pugin. After their graduation, in 1856, they became closely involved with the poet and painter Dante Gabriel Rossetti, eventually collaborating with him in 1857 on murals for the Union Society building at Oxford, an enterprise that deliberately echoed the Nazarene frescoes in Rome. Although Burne-Jones had already determined to become a painter, it was some months before Rossetti could lure Morris to London, away from his articled position in the Oxford office of the Gothic Revivalist architect G.E. Street. Somewhat paradoxically, Morris's career as a designer dates from his decision, late in 1856, to abandon architecture for painting; but that had to wait upon the furnishing of his rooms in London, for which he designed his first 'intensely medieval furniture ... as firm and as heavy as a rock'. These unpretentious pieces, no doubt inspired by the craft ideals of Ruskin, were designed under the guidance of Philip Webb, with whom Morris had previously worked in Street's office. In 1858 Pre-Raphaelite domestic culture was crystallized, as it were, in Morris's only known easel work, a portrait of his wife, Jane Burden, as *Queen Guinevere* or *La Belle Iseult*, wearing ornate clothes in an ideal Pre-Raphaelite interior. Morris then gave up painting entirely and addressed himself to the task of furnishing his new home, the Red House [25, 26], which Philip Webb built for him in 1859 at Bexleyheath, Kent, in a style which except for minor details was close to the work of Street and more particularly to William Butterfield's Gothic Revival vicarages dating from the 1840s and 1850s.

**25, 26** Webb, Red House, Bexleyheath, Kent, 1859. View, and plans of ground and first floors.

In the Red House (so called on account of its brickwork) Webb established the principles which were soon to inform the work of his brilliant contemporaries William Eden Nesfield and Richard Norman Shaw, and for which he was to be known throughout his career – his concern for structural integrity and his desire to integrate buildings into their site and into the local culture. These aims he achieved through practical design, sensitive site layout and the use of local materials, coupled with a profound respect for traditional building methods. Like Morris, his first client and lifelong colleague, Webb had an almost mystical respect for the sacredness of craftsmanship and for the earth in which both life and architecture were ultimately founded. Even more than Morris, he was against any excessive use of ornament. According to his biographer, W.R. Lethaby, Webb once complained that an overelegant grate was ‘hardly fit for the holy fire’. Such a sentiment could hardly be further removed from the mannered interpretation that his approach was to be given at the hands of Nesfield and Shaw, for instance in the latter’s picturesque ‘Old English’ country house, Leyswood, Sussex, designed in 1866 [27].

**27** Shaw, Leyswood, Sussex, 1866–69.

The whole exuberant unfolding of the English Free Architecture movement, from the eccentricities of A.H. Mackmurdo and C.R. Ashbee to the refined professionalism of Shaw, Lethaby and C.F.A. Voysey, may be said to have had its origin in the creation of the Red House. At all events, this work was catalytic in launching Morris on his destined career, and two years later he organized an association of Pre-Raphaelite artists, including Webb, Rossetti, Burne-Jones and Ford Madox Brown, into an atelier which would design and execute on commission anything from murals to stained glass and furniture, from embroidery to metalwork and

carved wood. The aim, as in Pugin's extensive furnishings designed for the Houses of Parliament in the 1830s and 1840s, was the creation of a total work of art. This much, with all modesty, the prospectus of the firm made clear: 'It is anticipated that by such co-operation ... the work must necessarily be of a much more complete order than if any single artist were incidentally employed in the usual manner.' Apart from the precedent established by Pugin, the foundation of this atelier may well have been influenced by the Art Manufactures organization, started by Henry Cole under the pseudonym of Felix Summerly in 1845. In any event, the Pre-Raphaelite craft work that had hitherto occurred spontaneously now took on a public character. It is fitting that the first work to be sold at the London premises of the firm was glass tableware designed by Webb.

With the prospering of the atelier, Morris was paradoxically compelled to leave the idyllic Red House in 1864 and to move permanently to London. A year later he gave over the management of the firm to Warrington Taylor, in order to devote himself exclusively to two-dimensional design and to literature, the two activities which were to consume the rest of his life. The first Morris wallpapers date from this period, as do the earliest works in stained glass by himself and Burne-Jones. Morris's models varied from Persian décor, illustrated in Owen Jones's *Grammar of Ornament* of 1856, to the medieval style which he naturally adopted for his stained-glass work - a product for which there was a steady, if limited, demand throughout his life. Morris, Marshall, Faulkner & Co. achieved public recognition in 1867 with the Green Dining Room or tea room that Webb designed for the South Kensington (now the Victoria and Albert) Museum in London. The room was entirely furnished and decorated by Morris and the artist-craftsmen of his firm.

After this date, Webb started to design and execute large domestic commissions on his own, culminating in his last great house, Standen, built near East Grinstead, Sussex

(1891–94), with furnishings provided – as was usually the case – by Morris's firm. Morris became increasingly involved with literature, from which he attempted fanatically to expunge all words of Latin origin, producing by the mid-1870s extensive translations of Icelandic sagas, in addition to numerous volumes of his own Romantic poetry. At that time it would seem as if medieval Iceland was the final 'Nowhere' that his idealistic spirit pined for, while it remained sequestered within the industrial reality of the 19th century.

The year 1875 was a watershed in Morris's life. The firm was dissolved and reorganized as Morris & Co. under his sole control, and he began to increase the number of crafts in which he and hence the firm could work. He taught himself dyeing and carpet weaving and, in 1877, established a London showroom as a prime commercial outlet. From then on, aside from the management of the firm and the design and production of a whole range of wallpapers, hangings and carpets, Morris's concerns gradually became increasingly public and less 'poetic' and craft-orientated. He seems to have felt it his duty to take up publicly the socialist and preservationist causes of Ruskin, who was by now mentally ill. Thus, in 1877 he wrote his first political pamphlet and founded the Society for the Protection of Ancient Buildings, in a successful attempt to foil Sir George Gilbert Scott's intentions to restore, or rather partly to rebuild, Tewkesbury Abbey in Gloucestershire.

In the decade following his reorganization of the firm, Morris divided his life equally between politics and design, producing during this period, according to his first biographer, Mackail, over 600 designs for various fabrics. In 1883, however, Morris began to read the works of Karl Marx and joined the Social Democratic Federation, headed by Engels, in the company of such committed socialists as Eleanor Marx and Edward Aveling. Two years later he left the Federation and founded the Socialist League, shifting

virtually all of his energies from design to politics. At frequent intervals, until his death in 1896, he wrote and published essays on the related themes of socialism, culture and society, beginning with his Fourierist essay of 1885 entitled *How We Live and How We Might Live*, and culminating in his famous utopian romance, *News from Nowhere*, of 1891.

To the coming generations, to Morris's associate Walter Crane, to Ruskin's protégé Mackmurdo and to the principal pupils of Shaw, namely Lethaby, E.S. Prior and Ernest Newton, even to Shaw himself, and to relative outsiders such as Ashbee and Voysey, Morris's somewhat contradictory position was patently clear. Above all there was his utopian vision of 'Nowhere', a land where the state had withered away according to Marxist prophecy and where all distinction between town and country had disappeared. The city no longer existed as a dense physical entity and the great engineering achievements of the 19th century had been dismantled: wind and water were once more the sole sources of power, and the waterway and the road were the sole means of transport. A society without money or property, without crime or punishment, without prison or parliament, where social order depended solely upon the free association of family groups within the structure of the commune. Finally, a society where work was based on the banded workshop, the guild or *Werkbund*, and where education was free and like labour itself unforced.

This single-minded socialist vision stood out in strong contrast to the context of Morris's own life and to the latent inconsistency of his thought. There was his prosperous firm itself, a laissez-faire phenomenon par excellence, whose diverse luxury goods were consumed by the upper middle class; then there was his highly radical socialism, largely unintegrated with his innate anarchic leanings - a revolutionary socialism totally unacceptable to the more liberal of his followers, such as Ashbee; and finally, for

Fabian Socialists and architects alike, there was within Morris's theory and practice the ameliorative suggestion of the garden city as a form of settlement to be based on the craft guild or cooperative, as a means for achieving not only work, but also evolutionary social reform and re-education, and so, by degrees, some public recognition for both. In contrast to this progressive (if somewhat disturbing) breadth of concern, there was the latent phobic quality of Morris's own design and – more critical still – there was his stubborn refusal to come to terms with industrial method and his ambiguous, not to say hostile, attitude to all architecture after the 15th century. Not only was the Classical past condemned but even sympathetic contemporary work was indifferently received: Webb's fine designs singularly failed to draw from Morris any public recognition. Could it be that Webb's eclecticism was finally too much for Morris; that the Classical and Elizabethan elements that were incorporated into his houses between 1879 and 1891 were sufficient cause for disaffection?

In the event, the historicism of the period was hardly capable of sustaining Morris's anti-Classical line. By the early 1870s worldly architects like Shaw were already manipulating and classicizing, in an urban context, the Queen Anne style that he, Webb and Nesfield had developed out of the English and Dutch domestic traditions. Before his wholesale conversion to Neo-Georgian in the early 1890s, Shaw established a respectable precedent for adopting a classic, if mannered, format in town, such as Swan House, Chelsea, of 1875–77, and a free, Picturesque, convenient one in the country, such as Pierrepont, at Frensham in Surrey, of 1876–78.

Despite his sophistry, Shaw was influenced by Ruskinian sociocultural concerns. In 1877 he began to design, for the artistic property speculator Jonathan T. Carr, houses for the first garden suburb, located on the western outskirts of London. The red brick and tile-hung style of this upper-

middle-class garden ‘village’, known as Bedford Park [28], was celebrated in the flippant ‘Ballad of Bedford Park’, published in the *St James’s Gazette* in 1881:

**28** Voysey, house in Bedford Park, London, 1890.

*Here trees are green and bricks are red  
And clean the face of man.  
We’ll build our gardens here he said  
In the style of good Queen Anne.  
Tis here a village I’ll erect  
With Norman Shaw’s assistance  
Where man will lead a chaste  
Correct, aesthetical existence.<sup>2</sup>*

This brick style extended even into the church, rendered significantly secular by the absence of any vertical feature: a structure which, although executed in a vague Gothic Revival manner, audaciously displayed a Wren-like lantern on its roof. The earliest houses of Bedford Park were built in 1876 to the designs of the *japoniste* architect E.W. Godwin. Shaw took over in 1877 and a number of different architects worked there under his influence over the next decade, including at the tail end Voysey, who built a remarkable house in The Parade in 1890.

In 1878, Shaw published his *Sketches for Cottages and Other Buildings*. This highly influential book illustrated numerous designs for workers’ houses of various sizes. It also included the essential public building typology for a self-contained ideal village community, such as a school, a village hall, an almshouse and a cottage hospital. In the following year the first of the paternalistic garden cities appeared: Bournville, Birmingham, founded by George Cadbury and designed by Ralph Heaton and others. It was largely the Bedford Park model that W.H. Lever followed

when, less than ten years later in 1888, he founded Port Sunlight.

The evolution of the garden city movement in the last decade of the century was intimately linked to the development of the Arts and Crafts movement. As presented by Ebenezer Howard in 1898, its social policy combined urban dispersal with rural colonization and decentralized government. As a complement to the co-operative movement, it advocated that such a city should derive its revenue from a balanced combination of industry and agriculture. Howard postulated trade union backing for the financing of housing, co-operative ownership of land, comprehensive planning and temperance reform. He fixed the optimum size of the garden city at 32,000, to be restricted from further growth by an isolating green belt. Each city was to be regionally located as a satellite settlement and linked to a major centre by means of a railway. In this form the garden city complemented continuing attempts to improve, by social reform, the living and working conditions of the industrial proletariat. On his return from America in 1876, Howard had become involved in those socialist circles frequented by Bernard Shaw and Sidney and Beatrice Webb, a group which later, as Fabian Socialists, initially rejected the garden city idea. Howard's position, in accordance with the spirit if not with the letter of Fabianism, was at once practical and ameliorative. The very title of his book of 1898, *Tomorrow: a Peaceful Path to Real Reform*, announced his position as a man of compromise. Howard was committed to free enterprise within the limits of social control and favoured a piecemeal approach to reform rather than revolutionary action. Apart from Ruskin's St George's Guild of 1871, Howard was to depend for the socio-political model of his city on thinkers as diverse as the anarchist Peter Kropotkin and the American economist Henry George, who in his *Progress and Poverty* of 1879 had advocated a single tax on all ground rent. Howard was

equally eclectic in deriving the diagrammatic form of his city from sources as varied as James Silk Buckingham's ideal town, Victoria, of 1849 and Paxton's Great Victorian Way proposal of 1855.

It is hard to imagine anything further removed from Howard's initial diagram than the realization of Letchworth Garden City, begun in 1904. The railway bisects the city, the shopping area is exposed to the weather, and industry is mixed with residential areas in a totally expedient way. Its architects, Raymond Unwin and Barry Parker, had, it seems, little to offer Howard save enfeebled essays in the style of Shaw and Webb. Hampstead Garden Suburb, designed by Unwin in 1907, would have been equally insipid had it not been for his collaboration with Lutyens.

Following in the Arts and Crafts tradition of Cole and Morris, Mackmurdo founded the Century Guild in 1882. Once again this comprised a group of artists who were to engage in the design and production of domestic objects. From the outset Mackmurdo worked with equal facility as a graphic artist and as a wallpaper and furniture designer. He publicized his views in collaboration with Selwyn Image, founding the Century Guild design group in 1882 and its magazine, *The Hobby Horse*, in 1884. In his applied art of the early 1880s Mackmurdo developed a unique style, anticipatory of the Art Nouveau: a style which, deriving directly from William Blake, was spiritually at variance with the elegant but severe forms of his architecture. This found its most strict expression in the highly original flat-roofed house that he built at Enfield about 1883, and in his more gratifying Century Guild Exhibition Stand of 1886.

In 1887, Ashbee followed the well-established guild model with his foundation in the East End of London of the Guild of Handicraft, which incorporated into its programme the goal of direct social reform. His guild was established for the express purpose of usefully employing and training London journeymen and their apprentices, who would

otherwise have remained unemployed. Ashbee, as we may judge from the house that he built for himself in Chelsea in 1904, was a more delicate and correct designer than Mackmurdo. With his postgraduate Toynbee Hall tutoring experience, he was also more committed to direct social action as a means of reform. However, although profoundly influenced by Morris and Ruskin, he took issue with both for their dogmatic antipathy to the machine and for their revolutionary socialism. In opposition to his more radical predecessors Ashbee styled himself a Constructive Socialist. After his meeting with Frank Lloyd Wright, around the turn of the century, he was confirmed in his belief that the resolution of the cultural dilemma posed by modern industry depended on a proper use of the machine. Like Howard, Ashbee was a man committed to compromise. He advocated the decentralization of existing urban concentrations and their institutions, thereby lending further support to a link between the Arts and Crafts movement and the garden city idea. Again following Howard, Ashbee remained opposed to the nationalization of land. Convinced that the cultural function of craftwork was to be that of human 'individuation', Ashbee feared the reductionist aspects of radical socialism. Thus later in life he welcomed the foundering of the Socialist International on the 'rock of race'. In its place, he favoured a somewhat dated Disraeli style of social reform and in consequence was unduly sanguine about the virtues of British imperialism. A strong sense of economic reality was not part of Ashbee's make-up, and his precious Guild of Handicraft, established as a craft-based agrarian community at Chipping Campden in Gloucestershire in 1906, collapsed after only two years.

Such ambitious social ends were not the concern of Mackmurdo's individualistic disciple Voysey, who in 1885 arrived at a strength and simplicity of style that was to elude most of his contemporaries. Voysey derived his style from Webb's principles of respect for traditional methods

and local materials, rather than from Shaw's inventiveness and spatial virtuosity. In an unrealized house project of 1885, intended for his own occupation, Voysey formulated (despite Shavian half-timbering) the essential components of his style: a slate roof with overhanging eaves, wrought-iron gutter brackets, and rendered rough-cast walls pierced by horizontal windows and marked at intervals by battered buttresses and chimneys. These features were to characterize his work for the next thirty years. Stylistically, Voysey's manner was a direct attempt to recover the basic merits of English yeoman building. However, his early association with Mackmurdo introduced a flowing and highly sophisticated element into his work which became manifest in his wallpaper and metalwork designs of about 1890. These details provided accents in Voysey's otherwise austere interiors. Unlike Morris, Voysey was possessed by a sense of restraint, almost to a fault. Thus he stipulated that either the fabrics or wallpapers should be patterned, but never both. His own house, The Orchard, built at Chorley Wood, Hertfordshire, in 1899, exemplifies the lively restraint of his interior style: gridded balusters flooded with light, low picture rails, tiled fireplace surrounds, plain oak furniture and thick carpets. While these elements were repeated with little variation throughout his career, his designs became less figurative as the years advanced, and where his early furniture tended towards the organic, his later pieces are based on Classical themes.

Between 1889 and 1910 Voysey designed some forty houses, a number of which transcended the latent historicism of his style. Among these are the artist's residence for J.W. Forster built in Bedford Park in 1890, the Sturgis House in Guildford of 1896, and Broadleys [29] on Lake Windermere, his finest house, realized in 1898. Nowhere else did he equal the clarity of its plan, the generosity of its layout and landscaping, and the boldness of its massing and fenestration. In all this, Voysey's

influence was as extensive as his career, Charles Rennie Mackintosh, C.H. Townsend, and the Viennese architects Joseph Maria Olbrich and Josef Hoffmann being among the architects influenced by his work.

**29** Voysey, Broadleys, Cumbria, 1898.

During the first phase of Voysey's career the English Arts and Crafts movement became firmly institutionalized: initially with the foundation in 1884 of the Art Workers' Guild, at the instigation of Lethaby and other members of Shaw's office, then in 1887 with the establishment of the Arts and Crafts Exhibition Society, presided over by Morris's protégé, Walter Crane. The last twenty-five years of the movement prior to the outbreak of the First World War are inseparable from the career of Lethaby. After serving for twelve years as Shaw's chief assistant, he set up on his own in 1895 with the design of Avon Tyrrell, a large mansion in the New Forest in southern England. Five years later he was installed, jointly with George Frampton, as the first principal of the Central School of Arts and Crafts in London. Thus, apart from his very brief career as a designer, Lethaby's role within the Arts and Crafts movement turned upon his marked abilities as a teacher. In 1892 he published his first book, *Architecture, Mysticism and Myth*, in which he demonstrated how architecture in the past had always been universally informed by cosmic and religious paradigms. He attempted to incorporate such symbolism into his own work, while his general argument seems to have had an impact on the work of his close colleague, E.S. Prior, whose famous 'butterfly plan' house, The Barn, built at Exmouth, Devon, in 1897, exhibited certain features that were decidedly symbolic. (Similar butterfly-plan forms were proposed by M.H. Baillie Scott, for Yellowsands in 1902 and for Hampstead Garden Suburb in 1908.)

With his entry into teaching, Lethaby shifted his attention from poetic content to the problem of developing the correct method for the evolution of form. Thus, by 1910, he argued against his 1892 thesis that one cannot instil magic into architecture when it is totally absent in the society.

For Lethaby, the tradition of which he had been a part appeared quite suddenly to be played out. The last in a long line of 'Gothic Revival' socialists, he was by the turn of the century arguing for pure functionalism. In 1915, while helping to organize the foundation of the Design and Industries Association, he was urging his colleagues to look to Germany and the Deutsche Werkbund for the way to the future.

As the first waves of the 1914 war broke across Europe, that golden age of dreamlike English country houses, ushered in by Webb, Shaw and Nesfield and rendered at its most exotic in the elaborate *Country Life* creations of Edwin Landseer Lutyens and Gertrude Jekyll, came definitely to a close. Yet this era had effectively ended even earlier, in a spate of large Neo-Georgian houses, built, as Robert Furneaux Jordan has remarked, for 'those aesthetic rich who after the Boer War had beaten their swords into gold shares'. Irrespective of this triumph of Neo-Palladianism in Edwardian taste - Lutyens's passion after the turn of the century for what he called the 'Wrenaissance' - it is unlikely that the forms and ideals of the English Arts and Crafts movement would have survived the socio-cultural trauma of the first large-scale industrialized war. Something of this can be sensed from the fate of Liberty & Co. after the war, for the holocaust of 1914–18 effectively divided the craft output of the firm like a guillotine. In the space of some five years, the inventive rigour and brilliance of its Art Nouveau silverware gave way to a décor of banal blue china, Tudor furniture and the pastiche production of pseudo-Pre-Raphaelite stained glass. Liberty & Co. were to opt for this degenerated style even in their new premises built in 1924

to the designs of E.T. Hall and E.S. Hall. This half-timbered department store epitomized the so-called ‘Stockbroker’s Tudor’ that in various debased domestic versions was to line the newly built bypasses linking London to the suburban commuter regions that were to become its life’s blood.

In the interim, Lutyens, now elevated to the position of being the unofficial ‘architect laureate’ to the state, found himself suspended in an aftermath that could not even afford the relatively modest luxury of his early country houses, with their small but complex gardens designed by Jekyll (e.g. his Prioressque Tigbourne Court of 1899). As the century advanced, Lutyens’s taste for Palladianism, first wittily expressed in his house, Nashdom, of 1905, was to find its estranged fulfilment in the solemnity of his Somme memorial to the British dead [30], at Thiepval (1924), and in the superannuated monumentality of his masterly Viceroy’s House, New Delhi, of 1923–31 (see p. 242). In these two brilliant Neo-Classical monuments, Lutyens ruthlessly renounced his Arts and Crafts heritage. It would be hard to imagine anything more removed from Morris’s utopian vision than these austere monuments isolated in the midst of flat and alien landscapes. ‘Nowhere’ was now to be embodied not in Morris’s homely revival of the medieval guild, but rather in an arch raised to the memory of a martyred generation, and in a Baroque vista opening onto an empire that was already on the edge of being lost.

**30** Lutyens, Thiepval Arch, Picardy, 1924.

## Chapter 2

# **Adler and Sullivan: the Auditorium and the High Rise 1886-95**

*I should say that it would be greatly for our aesthetic good if we should refrain entirely from the use of ornament for a period of years, in order that our thought might concentrate acutely upon the production of buildings well formed and comely in the nude. We should thus perforce eschew many undesirable things, and learn by contrast how effective it is to think in a natural, favorable and wholesome way ... We shall have learned, however, that ornament is mentally a luxury, not a necessity, for we shall have discerned the limitations as well as the great value of unadorned masses. We have in us romanticism, and feel a craving to express it. We feel intuitively that our strong, athletic, and simple forms will carry with natural ease the raiment of which we dream, and that our buildings thus clad in a garment of poetic imagery, half hid as it were in choice products of loom and mine, will appeal with redoubled power, like a sonorous melody overlaid with harmonious voices.*

Louis Sullivan  
*Ornament in Architecture, 1892*<sup>1</sup>

H.H. Richardson's Neo-Romanesque Marshall Field Wholesale Store, begun in 1885 and completed a year after his death in 1887, was the point of departure for the

important achievements of the Chicago architectural partnership of Adler and Sullivan. Before joining Dankmar Adler as an assistant in 1879 (he was to become designing partner in 1881), Louis Sullivan had received a somewhat varied education: formally at two prestigious academies, where on each occasion he stayed for something under a year – at MIT in 1872 and then at J.-A.-E. Vaudremer's atelier in the Ecole des Beaux-Arts, Paris, in 1874. Between these academic forays, Sullivan worked for a year in Frank Furness's office in Philadelphia, a year which was to prove critical to his career, not only because of his experience of Furness's 'Orientalized' Gothic manner – an episode which had an enduring effect on his own approach to ornament – but also because he met the young intellectual architect John Edelman, who introduced him, after 1875, to the Chicago architectural establishment – first to William Le Baron Jenney, later to become the pioneer of steel-frame construction in his Fair Store [32] of 1892, and then to Dankmar Adler. Edelman's unusual cultivation, including his anarcho-socialist views, derived from Morris and Kropotkin, exercised an influence over Sullivan's theoretical development, evidenced in the latter's *Kindergarten Chats* of 1901.

During their early careers, Adler and Sullivan were preoccupied with meeting the urgent demands of a booming Chicago, then being rebuilt as the Midwestern capital after its destruction by fire in 1871. In the later 1870s, while Adler was still establishing his practice, Sullivan worked for Jenney, thereby becoming familiar with the technical aspects of Chicago construction. In his 1926 essay, *The Autobiography of an Idea*, Sullivan wrote of the powerful forces that led to this method of building.

*The tall commercial building arose from the pressure of land prices, the land prices from pressure of population, the pressure of population from external pressure ... But an*

*office building could not rise above stairway height without a means of vertical transportation. Thus pressure was brought on the brain of the mechanical engineer, whose creative imagination and industry brought forth the passenger elevator ... But it was inherent in the nature of masonry construction to fix a new limit of height; as its ever-thickening walls ate up ground and floor space of ever-increasing price, as the pressure of population rapidly increased. ... [This] Chicago activity in erecting high buildings finally attracted the attention of the local sales managers of Eastern rolling mills; and their engineers were set to work. The mills for some time past had been rolling those structural shapes that had long been in use in bridge work. Their own ground work was thus prepared. It was a matter of vision in salesmanship based upon engineering imagination and technique. Thus, the idea of a steel frame which should carry all the load was tentatively presented to Chicago architects ... the trick was turned; and there swiftly came into being something new under the sun ... The architects of Chicago welcomed the steel frame and did something with it. The architects of the East were appalled by it and could make no contribution to it.*<sup>2</sup>

As Sullivan indicated, the Chicago architects of the 1880s had no choice but to master advanced modes of construction if they wanted to remain in practice; and while the great fire had demonstrated the vulnerability of cast iron, the subsequent development of the fireproof steel frame – with its ability to provide multistorey rentable space – enabled speculators to develop downtown sites to the absolute optimum. The contemporary critic Montgomery Schuyler remarked in 1899, ‘the elevator doubled the height of the office building and the steel frame doubled it again’.

Before 1886, Adler and Sullivan were occupied primarily with small office structures, warehouses and department stores, a commercial practice that was varied from time to

time by residential commissions. These early buildings, limited to about six floors, afforded little scope, except for the expression of the frame, be it in iron, masonry or a mixture of the two, and one could do little save manipulate the Classical division of the façade into base, middle and top.

All this was changed in 1886 by the commission to design the Auditorium Building [31, 33], a structure whose overall contribution to Chicago culture was to be as much technological as conceptual. The basic arrangement of this multi-use complex was exemplary. The architects had been asked to install, within a half-block of the Chicago grid, a large modern opera house flanked on two sides by eleven storeys of accommodation, to be given over in part to offices and in part to a hotel. Their unique organization of this brief incorporated such innovations as locating the hotel kitchen and dining facilities on the roof so that the fumes would not disturb the residents. At the same time the auditorium itself offered plenty of scope for Adler's technological imagination. He met the demands for a variable capacity by using folding ceiling panels and vertical screens which could vary the auditorium from a concert size of 2,500 to a convention capacity of 7,000. The client's faith in Adler's technical ability finds some reflection in Adler's own description of the hall:

**31** Chicago, 1898: view from Michigan Boulevard westwards. In the centre (no. 2) is the Auditorium Building (see fig. 33, p. 60).

**32** Jenney, Fair Store, Chicago, 1890–91. Detail of fireproof steel-frame construction.

**33** Adler and Sullivan, Auditorium Building, Chicago, 1887–89. Longitudinal section through the stage and auditorium.

*The architectural and decorative forms found in the auditorium are unconventional in the extreme and are determined to a great extent by the acoustic effects to be attained. ... A series of concentric elliptical arches effect the lateral and vertical expansion of sound from the proscenium opening to the body of the house. The soffits and faces of these elliptical surfaces are ornamented in relief, the incandescent electric lamps and ... inlet openings of the ventilating system forming an essential effective part of the decoration ... Much attention has been paid to the heating, cooling and ventilating apparatus. Fresh air, taken from the top of the building, is forced into the house by a fan ... 10 feet [3 metres] in diameter. ... This washes from the air much dust and soot. ... A system of ducts carries the air into different parts of the auditorium ... stage ... corridor foyers and dressing-rooms. The general movement of air is from the stage outward and from the ceiling downward ... Ducts are carried to ... exhaust fans from openings in the risers of all the steppings for the seats.*<sup>3</sup>

Adler was possibly one of the last architect-engineers to prove his competence over a wide technical range. He mastered a multitude of difficulties: from the air conditioning of the auditorium to the trussed steel girder supporting its acoustical interior; from the accommodation of a complex revolving stage to the provision of extensive foyers to both the opera house and the hotel. The whole complex was housed in a massive masonry and iron structure, ingeniously ballasted during construction so as to compensate for the differential loading of its foundations.

The aesthetic of this eleven-storey complex was based on an attenuation of the syntax of Richardson's Marshall Field Store. Where Richardson had used rusticated stone blocks throughout, Sullivan varied the facing material of the Auditorium Building to modulate its greater height and mass, changing from rusticated blocks to smooth ashlar

above the third floor. However, the bleakness and austerity of the final result dismayed Adler, who wrote in 1892:

*It is to be regretted that the severe simplicity ... rendered necessary by the financial policy of the earlier days of the enterprise, the deep impression made by Richardson's 'Marshall Field Building' upon the Directors of the Auditorium Association, and a reaction from a course of indulgence in ... highly decorative effects on the part of its architects, should have happened to coincide ... and thereby deprive the exterior of the building of those graces ... so characteristic of its internal treatment.<sup>4</sup>*

Nevertheless, there is something forceful, taut and rhythmic about its overall character, while the colonnade of the hotel veranda on the lake front is echoed by similar delicate motifs in the tower. The slight hint of orientalism in this veranda anticipates the decidedly Turkish feeling of the Charnley House in Chicago that Sullivan was to design in 1892, in close collaboration with his assistant Frank Lloyd Wright.

Richardson was to remain the ultimate determinant of Sullivan's early style. In Sullivan's hands Richardson's finely modulated use of the Romanesque became brutally simplified into an almost Neo-Classical manner, which was first developed in his Walker Warehouse of 1888 and in his Dooly Block of 1890. These were surely those buildings, 'well formed and comely in the nude', to which he referred in *Ornament in Architecture* of 1892. From now on Sullivan's delimitation of mass depended on pronounced string-courses and projecting cornices. Fenestration is grouped in elongated arcades, while smooth, flush façades are articulated by taut decorative episodes. The Getty [34] and Wainwright tombs, designed in 1890 and 1892, epitomize the consolidation and refinement of this approach, which was rendered on a large scale in the Wainwright Building,

completed in St Louis, Missouri, in 1891. As in the work of the Viennese architect Otto Wagner, the basic austerity of Sullivan's stereometric structures was in opposition to the ornamentation by which they were enriched and articulated. Yet, in contrast to Wagner's flowing ornament, there is always something decidedly Islamic about Sullivan's disposition of decoration. Even where his ornament is not intrinsically geometric it is almost always contained by geometric form. In this recourse to the aesthetic and even the symbolic content of the East, Sullivan sought to reconcile that schism in Western culture between the intellectual and the emotional, poles which he was to associate later with the Greek and the Gothic. Between the Auditorium and the Wainwright Building, the character of Sullivan's ornament alternates from being organically free to conforming to the outline of a precise geometry. In the Transportation Building for the Chicago World's Columbian Exposition of 1893, it becomes predominantly geometric, or, where free, strictly contained within a geometric grid. As Frank Lloyd Wright wrote in his book, *Genius and the Mobocracy* (1949), this 'crystallization' finally arrived at its definitive form in Sullivan's Guaranty Building at Buffalo, New York, of 1895.

**34** Sullivan, Getty tomb, Graceland cemetery, Chicago, 1890.

Neither Sullivan nor Jenney can be credited with the invention of the skyscraper, if by that term one simply means a multistorey structure of great height, since such heights had already been achieved in load-bearing brick just prior to Sullivan's Wainwright structure, most notably in Burnham and Root's sixteen-storey Monadnock Block, Chicago (1889–92). Sullivan, however, may be credited with the evolution of an architectural language appropriate to the high-rise frame. The Wainwright Building is the first

statement of this syntax, in which the suppression of the transom already evident in Richardson's Marshall Field Warehouse is taken to its logical conclusion. The façade, no longer arcaded, is articulated by gridded piers, clad in brick, while transoms are recessed and faced in terracotta so as to fuse with the fenestration. The piers rise out of a taut two-storey stone base and terminate abruptly at a massive and ornate terracotta cornice. Four years later Sullivan refined this expressive formula in his second masterwork, the Guaranty Building [35].

35 Adler and Sullivan, Guaranty Building, Buffalo, 1895.

The Guaranty Building is Sullivan at the height of his powers: it is without doubt the fullest realization of the principles that he outlined in his essay of 1896, *The Tall Office Building Artistically Considered*. In this thirteen-storey office building Sullivan created a decorative structure in which, in his own words, 'The ornament is applied in the sense of being cut in or cut on ... yet it should appear when completed, as though by the outworking of some beneficent agency, it had come forth from the very substance of the material.' Ornamental terracotta envelops the exterior in an opaque filigree, whose motifs penetrate even into the ornate metalwork of the lobby. Only the ground-floor plate-glass windows and marble walls were exempt from this intense, not to say delirious, treatment.

Sullivan, like his pupil Frank Lloyd Wright, saw himself as the lone creator of the culture of the New World. Nurtured on Whitman, Darwin and Spencer and inspired by Nietzsche, he regarded his buildings as emanations of some eternal life force. For Sullivan nature manifested herself in art through structure and ornamentation. His famous slogan, 'form follows function', found its ultimate expression in the concave cornice of the Guaranty Building, where the

ornamental ‘life force’ on the surface of the mullions expands in swirls around the circular attic windows, metaphorically reflecting the mechanical system of the building which, to quote Sullivan, ‘completes itself and makes its grand turn, ascending and descending.’ This organic metaphor was established in a more fundamental form in the significance which Sullivan attached to the winged seed of the sycamore, the ‘germ’ featured on the first page of his discourse on architectural ornament, *A System of Architectural Ornament According with a Philosophy of Man’s Powers*, published in 1924, the year of his death. Under this image Sullivan placed a Nietzschean caption: ‘The Germ is the real thing; the seat of identity. Within its delicate mechanism lies the will to power, the function of which is to seek and eventually to find its full expression in form.’

For Sullivan, as for Wright, this form could only evolve in a millennialistic, democratic America, where it would emerge as ‘an art that will live because it will be of the people, for the people, and by the people’. As a self-appointed cultural prophet of democracy Sullivan was largely ignored. His overidealized egalitarian culture was rejected by the people themselves. His morbid insistence on the creation of a new civilization comparable to that of the Assyrians, particularly as expressed in the coexistent delirium and restraint of his orientalized architecture, left them both confused and alienated. Uprooted in their very essence and living through an economic depression on the edge of a frontier, they preferred the gratifying distractions of an imported Baroque, the ‘White-City’, East Coast emblems of imperialistic fulfilment that were so seductively presented to them in Daniel Burnham’s World’s Columbian Exposition in Chicago of 1893. This rejection destroyed Sullivan’s morale, and despite a residual brilliance his powers began to decline. Separated from his urbane partner, Adler, he lost control over his professional destiny

so that after the turn of the century he received few commissions. Among these must be acknowledged his inventive, eccentric and highly ornate Midwestern bank buildings of the period 1907-19, and last but not least the proportional magnificence and ornamental vitality of his prophetic Schlesinger and Mayer department store (now Carson, Pirie, Scott), built in Chicago between 1899 and 1904.

## Chapter 3

# Frank Lloyd Wright and the Myth of the Prairie 1890-1916

*When in early years I looked south from the massive stone tower in the Auditorium Building, a pencil in the hand of a master - the red glare of the Bessemer steel converters to the south of Chicago thrilled me as pages of the Arabian Nights used to with a sense of terror and romance.*

Frank Lloyd Wright  
'The Nature of Materials',  
*Architectural Record*, October 1928<sup>1</sup>

These words written by Wright of the formative period that he spent with Adler and Sullivan in the early 1890s hint at the exotic vision that inspired his early career: the transformation of industrial technique through art. Yet what form this transformation should take was for Wright, at the turn of the century, far from clear. Like his masters, Sullivan and Richardson, he oscillated between the authority of Classical order and the vitality of asymmetrical form. Richardson, after the manorial and urban manner of Norman Shaw, had adopted an asymmetrical style for domestic settings while reserving the symmetrical mode for most of his public institutions. Yet Richardson's houses always display a unifying density, and wherever possible he tried to adapt the Romanesque gravity of Vaudremer's Second

Empire manner and turn it into an appropriate style for the New World. Even in his early timber houses a certain feeling of weight pervades the shingled façades, while in his later domestic work, such as the Glessner House in Chicago of 1885, where shingle gave way to stone, the asymmetrical composition was imbued with an irrefutable monumentality.

This issue of monumentality seems to have been equally problematic for both Sullivan and Wright. Sullivan had already used monumental forms in his Getty and Wainwright tombs of the 1890s, but were they equally suitable to house the living? The initial solution seems to have turned on the doubly articulated formula of Classical and stone if urban, and Gothic and shingle if rural. Wright, who was virtually in charge of Sullivan's domestic work after 1890, demonstrated this dual principle first in his own house, erected in 1889 in what was still the prairie of American mythology – the nascent Chicago suburb of Oak Park – and then in the orientalizing, Italianate Charnley House that he designed with Sullivan for downtown Chicago in 1892. Wright's own house was derived in both profile and plan, as Vincent Scully has shown, from the cruciform and T-plan Richardsonian pyramid-shaped houses that Bruce Price was then building in Tuxedo Park, New York.

For Sullivan and Wright, the young, egalitarian culture of the New World could not be based on something so ponderous and conventionally Catholic as Richardson's Romanesque. In consequence they turned to the work of a fellow Celt, Owen Jones, whose *Grammar of Ornament* had first been published in 1856. Over sixty per cent of Jones's ornamental examples were exotic, that is of Indian, Chinese, Egyptian, Assyrian or Celtic origin, and it was to such sources, all removed from the West, that Sullivan and Wright resorted in their search for an appropriate style in which to embody the New World. This not only accounts for the Islamic motifs to be found in Sullivan's work but also for the 'science-fiction' semicircular décor over the playroom in

Wright's Oak Park studio of 1895, a mural featuring a recumbent Arab, who is transfixed before the celestial muse of an emergent civilization.

In Wright's Winslow House [36], built at River Forest, Illinois, in 1893, the problem of evolving an egalitarian but appropriate format was provisionally resolved by providing two distinctly different aspects to the building: the street or 'urban' façade, being symmetrical and entered on axis, and the garden or 'rural' façade, being asymmetrical and entered to one side. This anticipates the planning strategy of Wright's Prairie Style, in which irregular distortions to the rear of a formal façade conveniently accommodate awkward ingredients such as service elements.

**36** Wright, Winslow House, River Forest, Illinois, 1893. View and site plan.

That the Winslow House was a transitional work is clearly confirmed by the mixed fenestration, part sash and part casement. Here, as Grant Carpenter Manson has written (in *Frank Lloyd Wright to 1910*, of 1958), Wright began 'to discard the sash window in favour of the casement, to prepare his work for the final change from fenestration in spots to fenestration in strips': while the characteristic Wrightian low-hipped Prairie roof appears here for the first time, the animation of surfaces with Sullivanesque bands of ornament and string courses testifies to the continued influence of Wright's master. The ornamented entrance elevation clearly derives from Sullivan's tombs of the early 1890s, while the arcaded fireplace screen of the entry hall is an introverted version of the façade of Sullivan's Schiller Theater.

This early emphasis on the fireplace testifies to another more critical influence, that of Japanese architecture, to which Wright on his own admission had been subject since 1890, and certainly since the Chicago World's Columbian

Exposition of 1893, when the Japanese Government housed their national exhibit in a reconstruction of the Ho-o-den Temple. The role that this structure may have played in Wright's evolution has been best characterized by Manson:

*If we assume that actual confrontation with a Japanese building was the necessary mechanism at a certain juncture in his career to give those concepts reality and direction, then many of the steps in the evolution of his architecture can be rationally explained. As examples: the translation of the tokonoma, the permanent element of a Japanese interior and the focus of domestic contemplation and ceremony, into its Western counterpart, the fireplace, but a fireplace expanded to unprecedented, animistic importance; the frank revelation of the masonry of fireplace and chimney as the one desired solid substance in an architecture of ever-increasing movement; the opening out of interior spaces away from the chimneybreast toward shifting planes of glass at their further limits; the extension of the great eaves beyond these planes to modify and control the intensity of light which they admit and to protect them from weather; the subdivision of interior space by suggesting rather than partition, acknowledging and accommodating the fluctuating human uses to which it is put; the elimination of all sculptured and varnished trim in favor of flat surfaces and natural wood - all these and more could have been adduced from the lesson of the Ho-o-den.<sup>2</sup>*

Irrespective of the final provenance of the *tokonoma* motif, by the time of the Winslow House, the fireplace, despite the provision of central heating, had become even more of a ceremonial core to the home than it had been in Wright's own Oak Park house of four years before. Yet in 1893 Wright remained uncommitted, for he could still design a thoroughly Classical façade for the Milwaukee Library. Two years later he extended his own home with a

studio in that quasi Pre-Columbian manner which we have come to regard, after Manson, as his Froebel style: a geometric proclivity supposedly influenced by the impact of Froebel toys on his education. About 1895 he also produced two surprisingly radical designs, his Luxfer Prism offices, faced entirely in glass, and the McAfee House, which was an ingenious reinterpretation of Richardson's *parti* for the Winn Memorial Library of 1878.

Wright appears almost desperate at this point to break through to a new style: his public work is still part Italianate, part Richardsonian, while his domestic work is now consistently characterized by low-pitched roofs, poised at various heights over elongated asymmetrical plans. Typical of these two modes are his Francisco Terrace apartments and his Heller and Husser Houses, all built in Chicago between 1895 and 1899.

It was to take Wright two more years to resolve all these various influences into that integrated domestic style with which he was to express his myth of the Prairie, and of which he was to write in 1908: 'The Prairie has a beauty of its own and we should recognize and accentuate this natural beauty, its quiet level. Hence ... sheltering overhangs, low terraces and out reaching walls, sequestering private gardens.'

The final emergence of the Prairie Style coincided with Wright's theoretical maturity, as manifest in his famous lecture of 1901, 'The Art and Craft of the Machine', which was first delivered, appropriately enough, at Jane Addams's Hull House Settlement in Chicago. Taking as his point of departure his youthful despair on reading Victor Hugo's *Notre Dame de Paris* (1832), in which the author had concluded that printing would eventually eliminate architecture, Wright countered that the machine could be intelligently used, in accordance with its own laws, as an agent for abstraction and purification – processes by which architecture may be redeemed from the ravages of

industrialization. He led his audience to contemplate the awe-inspiring panorama of Chicago as a giant machine, and concluded with the exhortation that this was ‘the thing into which the forces of Art are to breathe the thrill of ideality! A SOUL!’

From the early 1890s on, the sculptor Richard Bock served as the iconographer of this ‘soul’, that is to say as the image-maker of Wright’s Prairie Style. Bock’s early work, in its nature symbolism, was close to the European Secession Style and complemented the residual Sullivan-esque aspects in Wright’s work. After 1900, however, under Wright’s influence, Bock’s sculpture became increasingly abstract, as is evident from the ‘Muse’ that he created for Wright’s Dana House of 1902 [37]. This figure, situated in the entrance hall, was depicted as assembling the abstract elements of an exotic machine culture, piece by piece.

**37** Bock, ‘Muse’ for Wright’s Dana House, Springfield, Illinois, 1902.

Wright’s Prairie Style crystallized finally in the house plans designed for the *Ladies’ Home Journal* in 1900 and 1901. Its elements were now established: an open ground plan contained within a horizontal format comprising low-pitched roofs and low bounding walls – the low profile being integrated deliberately into the site, in strong contrast to the vertical chimneys and internal double-height volumes. Yet Wright is still hesitant about the profile at this point, oscillating between the Richardsonian density of his Heurtley House of 1902 and the lightweight Japanese framing of his Hickox House, completed at Kankakee, Illinois, two years before.

This split between a monolithic versus an articulate expression resolved itself when Wright started to work for the entrepreneurial Martin family in Buffalo. The Larkin

Building and the Martin House [38], both built in 1904 for Darwin D. Martin, owner of the Larkin Mail Order Co., represent the emergence of Wright's mature style. They were followed at once by Wright's first visit to Japan in 1905 and by the realization of his first concrete building, the Unity Temple at Oak Park, Illinois, in 1906. By now the Classical base, overlaid with the exotic, had been transformed into a style that was Wright's own, a unique manner soon to be made available in Europe through the portfolios of his work issued by Wasmuth in Berlin in 1910 and 1911.

**38** Wright, Martin House, Buffalo, 1904.

The masterpieces of 1904–06, a house, a church and an office building, all display essentially the same architectural system. The Martin House is the first work by Wright to be consistently based on a modulated tartan plan form. Similar gridded articulations of support and void occur in the main volumes of the Unity Temple and the Larkin Building, although where the church is centralized about two axes the office building is structured around one. Both these public buildings comprise a single internal space, top-lit and surrounded by galleries on all four sides served by stairways at each of the four corners [39, 40]. The elevations of the church are effectively the same on all sides, symbolizing 'unity', whereas those of the Larkin Building differ on the longer and shorter sides. Apart from being monumental variations of the same architectural *parti*, both buildings pioneered ingenious systems of environmental control. The Unity Temple was equipped with built-in ducted hot-air heating, while the Larkin Building was one of the first 'air-conditioned' office structures, inasmuch as its air was cooled as well as heated.

**39** Wright, Unity Temple, Oak Park, Illinois, 1904–06.

**40** Wright, Larkin Building, Buffalo, 1904. Glazed central space.

In these works Wright, the Unitarian, appeared to imbue his vision of a new life with a universal sense for the sacred, running from the sacrament of the family hearth through to the sacrament of work and to the house of religious assembly. His goal, like that of many of his European contemporaries, was the achievement of a total environment, embracing and affecting the whole of society. This would explain his obsessive exaltation of the hearth as the moral and spiritual centre to be projected, with the aid of well-placed inscriptions, into the more public realms of worship and work. It would also in part account for Wright's disappointment when, having designed the Larkin office furniture, he was not permitted to restyle the telephones. It is this same intent that embellished the main entrance to the building, where employees entered dutifully past a cascade of water falling from a symbolic relief by Bock bearing the paternalistic inscription: 'Honest labour needs no master, simple justice needs no slaves.' The same idealistic spirit is manifest in Wright's disgust at changes made to the Larkin structure during the course of its daily use. 'They', he wrote bitterly of the management, 'never hesitated to make sense-less changes ... it was just one of their factory buildings.' Despite his artistic patronage, Martin was obviously unable to place restrictions on the organization and management of his offices, and where the home could be preserved in all its purity, the workplace remained vulnerable to the dictates of production.

In these fertile years Wright carefully assembled an atelier of technicians and artist-craftsmen to design and realize his vision of a *Gesamtkunstwerk*, a 'total work of art'.

This team included the engineer Paul Mueller, the landscape architect Wilhelm Miller, the cabinet-maker George Niedecken, the mosaic designer Catherine Ostertag, the sculptors Richard Bock and Alfonso Ianelli, and the talented Orlando Giannini, who served as Wright's fabricator of glass and textiles from 1892.

By 1905 the syntax of the Prairie Style was firmly established. Its expression, however, constantly oscillated between two poles, the one rambling, asymmetric and picturesque, as exemplified in the Avery Coonley House of 1908, and the other compact, gridded, symmetrical and architectonic, as displayed in the masterly Robie House of 1908–09 [41]. The Hardy House, built in 1905 in Racine, Wisconsin, is the purest formulation that Wright was ever to make of a symmetrical, frontalized house.

**41** Wright, Robie House, Chicago, 1908–09.

Midway Gardens, built in 1914, was the last concerted work of Wright's design team in Chicago. With the Imperial Hotel in Tokyo, it constituted the last attempt by the early Wright to establish his vision as a universal expression. Built in the short time of ninety days by the ever-ingenuous Mueller, Midway Gardens was, as Wright put it, 'a social response to the dance craze'. Based on the German beer garden, it was the embodiment of a new social institution, and took the form of a sequence of stepped terraces, focused axially on an orchestra shell at one end and linked by flanking arcades to a galleried restaurant and winter garden complex at the other [42, 43]. It was in many respects Wright's most cogent attempt at a popular culture. As such it afforded full scope to the rhetoric of his Prairie Style, with Bock and Ianelli designing figures, finials and reliefs and Giannini providing the glass. Inside there were large reliefs and abstract murals comprising concentric

circular elements, which were reminiscent of Wright's fanciful idea of decorating the gardens with gas-filled coloured balloons moored to the roof.

**42, 43** Wright, Midway Gardens, Chicago, 1914. *Above*, longitudinal section, showing the restaurant and bandshell; *below*, general view of the beer gardens in their heyday.

Wright's Prairie subculture played itself out as a hermetic style in the building of the Imperial Hotel in Tokyo during the years 1916–22. This structure derived in both plan and section from Midway Gardens. The restaurant/winter garden of the Chicago complex reappeared as the auditorium and lobby of the hotel, while the flanking arcades of the gardens were transformed into its residential wings. The internal murals and reliefs also extended Midway themes, while the galleried accessways of the hotel recalled the café terraces of the Midway layout.

Removed from an American context, Wright sought affinities with the local masonry tradition by employing a battered and castellated profile, executed in brick and dressed in Oya stone. Internally this lava stone was modelled so as to allude to Pre-Columbian profiles, as had been done with the blockwork of Midway Gardens. Such exotic references were to become a theatrical formula in Wright's Hollywood houses of the 1920s. In the Imperial Hotel they amounted to a petrification of his New World culture.

As it happened, the Imperial Hotel was to be valued as much for its structural ingenuity as for its architecture, much of the credit for its miraculous survival amid the ruins of the 1922 Tokyo earthquake disaster going to the engineer, Mueller. Nevertheless, it was fitting that this final work in the first phase of Wright's brilliant career should be praised by Sullivan, who just before his death in 1924 wrote

in mystical terms of its survival: 'it stands today, uninjured, because it was thought-built so to stand. It was not an imposition upon the Japanese, but a free will contribution to the finest elements in their culture.'

# Chapter 4

## **Structural Rationalism and the Influence of Viollet-le-Duc: Gaudí, Horta, Guimard and Berlage**

### **1880-1910**

*In architecture, there are two necessary ways of being true. It must be true according to the programme and true according to the methods of construction. To be true according to the programme is to fulfil exactly and simply the conditions imposed by need; to be true according to the methods of construction, is to employ the materials according to their qualities and properties ... purely artistic questions of symmetry and apparent form are only secondary conditions in the presence of our dominant principles.*

Eugène Viollet-le-Duc  
*Entretiens sur l'architecture, 1863-72*<sup>1</sup>

For the great French architectural theorist Eugène Viollet-le-Duc these principles, first outlined in his lectures at the Ecole des Beaux-Arts in 1853, clearly precluded the architectural tradition of French Classical Rationalism. In place of an 'abstract' international style, Viollet-le-Duc advocated a return to regional building. His illustrations to

the *Entretiens*, which in certain aspects anticipated Art Nouveau, ostensibly indicated the kind of architecture that would evolve from his principles of Structural Rationalism. To the envy of Ruskin, Viollet-le-Duc provided more than a moral argument. He proffered not only models but also a method which would theoretically free architecture from the eclectic irrelevancies of historicism. In this way, his *Entretiens* came to serve as an inspiration to the avant garde of the last quarter of the 19th century, his method penetrating to those European countries where French cultural influence was strong but the tradition of Classicism was weak. Eventually his ideas spread even to England, where they influenced men such as Sir George Gilbert Scott, Alfred Waterhouse and even Norman Shaw. Outside France his thesis, in particular its implicit cultural nationalism, had its most pronounced impact on the works of the Catalan Antoni Gaudí, the Belgian Victor Horta and the Dutch architect Hendrik Petrus Berlage.

The writings of Viollet-le-Duc, Ruskin and Richard Wagner were all part of Gaudí's adopted cultural background. Aside from these extra-Mediterranean influences, his achievement seems to have sprung from two rather antithetical impulses, the desire to revive indigenous architecture and the compulsion to create totally new forms of expression. In this, of course, save for his unusual powers of fantasy, Gaudí was hardly unique. This antithesis, latent in the whole of the Arts and Crafts movement, was reflected in the Irish Celtic literary revival which exercised such a strong influence on the Glasgow School in the 1890s. A comparable Catalan revival had arisen in Barcelona as early as the 1860s, when Madrid asserted its sovereignty over Catalonia by prohibiting the use of the Catalan language. First confined to sociopolitical reform, the revival soon sued for Catalan independence and, although such a status was never granted, the claim to autonomy re-emerged as a powerful factor in the Spanish Civil War and is alive again.

today. In the second half of the 19th century the Church supported Catalan claims to sovereignty and social reform, so that Gaudí was free from any conflict between his faith and his political allegiances.

Both Gaudí and his patron, the textile manufacturer and shipping magnate Eusebio Güell Bacigalupi, grew to their maturity under the influence of the Catalan separatist movement. Although this movement had its conservative aspects, it nonetheless supported various programmes for social reform, which were largely the work of the Catalan intelligentsia. Gaudí had in fact been subject to socialist ideas before his meeting with Güell in 1882. Immediately after his graduation he had been involved with the Mataró Workers' Co-operative, who commissioned him to design a workers' settlement comprising houses, a community structure and a workshop, of which only the last was built, in 1878.

Soon after this, Gaudí began to work for the bourgeoisie, building the exotic Casa Vicens in a quasi-Moorish style in 1878. This house, like most of Gaudí's work, testified to the influence of Viollet-le-Duc, in particular the latter's *L'Art russe* (1870), where the constituent elements of a national style were seen as being contingent on the principles of Structural Rationalism. In the Casa Vicens, Gaudí first formulated the essence of his style, which while Gothic in structural principle was Mediterranean, not to say Islamic, in much of its inspiration. As Ary Leblond wrote in 1910, Gaudí sought 'a Gothic which was full of sunlight, structurally related to the great Catalan cathedrals, employing colour as both the Greeks and the Moors did, logical for Spain; a Gothic, half maritime, half continental, enlivened by Pantheistic richness'. The result in the Casa Vicens was a Mudéjar pastiche planned around a conservatory, which in its banded brick, glazed tiles and decorative ironwork was more exuberant than any house of comparable date (compare Shaw's Pierrepont, at Frensham in Surrey, of

1876). Yet the structure transcended its exotic expression; for this was the first occasion on which Gaudí used the traditional Catalan or Roussillon vault, in which archlike forms are achieved through corbelling out laminated layers of tiles. This vault became a key feature of his style, appearing in its most delicate form in the thin shell structure of his Sagrada Família School, Barcelona, of 1909.

The initial achievements of Gaudí's career are inseparable from the various works that he and his colleague, Francesc Berenguer, designed for Eusebio Güell. Count Güell was a progressive, and his house in Barcelona, the Palau Güell [45], which Gaudí designed for him in 1888, became a Mecca for the intelligentsia of the 1890s. As the Casa Vicens had been built around a conservatory, so the Palau Güell was built around a music room, an organ loft and chapel. This composite space echoed the form of the typical Islamic court and ran through the entire upper section of the house.

Prominent among Güell's enthusiasms were Ruskin and Wagner, and Gaudí seems to have been as much affected by the theories of the one as by the music-dramas of the other. At any event Ruskin's reputation was at its height at the turn of the century, and his dictum, so compatible with Wagner, that the architect who was not a sculptor or a painter was 'nothing but a framemaker on a large scale' would clearly have appealed to Gaudí.

For Güell the transformation of society at large was to be effected through the garden city. To this end in 1891 he commissioned Gaudí and Berenguer to design a workers' community for his textile plant at Santa Coloma de Cervelló, later known as the Colonia Güell. This was to be followed by a commission in 1900 for a middle-class suburb, the Park Güell, situated on the Montaña Pelada overlooking Barcelona, a project eventually realized without its perimeter of houses between 1903 and 1914. In the meantime Berenguer continued with the sporadic

development of the Colonia Güell, until Gaudí succeeded him there in 1908, to complete the work on the chapel. By then Gaudí's career as an ecclesiastical architect had already begun, since he had taken over the building of the Sagrada Familia Church [44] in Barcelona from Juan Martorell in 1906.

**44** Gaudí, three progressive stages of the Sagrada Familia Church, Barcelona (left to right, 1898, 1915, 1918) and (far right) Viollet-le-Duc, plan for a cathedral, from his *L'Art russe*, 1870.

**45** Gaudí, Palau Güell, Barcelona, 1888.

Gaudí's Park Güell emerged as the uninhibited crystallization of his ecstatic vision. For all that the park commanded a spectacular view, the only buildings to be completed there were the gatehouse, the grand stairway leading to the covered market above and Gaudí's own house. The irregularly shaped undulating vault of the market was carried on sixty-nine grotesque Doric columns, while its roof, bounded by a continuous serpentine bench, was intended to function as an arena or open-air stage. This exotic, mosaic-faced perimeter terminated in an esplanade, which in turn merged into the naturalistic random rubble construction of the rest of the park. The park itself was structured by serpentine pathways which, where necessary, were supported on vaulted buttresses, shaped so as to suggest petrified tree trunks.

The Park Güell is the first of Gaudí's works to evoke directly, through the undulating profile of its arena, the obsessive image of his life – the famous mountain near Barcelona known as Montserrat. According to the medieval legend, celebrated by Wagner in *Parsifal*, the Holy Grail was concealed in the castle of Montsalvat, a site later identified

with Montserrat and its monastery, housing the patron saint of Catalonia. Gaudí, who first worked for the monastery in 1866, remained haunted by the serrated profile of the mountain for the whole of his life.

The peaks and chimneys of the Casa Milà [46] rise out of the rational grid of Barcelona as the crown of an undulating cliff face, a cyclopean gesture whose overwhelming sense of weight seems to contradict its free and delicate organization about three irregularly shaped courts. This contradiction finds its parallel in the perverse suppression of the building's steel structure behind massive stone facing. As in the Park Güell, the articulation of the structure has been sacrificed to the evocation of some primal force. Nothing could have been further from Viollet-le-Duc, for neither the fabric nor its mode of assembly was explicitly rendered. Instead, huge blocks were laboriously worked so as to suggest a rock face eroded by time. A similar cosmic reference seems to be intended in the iron balconies, wrought by the Gaudí atelier in such a way as to suggest petrified strands of storm-tossed seaweed. Departing from the principles of Viollet-le-Duc, Gaudí finally transformed his raw material into an assembly of powerful images, whose emotive force recalls the operatic genre of Wagner. Seen in retrospect, the Casa Milà seems to anticipate something of the ethos of the Expressionism that was soon to emerge in Central Europe. In 1910, its symbolic solemnity served to isolate Gaudí, not only from the tradition of Structural Rationalism, but also from the lighter aspects of Symbolism, those flutters of 'farewells in space' that constitute the general tenor of Catalan 'Modernismo'.

**46** Gaudí, Casa Milà, Barcelona, 1906-10.

The situation in Brussels at the end of the century was similar in many respects to that in Barcelona. In the Flemish

capital a comparable accumulation of industrial wealth was paralleled by an equally obsessive preoccupation with national identity, although in Belgium the wealth was more evenly distributed and the nationalism mitigated by actual independence. All the same, Belgian architects were quite as anxious as the Catalans for the evolution of a truly modern but nonetheless national style. The architectural avant garde of the 1870s accused the Beaux-Arts architect Joseph Poelaert of cultural mendacity for his Neo-Classical Palais de Justice, completed in 1883: not only was it Piranesian and megalomaniacal, but it evoked a past which was international and hence by definition un-Flemish. As far as they were concerned, the model for a new 'native' architecture could be found in the local 16th-century brick traditions, in which the principles of Viollet-le-Duc could flourish.

One year after the publication of *Entretiens*, the newly formed Société Centrale d'Architecture de Belgique started to campaign vigorously in their magazine *L'Emulation* for a new national style. The issue of 1872 declared: 'We are called to create something which is our own, something to which we can give a new name. We are called upon to invent a style.' E. Allard, the major theorist of *L'Emulation*, later wrote: 'We must try first and foremost to create Belgian artists – we must free ourselves from foreign influences.' Throughout the 1870s *L'Emulation* continued to propagate the principles of a hypothetical style that was more constrained in its Structural Rationalism than that adopted by Gaudí. 'Nothing is beautiful in architecture unless true.' 'Shun painted plaster and stucco.' 'Architecture is drifting towards decadence; towards a veritable cacophony.'

Despite these exhortations, a convincing style took its time to materialize, and nothing of consequence was achieved in Belgium until 1892, when Victor Horta began his mature career with the realization of the Hôtel Tassel in

Brussels [47]. In this narrow-fronted, three-storey town house of traditional terrace format, Horta went beyond the achievement of his early career to become one of the first architects to make an extensive use of iron in domestic architecture. He treated iron as though it were an organic filament insinuated into the fabric to subvert the inertia of stone. Other than the works of Eiffel and Contamin, which he would have seen at the Paris Exhibition of 1889, the most influential image behind Horta's peculiar 'strapwork' style was the contemporary graphic work of the Dutch-Indonesian artist Jan Toorop. This connection underlines the importance of painting in the Belgian Art Nouveau. Toorop was a member of that influential Post-Impressionist group, Les XX, whose later re-formation as La Libre Esthétique was to play a key role in disseminating the aims and principles of the English Arts and Crafts movement.

**47** Horta, Hôtel Tassel, Brussels, 1892.

In the open planning of the Hôtel Tassel, Horta exploded the 18th-century Parisian *hôtel*/ formula. As the octagonal vestibule on the ground floor rose upwards through a half-level towards the garden, it expanded laterally into an adjacent foyer space covered by an iron superstructure. The free-standing columns of this space, embellished with iron tendrils, echo similar serpentine forms throughout the rest of the metalwork. From the balustrades to the light fittings the same aesthetic is dominant, a linear exuberance that is delicately echoed in the mosaic floor and wall finishes and in the coloured glass panels of the door to the salon. Yet for all this florid profusion the main volumes are still tempered by the use of Rococo mouldings, which serve to relate the more exotic elements to the received tradition of Louis Quinze. A similar balance is achieved on the exterior, where the ductile elements of the inner armature find their

discreet expression. In an otherwise Classical façade, the stone quoins of an iron bay window are wrought in such a way as to imply the thrust of the inner metallic structure.

Over the next decade Horta continued this dialogue between the tensility of iron and the massiveness of stone in a number of other town houses in Brussels, including residences for the chemist Solvay and the industrialist Van Eetvelde and his own house and studio in the Rue Américaine, all built before 1900. All were partial elaborations of the Hôtel Tassel syntax, yet none, save the Hôtel Solvay, equalled its simplicity and impressiveness.

The Maison du Peuple [48], built for the Belgian Workers' Socialist Party in 1897–1900, is the most original work of Horta's career and the only one in which he seems to have felt free to pursue the principles of Viollet-le-Duc to their logical conclusion. Here a native brick and stone vernacular was brilliantly exploited to create an architecture of revealed construction – brickwork being consistently modulated and moulded to receive stone, and stone being dressed to receive iron and glass. While externally this tectonic was comprised by the elevational expression of a complex programme and by the displacement of a concave plan-form over a sloping site, internally it achieved a dramatic and highly fluid expression through the exposed steel framework of all the major volumes, the offices, meeting rooms, lecture theatre and cafeteria. This consistent but strangely unresolved 'Neo-Gothic' assembly of masonry, iron and glass was Horta's most influential achievement and one which he was not to surpass in his more resolved and last essay in this idiom, his Innovation department store, built in Brussels in 1901.

**48** Horta, Maison du Peuple, Brussels, 1897–1900. Detail of façade.

In France, the line of succession linking Viollet-le-Duc to Hector Guimard passes through Guimard's master Anatole de Baudot, who had been a pupil of both Viollet-le-Duc and Labrouste. In 1894 de Baudot had designed, in association with the engineer Paul Cottancin, the church of St-Jean-de-Montmartre in Paris, a structure of reinforced brickwork and *ciment armé* that was surely the most profound essay in Structural Rationalism to date. Thus Guimard, in his early Parisian works, reveals his debt to both de Baudot and Viollet-le-Duc, particularly in his Ecole du Sacré Coeur and his Maison Carpeaux in the Boulevard Exelmans, both completed by 1895. While the former, a small school building with V-supports to the upper floor, was almost a direct realization of the famous illustration to *Entretiens*, the latter, a bourgeois town house, displayed the same tendencies towards a vestigial Classicism that we find in the works of Horta.

In a letter to L.-C. Boileau in 1898, Guimard openly acknowledged his debt to Viollet-le-Duc: 'Decoratively, my principles are perhaps new but they derive from those already in use with the Greeks ... I have only applied the theories of Viollet-le-Duc without being fascinated by the Middle Ages.' Yet Guimard was concerned to achieve that native style prescribed by the French theorist as conforming to usage, climate and national spirit and 'to the progress which has been made in science and practical knowledge'. Thus we find him writing in 1903:

*A style of architecture, in order to be true, must be the product of the soil where it exists and of the period which needs it. The principles of the Middle Ages and those of the 19th century, added to my doctrine, should supply us with a foundation for a French Renaissance and an entirely new style. Let the Belgians, the Germans and the English evolve for themselves a national art and assuredly in so doing they will perform a true, sound and useful work.<sup>2</sup>*

We may assume that what Guimard, like Gaudí and Horta, had in mind was the evolution of the ‘constituent elements’ of a national style as advocated by Viollet-le-Duc. Yet by the turn of the century there were at least three versions of Guimard’s own style: a loose, rustic, mixed-media expression, as found in the country chalets that he built between 1899 and 1908, of which his Castel Henriette of 1900 is typical; an urban style of precisely assembled brick and dramatically sculptured stonework such as we find in his own house in the Avenue Mozart, Paris, of 1910; and finally a spidery ferrovitreous manner which was mass-produced soon after 1899, when he was awarded the commission for the Paris Métro stations. The entrances were made up of interchangeable standard iron pieces, cast in the form of naturalistic elements and framing enamelled steel and glass. Paradoxically, they were closer to the linear expressiveness of Horta than to the moral rigour of de Baudot; and Guimard even treated the typography and illumination of these structures as the sinuous continuation of their form. Thereafter, over the next four years, these apparently natural emanations from a wondrous subterranean world erupted over the streets of Paris, to make Guimard notorious as the creator of the ‘Style Métro’ [49].

**49** Guimard, iron and glass Métro entrance, Paris, 1899–1904. Side and front elevations.

This well-earned notoriety has unfortunately helped to eclipse the one short-lived masterpiece of Guimard’s whole career, his Humbert de Romans concert hall [50], completed in Paris in 1901 and demolished in 1905. Like Horta’s Maison du Peuple, this surely has to be regarded as one of the major achievements of Structural Rationalism. Fernand Mazade’s text of 1902 is still capable of evoking the power

of an interior that, save for a few faded photographs, is entirely lost:

**50** Guimard, Humbert de Romans concert hall, Paris, 1901. Composite of section and elevation.

*[its] main branches, eight in number, support a rather high cupola, pierced, like the sides, with bays filled with pale yellow stained glass, through which an abundance of light finds its way into the hall. The framework is of steel, but the metal is covered with mahogany ... the result is the most elaborate roof ever conceived by a French architect.<sup>3</sup>*

Throughout the two decades that spanned the turn of the century, there remained quietly in the background the Dutch architect Hendrik Petrus Berlage, who contrived to practise in a consistent manner until his death in 1934. Unlike Horta, Berlage did not allow his principles to become compromised by the acquired, 'alien' tastes of an arriviste middle class. In Holland, in any case, the middle class was fully integrated into the general society, social co-operation being second nature in a country that was constantly threatened with inundation. In such a stable context Berlage enjoyed almost fifty years of uninterrupted practice, over a period that due to Dutch neutrality was not even disturbed by the hostilities of the First World War.

Berlage received his professional education at the Eidgenössische Technische Hochschule, Zürich, in the late 1870s. There he studied under the immediate followers of Gottfried Semper, from whom he would have received an extremely rational and typological education. On his return to Amsterdam in 1881 he began to associate with P.J.H. Cuijpers, nearly thirty years his senior, who was already a disciple and correspondent of Viollet-le-Duc. In accordance with the principles of Structural Rationalism, Cuijpers sought

to rationalize his own eclecticism in an effort to evolve a new national style, an attempt which culminated in his Neo-Flemish Rijksmuseum, Amsterdam, of 1885. This work strongly influenced Berlage's entry for the Amsterdam Exchange competition of 1883, which he designed in association with Theodorus Sanders in a similar turreted and gabled manner.

Twelve years later Berlage received the commission for the Exchange, despite the fact that he had only been awarded fourth place in the competition. At once he began to rework the design after an arched brick syntax that he had developed in the interim, first in a villa built at Groningen in 1894, and then in an office building erected in The Hague in the following year. These crenellated, Neo-Romanesque brick structures, influenced without doubt by Richardson's work in the United States, were vehicles for an architecture of explicit construction, a fact that was most evident in the brick-vaulted stair complex of the office building. Yet for all the profundity of these early essays (reminiscent in their structural probity of the rigour of de Baudot) the final formulation of the Berlage idiom was to depend on the realization of the Exchange.

The four versions of the Exchange [51, 52] that followed the initial project represent different stages in an arduous process of simplification. In this development Berlage seems to have been guided by a complex of theoretical ideas, some drawn from Viollet-le-Duc, some from Semper and some from his colleague Jan Hessel de Groot, who was the originator of the Amsterdam school of mathematical aesthetics. After the Exchange was opened in 1903, Berlage began to publish his own synthesis of these ideas in a series of theoretical studies, first in his *Gedanken über den Stil in der Baukunst* ('Thoughts on Style in Architecture') of 1905 and then in his *Grundlagen und Entwicklung der Architektur* ('Principles and Evolution of Architecture') of 1908. As Reyner Banham has observed, the salient principles

stressed in these writings were ‘the primacy of space, the importance of walls as creators of form and the need for systematic proportion’. The distillation of the Exchange into its final form takes on a richer significance once we become aware of Berlage’s views on the essential role of masonry, as first set forth in these texts. ‘Before all else the wall must be shown naked in all its sleek beauty and anything fixed on it must be shunned as an embarrassment.’ Or again, ‘The art of the master builder lies in this, in the creation of space, not the sketching of façades. A spatial envelope is established by means of walls, whereby a space ... is manifested according to the complexity of the walling.’

**51, 52** Berlage, Exchange, Amsterdam. *Above*, second design, 1896–97; *below*, as built, 1897–1903.

In his gradual refinement of the Exchange, Berlage largely retained the original plan of three top-lit rectangular volumes, one for each exchange, housed in an orthogonal matrix of four-storey perimeter walls. The progressive aim was to simplify this *parti* and its structure into an extremely astringent form, and to this end he gradually reduced the number of gables and turrets and slowly eliminated all lanterns and every trace of banded stonework. At one stage the scheme vaguely resembled Gustav Gull’s Landesmuseum, then nearing completion in Zürich, while at the penultimate stage the reduced forms attained their final definition through the superimposition of a diagonal lattice derived from De Groot. After this all subsequent changes were largely confined to the design of the main entrance and its adjacent tower, which were conceived by Berlage as the prime representative elements of both the institution and the city.

The load-bearing brick structure of Berlage’s Exchange was precisely articulated in accordance with the principles

of Structural Rationalism. Inside, a mosaic frieze or a filigreed lamp are but inflections within large brick volumes where granite abutments, quoins, corbels and cappings consistently mark the points of structural transference and bearing [53]. The same dressed stones which in one instance are corbelled out to receive a steel truss in another articulate the keying of an arch. In this way the ethos and the logic of Viollet-le-Duc pervade the entire fabric as in no other structure of the 19th century.

**53** Berlage, Exchange, Amsterdam, 1897–1903. Main hall.

To this achievement the philosophical tenor of Berlage's thought added dimensions which went beyond any single structure, first into the immediate urban context and then, by extension, into the body politic at large. His model for an ideal urban society was first outlined in a set of essays published in 1910, of which one in particular, *Kunst en Maatschappij* ('Art and Society'), most clearly reveals the depth of his socio-political commitment. While socialism for Berlage was a prime article of faith, he nonetheless subscribed to Hermann Muthesius's view that the general level of a culture could only be raised through the production of high-quality, well-designed objects. On the other hand, he remained convinced as to the supreme cultural importance of the city, and deplored the disurbanizing tendency of the English garden city.

In 1901 Berlage was given an opportunity to put his urban theory into practice, when the city of Amsterdam commissioned him to prepare a plan for Amsterdam South. For Berlage the street was essentially an outdoor room, the necessary consequence of the housing lining its length. This insistence on enclosure, prefigured in the medieval city, had already been postulated by Berlage in his design for the Exchange. After Alphand and the theories of the German

planner Stübben, the qualities of the street spaces in Amsterdam South vary according to their width and furnishing. The wider streets were furnished with *parterres* and flanking avenues of trees; the narrower ones were simply lined with trees and paving. At the major intersections centralized spaces were created somewhat after the principles of Stübben and Camillo Sitte (see [p. 29](#)). The whole was fed by a modern system of mass transit in the form of the electric tram.

In 1915 Berlage totally revised his plan [[54](#)] to incorporate avenues of Haussmann-like scale, two of which, converging at a sector known as Amstellaan, were completed with their environs in the early 1920s. Their realization, which unequivocally demonstrated Berlage's concern for the physical continuity of the urban environment, eventually brought him into conflict with the anti-street polemic of the Congrès Internationaux d'Architecture Moderne (CIAM), founded in 1928. Yet today the value of his urban achievement seems to be more pertinent than ever, for as Giorgio Grassi has written of Amstellaan:

**54** Berlage, revised development plan for Amsterdam South, 1917.

*it is still the key point on the outskirts of Amsterdam, the point where one finds expressed most clearly the concept of collective living, where the civic value of single parts blends into a unified vision that - being less concerned with the optimum dwellings of certain rationalist experiments - has, in its nuclear concept of housing, well expressed the values of the city. And it has recognized not only the physical need of the dwellers for recreation and rest, but their impulse to form communities and to assume in this act a symbol of life.<sup>4</sup>*

# Chapter 5

## Charles Rennie Mackintosh and the Glasgow School 1896-1916

*On the second floor of a modest building in the great industrial smoky town of Glasgow there is a drawing room amazingly white and clean looking. Walls, ceiling and furniture have all the virginal beauty of white satin. The note throughout is white - white and violet. From the upper part of two large violet plaques, which form centre pieces, there hang long tendrils threaded with little globes of old silver. ... The carpet and the leaded glass window are violet, and one can trace the same colour note on the narrow frames of two choice drawings. ... In the stillness of the studio, among a bevy of plants and strewn with the novels of Maeterlinck, two visionary souls, in ecstatic communion from the heights of loving mate-ship, are wafted still further aloft to the heavenly regions of creation.*

E.B. Kalas  
*De la Tamise à la Sprée*  
*l'essor des industries d'art, 1905*<sup>1</sup>

By 1905, Charles Rennie Mackintosh and his wife, Margaret Macdonald, had already acquired an international reputation. In England they had achieved notoriety in 1896, when with Herbert McNair and Margaret's sister Frances Macdonald, as the 'Glasgow Four', they had exhibited their

early works at the London Arts and Crafts Exhibition Society show. Such was the impact of their work on this occasion that, despite official disapproval stemming from Walter Crane, they were appreciatively acclaimed as the 'Spook School' by Gleeson White, editor of *The Studio*. This sudden success, which had been preceded by an exhibition of their student work at Liège in 1895, was further confirmed by the acceptance in 1896 of Mackintosh's design for the new Glasgow School of Art, on which work commenced in the following year.

The Four had been making furnishings since 1894, so Gleeson White's article in *The Studio* of 1897 could illustrate, in addition to their graphic work, repoussé metal plaques, mirrors, sconces and clocks designed by the Macdonald sisters and cupboards and cabinets designed by McNair and Mackintosh. In all this, the Four had evolved a sensibility which for White was the expression of a 'quasi-malignant paganism', a style which took its linear manner from the graphic work of William Blake, Aubrey Beardsley and Jan Toorop and its sentiment, part nationalist and part Symbolist, from old Cymric motifs of Celtic origin and from names drawn from the mystical works of Maurice Maeterlinck and Dante Gabriel Rossetti.

Mackintosh's architecture also had other, somewhat less exotic, origins. Through his education within the mainstream of the Gothic Revival he had naturally acquired an affinity for a solid craft approach to buildings. Like Philip Webb, his architectural precursors were the Gothic Revivalists of the mid-century, men such as Butterfield and Street. This much is evident in his own early ecclesiastical work, such as his Queens Cross Church of Scotland, Glasgow, of 1897. In his secular work, however, he managed to temper the revivalist impulse with a more direct approach, deriving partly from Voysey and partly from the Scottish Baronial tradition (compare James MacLaren's Fortingall cottages of 1892). His

first and last statements in this manner are incorporated in the gradual realization of the Glasgow School of Art.

Throughout Mackintosh's unique and highly influential development, Lethaby's *Architecture, Mysticism and Myth* of 1892 was to serve as an important catechism – not only because it revealed the universal metaphysical basis of all architectural symbolism but also because, coming from Lethaby's hand, it formed a bridge between the other-worldliness of Celtic mysticism and the more pragmatic Arts and Crafts approach to the creation of form. With regard to this last, Mackintosh took the traditionalist Ruskinian line and argued that modern materials, such as iron and glass, 'will never worthily take the place of stone because of this defect, the want of mass'.

There was to be no want of mass in the Glasgow School of Art, which was built from a local grey granite on three of its sides and from roughcast brickwork on the fourth. Yet, despite Mackintosh's avowed respect for masonry, glass and iron were present in abundance in the extensive studio northlights, which occupy the full length of the main façade. At the same time, from a technical standpoint, Mackintosh – like his American contemporary Frank Lloyd Wright – made every effort to incorporate ingenious and up-to-date systems for environmental control, such as the system of ducted heating and ventilation, built into the school from the beginning.

Following the Gothic Revival tradition, Mackintosh designed the main body of the school as a loose-fitting envelope, with the bulk of the studio space being stacked on four floors. This mass, which was effectively read as two storeys throughout the length of the main façade, was complemented by ancillary elements (such as the library and museum) located to the sides, the centre and the rear. The result was an E plan-form [55], with an eccentrically counterbalanced main elevation, in which subtle displacements in both the main entrance and the forecourt

railings simultaneously engendered symmetrical and asymmetrical readings. The return east and west façades, steeply sloping down towards the rear of the site, were left partly blank so as to express the depth of the studio space. With the aid of finials, gables, projecting turrets and incised windows, this inherent asymmetry imparted to the east façade an overtly Gothic Revival character, which would have been repeated on the west had it not been for Mackintosh's radical redesign of the second stage in 1906. This west façade as finally completed represented Mackintosh at the height of his power. In no other work was he able to reach such authority and grandeur. Its three vertical oriels with their gridded fenestration served dramatically to light and express the rich volume of the library [56] and its adjacent upper floor.

**55** Mackintosh, Glasgow School of Art, 1896–1909. Axonometric view and ground plan.

**56** Mackintosh, Glasgow School of Art, Library, 1905–09.

Built in two stages, the art school was a record of Mackintosh's stylistic development from 1896 to 1909. The difference between the Voyseyesque entry hall and stair of the first stage and the double-height library of the final stage, patently influenced by Norman Shaw, reflected the full range of his development by that date. In a matter of a few years he had fully crystallized that sinuous architectural syntax which he had first used on a grand scale in the design of the Willow Tea Rooms, Glasgow, in 1904. In contrast to those 'white and willowy' interiors, the art school library was austere and geometrical, and executed in dark wood throughout. There was almost a Japanese quality about its structural articulation. It must be seen as a

transitional work, lying somewhere between Mackintosh's Art Nouveau period and the later, modern, almost Art Deco manner that characterizes his final work for W.J. Bassett-Lowke.

The brief and brilliant, violet and silver period of organic ornamentation set against plain white surfaces, commonly regarded as the touchstone of the Mackintosh style and eulogized as such by Kalas in 1905, came to its maturity at the turn of the century. It was already developed in full in the furniture and décor of Mackintosh's Glasgow apartment, designed in 1900. It was further elaborated in the Scottish section of the Viennese Secession Exhibition of the same year and in the music salon built for Fritz Wärndorfer in Vienna in 1902. As a fully integrated aesthetic, both internally and externally, it reached its apotheosis in the Willow Tea Rooms, completed two years after the Wärndorfer salon.

Externally, the restrained yet moulded white façade of the Willow Tea Rooms was of the same genre as Mackintosh's Voysey-like house projects of the turn of the century or the two quasi-Baronial roughcast houses that he realized at Kilmacolm and Helensburgh [57] between 1899 and 1903. As Robert Macleod has written, 'these houses were an expression of conscious gaucheness, and an anti-pretty attitude that had as its chief historical exponents William Butterfield and Philip Webb'. Mackintosh's perverse attempt to fuse the ornamental with the gauche was often far from successful, and the houses appear somewhat chaotic and unresolved when compared to the magnificent and highly influential 'Haus eines Kunst-freundes' ('House for an Art-lover'), which Mackintosh designed as his entry to the limited competition organized in Darmstadt by Alexander Koch in 1901.

**57** Mackintosh, Hill House, Helensburgh, 1902–03.

The unrealized 'House for an Art-lover' and the Glasgow School of Art represent Mackintosh's essential contribution to the mainstream of 20th-century architecture. In the house he created a work which passed well beyond the constraints of the traditional Voysey model to display a formal plasticity of almost Cubist affinity. The organization of the house around a number of countervailing axes and its division into two major longitudinal masses that appear to be on the point of sliding past each other resulted in a tense but consolidated composition, and the enrichment of its otherwise plain surface with precisely proportioned windows and occasional accents of embossed ornament suggests at once the strong influence it must have exercised over Josef Hoffmann, in particular on his design for the Palais Stoclet, Brussels, of 1905. Nothing in any event could have been further from the yeoman rusticity of the winning design by Baillie Scott.

It is ironic that Mackintosh should have begun and ended his career as an independent architect with the Glasgow School of Art, the effective years of his practice being from 1897 to 1909. In 1914 the Mackintoshes moved from Scotland to England, where Mackintosh, suddenly and somewhat inexplicably discouraged as an architect, turned to painting. In 1916, however, he made a brief comeback with the brilliant remodelling of a small terrace house for W.J. Bassett-Lowke, No. 78 Derngate in Northampton. The rich, abstract interiors are equal to any Continental work of comparable date. The plain geometrical bedroom furniture and the striped graphic décor bonding the twin beds together were well in advance of their time, inasmuch as they anticipated the spatial and plastic devices to be employed by the Continental avant garde after the First World War (De Stijl, Art Deco, etc.). During the war Mackintosh designed clocks, furniture and posters for Bassett-Lowke, but even this patronage was withdrawn after 1918.

Rejected in Scotland and isolated in England, Mackintosh could sustain neither the values of his earlier life nor the creative impulse of his pre-war career. The last decade of his life was one of progressive decline, in which the commissioning in 1925 of the German architect Peter Behrens to design a new house for Bassett-Lowke was but a final blow. It was a tragic fate for one who, as P. Morton Shand has written, 'was the first British architect since Adam to be a name abroad and the only one that has ever become the rallying point for a Continental school of design'.

# Chapter 6

## The Sacred Spring: Wagner, Olbrich and Hoffmann 1886-1912

*A series of edifices expressed the Bildungsideal of Liberal Austria: university, museum, theatre and – grandest of all – the opera. The culture once confined to the palace had poured into the market place, accessible to all. Art ceased to serve only as an expression of aristocratic grandeur or ecclesiastical pomp; it became the ornament, the communal property, of an enlightened citizenry. The splendiferous structures of the Ringstrasse bore massive witness to the fact that Austria had replaced despotism and religion with constitutional politics and secular culture ... the economic growth of Austria created the basis for an increasing number of families to pursue an aristocratic style of life. Wealthy burghers or successful bureaucrats, many of whom acquired patents of nobility like Stifter's Freiherr von Risach [in the novel Der Nachsommer, 1857], established urban or suburban variants of the Rosenhaus, museum-like villas which became centres of a lively social life. Not only gracious manners, but also intellectual substance were cultivated in the salons and soirées of the new élite ... the English Pre-Raphaelites inspired the Art-Nouveau movement (under the name of 'Secession') in fin de siècle Austria, but neither their pseudo-medieval spirituality nor their strong social-reformist impulse penetrated to their Austrian disciples. In brief, the Austrian aesthetes were neither as*

*alienated from their society as their French soul-mates nor as engaged in it as their English ones. They lacked the bitter anti-bourgeois spirit of the first and the warm melioristic thrust of the second. Neither dégagé nor engagé, the Austrian aesthetes were alienated not from their class, but with it from a society that defeated its expectations and rejected its values. Accordingly, Young Austria's Garden of Beauty was a retreat of the beati possidentes, a garden strangely suspended between reality and utopia. It expressed both the self-delight of the aesthetically cultivated and the self-doubt of the socially functionless.*

Carl Schorske

*The Transformation of the Garden: Ideal and Society in Austrian Literature, 1970*<sup>1</sup>

As Carl Schorske informs us, that which realized itself in 1898 as the 'sacred spring', through the appearance of the Secessionist magazine *Ver Sacrum*, had some of its origins at mid-century in *Der Nachsommer*, the Indian Summer of Adalbert Stifter's idealistic novel of 1857. Otto Wagner's first suburban villa of 1886 may be seen as a realization of the Rosenhaus which Stifter had invented as the ideal location for the cultivation of a private aesthetic life. While Wagner had been born into the same class as Stifter's Freiherr von Risach, he did not attain immediate success. After a distinguished academic career, first at the Vienna Polytechnic and then at the prestigious Bauakademie in Berlin, purveyor of the Schinkel tradition, he practised independently for some fifteen years before receiving his first state commission, the décor for the Emperor's silver wedding celebrations in 1879. Even this royal recognition did not bring him wide acclaim, so that when in 1886 he built his own Italianate version of the Rosenhaus at Hütteldorf he was still far from being professionally established. Four years later, however, he had not only

arrived artistically but had achieved some worldly success with the building of a small but lavish town house in Vienna for his own use.

Wagner's influence as a teacher dates from his succession in 1894 to Karl von Hasenauer as professor at the school of architecture in the Academy of Fine Arts in Vienna. In 1896, at the age of fifty-four, he published his first theoretical work, *Moderne Architektur*. This was followed in 1898 by the first publication of the work of his students, given under the title *Aus der Wagnerschule*. Having been formed in Berlin by one of Schinkel's prime pupils, Wagner's architectural affinities at this time seem to have lain somewhere between the rationalism of the *Schinkelschüler* and the more rhetorical manner of those last great architects of the Ringstrasse, Gottfried Semper and Karl von Hasenauer, whose State Museums, Burgtheater and Neue Hofburg were under construction in the Ring throughout the last quarter of the century.

Wagner's polytechnical education had left him acutely aware of the technical and social realities of his epoch. At the same time, his romantic imagination was drawn towards the radical stirrings of his more talented pupils – to the anti-academic art movement co-founded by his assistant Joseph Maria Olbrich and by his most brilliant pupil, Josef Hoffmann, who had graduated with a Prix de Rome in 1895. These men were not only influenced by the work of the Glasgow Four, then being illustrated in *The Studio*, but were also under the spell of the exotic vision of two young Viennese painters, Gustav Klimt and Koloman Moser. Under the leadership of Klimt, Olbrich, Hoffmann and Moser banded together in their revolt against the Academy and in 1897, with Wagner's blessing, they founded the Vienna Secession. In the following year Wagner declared his own sympathies for the Secession through the creation of a florid abstraction in faience for the façade of his pseudo-Italianate Majolica

House in Linke Wienzeile, and in 1899 he scandalized the establishment by becoming a full member of the Secession.

In 1898 Olbrich built the Secession building [58], apparently after a sketch by Klimt, who was to remain the prime mover of the revolt. From Klimt came the battered walls, the axiality and especially the laurel motif – with its dedication to Apollo – the last being rendered by Olbrich as a perforated metal dome, suspended between four short pylons and set above planar masses whose severe modelling recalls the work of such British architects as Voysey and Charles Harrison Townsend. A comparable symbol of organic vitality occurred on the cover of the first issue of *Ver Sacrum* – an ornamental shrub whose vital roots were depicted bursting through its tub into the earth beneath. Such was Olbrich's symbolic point of departure, a conscious return to the fertility of the unconscious, from which, ever subject to the influence of Voysey and Mackintosh and the claims of Klimt's pan-eroticism, he began to evolve a style of his own.

**58** Olbrich, Secession building, Vienna, 1898.

This evolution took place largely in Darmstadt, where Olbrich had been invited by the Grand Duke Ernst Ludwig in 1899. Later in that year he was joined by six other artists, the sculptors Ludwig Habich and Rudolf Bosselt, the painters Peter Behrens, Paul Bürck and Hans Christiansen, and the architect Patriz Huber. Two years later, this artists' colony exhibited its life style and 'habitat' as a total work of art, under the title 'Ein Dokument deutscher Kunst'. The exhibition was opened in May 1901 by a mystical ceremony called 'Das Zeichen' ('The Sign'), which took place on the steps of Olbrich's Ernst Ludwig House. In this ceremony an 'unknown' prophet descended from the golden portal of the building to receive a crystalline form, as a symbol of base

material transformed into art, just as carbon may be changed into the brilliance of a diamond.

The Ernst Ludwig House [60], built in 1901, was undoubtedly the most progressive work that Olbrich designed during his nine-year residence in Darmstadt. Consisting of eight studio living spaces, four on each side of a common meeting hall, it was in effect the colony's initial focus, around which a number of individual artists' houses were eventually built. With its high, blank, horizontally fenestrated façade, shielding north lights to the rear, and its ornate, recessed circular entrance flanked by giant statues carved by Habich, it was the ultimate monumentalization of themes that Olbrich had broached in the Secession building.

Between this early masterpiece and the final 'classicization' of his style in 1908 – the year of his premature death – Olbrich continued his search for a uniquely expressive mode. Throughout the last decade of his life he created works of exceptional originality, culminating in his cryptic and brooding Hochzeitsturm or Wedding Tower, which, with the adjacent exhibition buildings [59], was completed on the Mathildenhöhe in Darmstadt for the Hessische Landesausstellung of 1908. With its pyramidal composition the Mathildenhöhe complex, built on top of a reservoir, was in effect a 'city crown' whose form anticipated the symbolic centre of Bruno Taut's 'Stadtkrone' of 1919. Girded by a series of tiered concrete pergolas, it was drawn by Olbrich as a mountainous labyrinth of dense foliage, whose colour would change with the seasons from green to russet brown. Rising from the high ground like a mystical mountain, it consciously opposed the Edenic serenity of the formal plane-tree garden, or Platanenhain, on which it fronted.

**59** Olbrich, Hochzeitsturm and exhibition buildings, Darmstadt, 1908.

**60** Olbrich, Ernst Ludwig House, Darmstadt. ‘Das Zeichen’, May 1901.

Over the whole of Olbrich’s career there stood the challenging figure of Peter Behrens, initially a graphist and painter, who had come to Darmstadt from the Munich Secession in 1899. He emerged as an architect and a designer with the building and furnishing of his own house at Darmstadt in 1901. In their rivalry as *Gesamtkünstler* to the house of Hesse-Darmstadt it was Olbrich rather than Behrens who was to be the brilliant designer of objects, while in their careers outside Darmstadt, as architects, it was Behrens who became the more powerful creator of form. Above all it was he who anticipated their common return to the kind of crypto-Classicism that characterizes the work of Olbrich’s final years, his Tietz department store in Düsseldorf and the mansion that he built for the cigar manufacturer Feinhals in Cologne, both completed in 1908.

In 1899 Josef Hoffmann began to teach at the applied art school attached to the Austrian Museum for Art and Industry in Vienna (which had been founded, in accordance with Semper’s educational programme, some thirty-five years before). A year later, he replaced Olbrich as the designer of the élite Hohe Warte suburb on the outskirts of Vienna, building four villas there between 1901 and 1905. He had succeeded Olbrich as the leading architect to the Secession, and his first work on this site, designed in the manner of English Free Architecture, was for Koloman Moser. By 1902, however, Hoffmann was already beginning to move towards a more planar and Classical mode of expression, based largely on the post-1898 work of Otto Wagner, that is towards a handling of mass and surface which was far removed from the British preoccupation with medieval, yeoman form.

By the time of the Vienna Secession Exhibition of 1900, at which Mackintosh’s actual work was shown in Austria for

the first time, Hoffmann had already arrived at a furnishing style of refined rectilinear form. This was his initial move away from the obsessive curvilinearity of his 'Apollo' shop in Vienna of the previous year. By 1901 he was preoccupied with the possibilities for abstract form in design. 'I am particularly interested in the square as such,' he wrote, 'and in the use of black and white as dominant colours, because these clear elements have never appeared in earlier styles.' Together with Moser and other Secessionists, he became interested in the craft production of decorative and applied art objects, along the lines of Ashbee's Guild of Handicraft. By 1902, with his setting for Klinger's Beethoven statue, exhibited in the Secession Building, he had arrived at his own abstract style, in which certain contours or proportions are emphasized through the use of projecting beads and clusters of small squares. A year later, in 1903, with the backing of Fritz Wärndorfer, the Hoffmann/Moser Wiener Werkstätte was started for the design, production and marketing of high-quality domestic objects. This organization and its output had achieved world fame by the time of its precipitate and inexplicable closure by Hoffmann in 1933.

The last issue of *Ver Sacrum* was published in 1903: with its demise the high period of the Secession was over. In 1904, Hoffmann and Josef August Lux started to edit a new periodical, entitled *Hohe Warte*, named after the garden suburb. From the outset it was dedicated to the propagation of 'back to nature' garden city values, and later, in less liberal times, it became the garden city platform of the Austrian National Socialist movement. Unlike Hoffmann, Lux was quick to react against its chauvinistic exaggeration of folklorish values, resigning his editorship in protest against its *Heimatstil* policy as early as 1908.

By 1903 Hoffmann had moved closer to the style of his master Wagner, particularly in the design of the Classical and austere Purkersdorf Sanatorium, which was to have

such an influence on Le Corbusier's early development. In 1905 Hoffmann began to work on his masterpiece, the Palais Stoclet, built in Brussels between 1905 and 1910 [61, 62]. As in Perret's Théâtre des Champs-Elysées, its reduced Classical decoration paid veiled homage to the Symbolist aesthetic of the Belle Epoque. But, unlike Perret's theatre, the Palais Stoclet is (as Eduard Sekler has observed) essentially atectonic: its thin white marble facing with its metal seams has all the mannered and handcrafted elegance of a Wiener Werkstätte object on a large scale. Of its conscious denial of structure and mass Sekler wrote:

**61, 62** Hoffmann, Palais Stoclet, Brussels, 1905-10.

*A strongly linear element is introduced by these articulated metal bands but it has nothing to do with 'lines of force', the way linear elements did in the architecture of Victor Horta. At the Stoclet house, we have lines which occur equally along horizontal and vertical edges - they are tectonically neutral. At the corners ... where two or more of these parallel mouldings come together, the effect tends towards a negation of the solidity of the built volumes. A feeling persists as if the walls had not been built in a heavy construction but consisted of large sheets of thin material, joined at the corners with metal bands to protect the edges.<sup>2</sup>*

These bands, which issue from the apex of the stair tower, where four male figures support a Secessionist dome of laurels, are vaguely reminiscent of Wagner's stylized cable mouldings, and serve as they cascade down over the corners to unite the whole building through the continuity of the seam.

Wagner's mature style dates from his sixtieth year, with the completion of his Vienna Stadtbahn network in 1901.

Not a trace of his Italianate manner remains in his *Die Zeit* telegraph office of 1902, or in his Kaiserbad Dam Works of 1906, both of which seem to relate in their engineered elegance and punctilious revetment to the atectonic style of Hoffmann. Yet the dematerialization of the Palais Stoclet seems to have been anticipated by Wagner's own masterwork, his Imperial Post Office Savings Bank built in Vienna in 1904 [63]. Wagner, unlike his Secessionist pupils, always built for the reality of the present rather than for some remote Symbolist utopia that looked towards the aesthetic redemption of man. Thus his 'Grosstadt' plan of 1910, with its hierarchy of neighbourhood units, was projected as a rationally planned and realizable metropolitan future. In all his public work Wagner built with great technical precision for a bureaucratic state which he could only regard as lasting indefinitely. Crowned by an honorific pergola hung with laurel wreaths and flanked by winged Victories whose arms are raised skywards, the Post Office Savings Bank represented the republican benevolence of the Austro-Hungarian Empire at the height of its power.

**63** Wagner, Post Office Savings Bank, Vienna, 1904. Detail of façade.

Like the Palais Stoclet, the Post Office Savings Bank resembles a gargantuan metal box, an effect due in no small measure to the thin polished sheets of white Sterzing marble that are anchored to its façade with aluminium rivets. Its glazed canopy frame, entrance doors, balustrade and parapet rail are also of aluminium, as are the metal furnishings of the banking hall itself [64]. Faced in ceramic, lit from above and resting in its turn on a suspended concrete floor, studded with glass lenses for the illumination of the basement, this hall existed until recently in its original form. Its unadorned, riveted steelwork was formally related

to the industrial lighting standards and the aluminium heating cowls which flanked its perimeter. As Stanford Anderson has observed,

**64** Wagner, Post Office Savings Bank, Vienna, 1904. Banking hall.

*The details of an engineered building are not placed before us in the sachlich manner of nineteenth-century exhibition halls or railway sheds; the concept of an engineered building is revealed to us instead through the building's own modernist symbols of exposed industrial materials, structure and equipment.<sup>3</sup>*

By 1911 the 'classicization' of the Secession was complete, and for all his continuing interest in the evolution of an appropriate *Heimatstil*, Hoffmann represented Austria at the Rome International Art Exhibition of that year with a pavilion design whose atectonic Classicism anticipated the rhetorical monumentality of Mussolini's New Rome. Equally prophetic was Behrens's representation of Prussia in St Petersburg with an embassy whose solemnity would point towards the official rhetoric of the Third Reich. In such a climate it fell to Wagner to close the Secession as it had begun, with the vigour of his extremely austere yet elegantly proportioned second villa, built in Hütteldorf in 1912. In this lucidly planned house, lyrically decorated by Moser and influenced to an equal degree by the work of Wagner's own pupils and the recently published works of Wright, Wagner was to spend his last six years.

# Chapter 7

## Antonio Sant'Elia and Futurist Architecture

### 1909-14

*We had stayed up all night, my friends and I, under hanging mosque lamps with domes of filigreed brass, domes starred like our spirits, shining like them with the imprisoned radiance of electric hearts. For hours we had trampled our atavistic ennuit into rich oriental rugs, arguing up to the last confines of logic and blackening many reams of paper with our frenzied scribbling.*

*An immense pride was buoying us up, because we felt ourselves alone at that hour, alone, awake, and on our feet, like proud beacons or forward sentries against an army of hostile stars glaring down at us from their celestial encampments. Alone with stokers feeding the hellish fires of great ships, alone with the black specters who grope in the red-hot bellies of locomotives launched down their crazy courses, alone with drunkards reeling like wounded birds along the city walls.*

*Suddenly we jumped, hearing the mighty noise of the huge double-decker trams that rumbled by outside, ablaze with colored lights, like villages on holiday suddenly struck and uprooted by the flooding Po and dragged over falls and through gorges to the sea.*

*Then silence deepened. But, as we listened to the old canal muttering its feeble prayers and the creaking bones of sickly palaces above their damp green beards, under the*

*windows we suddenly heard the famished roar of automobiles.*

*'Let's go' I said. 'Friends, away! Let's go! Mythology and the Mystic Ideal are defeated at last. We're about to see the Centaur's birth and, soon after, the first of Angels! ... We must shake the gates of life, test the bolts and hinges. Let's go! Look there, on earth, the very first dawn! There's nothing to match the splendour of the sun's red sword, slashing for the first time through our millennial gloom!'*

Filippo Tommaso Marinetti

'Le Futurisme', *Le Figaro*, Paris, 20 February 1909<sup>1</sup>

With bombastic rhetoric, Italian Futurism announced its iconoclastic principles to the complacent bourgeoisie of the Belle Epoque. This millennialistic introduction was followed by an account of an impromptu automobile race on the outskirts of Milan ending in an accident which, as Reyner Banham has observed, had all the overtones of being 'the mimic baptism of a new faith'. In a text that pretended to be part autobiographical, Marinetti told of the overturning of his car into a factory ditch:

*Oh! Maternal ditch, almost full of muddy water! Fair factory drain! I gulped down your nourishing sludge; and I remembered the blessed black breast of my Sudanese nurse. ... When I came up - torn, filthy, and stinking - from under the capsized car, I felt the white-hot iron of joy deliciously pass through my heart! ...*

*And so, faces smeared with good factory muck - plastered with metallic waste, with senseless sweat, with celestial soot - we, bruised, our arms in slings, but unafraid, declared our high intentions to all the living of earth.<sup>2</sup>*

Then followed the eleven points of the Futurist Manifesto, the first four of which extolled the virtues of temerity,

energy and audacity, while asserting the supreme magnificence of mechanical speed in the now famous passage that declared a racing car to be more beautiful than the Winged Victory of Samothrace. Points five to nine went on to idealize the driver of such a vehicle as being integral with the trajectories of the universe and to celebrate other diverse virtues, such as patriotism and the glorification of war; point ten called for the destruction of academic institutions of every kind; and point eleven itemized the ideal context of a Futurist architecture:

*We will sing of the stirring of great crowds - workers, pleasure seekers, rioters and the confused sea of colour and sound as revolution sweeps through a modern metropolis.*  
*We will sing of the midnight fervour of arsenals and shipyards blazing with electric moons; insatiable stations swallowing the smoking serpents of their trains; factories hung from the clouds by the twisted threads of their smoke; bridges flashing like knives in the sun, giant gymnasts that leap over rivers; adventurous steamers that scent the horizon, deep chested locomotives that paw the ground with their wheels, like stallions harnessed with steel tubing; the easy flight of aircraft, their propellers beating the wind like banners with a sound like the applause of a mighty crowd.<sup>3</sup>*

Apart from its debt to the *aeropoesia* of the nationalist poet Gabriele D'Annunzio and a feeling for the 'simultaneity' of Cubist vision, this evocative passage was a straightforward homage to the triumph of industrialization - to the technical and social phenomena of the 19th century as they were then being extended through aviation and electrical power. In the face of Italian Classical, *passéiste* values, it proclaimed the cultural primacy of a mechanized environment that later informed to an equal degree the architectural aesthetic of Italian Futurism and Russian Constructivism. In 1909, as Joshua Taylor has remarked,

Futurism was an impulse rather than a style, so that for all its explicit opposition to both the Secession and to the classicizing Post-Secession, the form that a Futurist architecture might take was not immediately clear. After all, Futurism had proclaimed itself as being fundamentally opposed to culture, and this polemically negative stance could hardly have excluded architecture.

In 1910, with the crucial contribution of the artist Umberto Boccioni, Futurism began to extend its 'anti-cultural' polemic to the domain of plastic art. Boccioni produced two Futurist manifestos on painting in that year, and they were followed in April 1912 by his *Manifesto tecnico della scultura futurista* (*Technical Manifesto of Futurist Sculpture*). This later text, like most of the pre-war Futurist writings, gave evidence of a developed architectural sensibility. Thus Boccioni's opening critique, while ostensibly addressing itself to the *pompier* dead end that he wished to confront in contemporary sculpture, could have applied, with just as much pertinence, to the post-1904 work of Secessionist architects such as Joseph Olbrich and Alfred Messel – the former for his Tietz department store in Düsseldorf and the latter for his Wertheim store in Berlin. Boccioni wrote: 'We find in Germanic countries a ridiculous obsession with a Hellenized Gothic style that is industrialized in Berlin and enervated in Munich.' By the same token Boccioni's positive concern to extend the field of the sculptural object to incorporate its immediate milieu had connotations which were intrinsically architectural. This he made explicit as a converse principle in his preface to the catalogue of the first exhibition of Futurist sculpture in 1913: 'The search for naturalistic form removes sculpture (and painting also) from both its origins and its ultimate end: architecture.'

In his concern for a non-naturalistic expression, Boccioni developed a plastic aesthetic that was entirely removed

from the concerns of the 1896 Secession. Again in his catalogue preface of 1913 he wrote:

*In sculpture, therefore, we are not necessarily looking for pure form, but for pure plastic rhythm, not the construction of an object, but the construction of an object's action. We have abolished pyramidal architecture to arrive at spiral architecture ...*

*We must, therefore, raise the concept of the object to that of a plastic whole: object + environment. In this way we shall have the object extended into the rays of light which shine on to it, by uniting atmospherical blocks with elements of a more concrete reality.<sup>4</sup>*

To achieve this sculptural simultaneity, Boccioni had already recommended, in his sculpture manifesto of 1912, that sculptors henceforth exclude the nude and exalted subject matter and the use of honorific materials such as marble or bronze in favour of heterogeneous media: 'Transparent planes of glass or celluloid, strips of metal, wire, interior or exterior electric lights can indicate the planes, the tendencies, the tones and half tones of a new reality.' Paradoxically, this concept of a spirally structured, non-monumental, mixed-media object to be extended into the immediate environment was to have more influence on Russian Post-Revolutionary 'Cubo-Futurist' Constructivism than on the evolution of Futurist architecture.

Nevertheless, Boccioni's sculpture manifesto of 1912 and Marinetti's *La Splendeur Géométrique et Mécanique (Geometric and Mechanical Splendour and the Numerical Sensibility)* of 1914 jointly gave the intellectual and aesthetic frame of reference within which a Futurist architecture could be postulated. Marinetti wrote: 'Nothing in the world is more beautiful than a great humming power-station, holding back the hydraulic pressures of a whole mountain range, and the electric power for a whole

landscape, synthesized in control panels bristling with levers and gleaming commutators.' This pristine vision of mechanical splendour was fittingly paralleled by the young Italian architect Antonio Sant'Elia's power-station designs of the same date.

Prior to 1912 Sant'Elia was still relatively isolated from the Futurists, and involved with the Italian Secessionist movement. This so-called 'Stile Floreale' was to enjoy an extensive, if brief, national popularity after the resounding success of Raimondo D'Aronco's flamboyant pavilion for the Exhibition of Decorative Arts held in Turin in 1902.

Thereafter, in Udine, D'Aronco continued to follow the lead of Olbrich, while the Milanese architects of the 'Stile Floreale' attempted to integrate their taste for the Neo-Baroque with motifs drawn from the *Wagnerschule*. In Milan this impulse found its most powerful synthesis in the works of Giuseppe Sommaruga, who seems to have exercised a particular influence over Sant'Elia's early development. Many of the characteristic elements of Sant'Elia's *dynamismo architettonico* were surely anticipated in Sommaruga's hotel at Campo de' Fiori, while Sommaruga's Faccanoni Mausoleum [65], built at Sarnico in 1907, seems to have served as the point of departure for Sant'Elia's design of 1912 for a cemetery at Monza [66].

**65** Sommaruga, Faccanoni Mausoleum, Sarnico, 1907.

**66** Sant'Elia, design for Monza Cemetery, 1912.

In 1905, at the age of seventeen, Sant'Elia obtained his diploma as a master builder from a technical school in Como. He then moved to Milan and started to work, first for the Villoresi Canal Company and later for the city of Milan. In 1911 he took architectural courses at the Brera Academy,

and in the same year he designed a small villa above Como for the industrialist Romeo Longatti. By 1912 he was back in Milan, working on a competition entry for the central station. In the same year he collaborated with his friends Ugo Nebbia, Mario Chiattone and others to form the group Nuove Tendenze. At the first exhibition of this group, in 1914, Sant'Elia showed his drawings for the Futurist 'Città Nuova'. At what date he had first made contact with Marinetti and the Futurist circle remains unclear, but he was fully under their influence by the time of writing, with the help of Nebbia, his *Messaggio*, as a preface to the 1914 exhibition.

The *Messaggio*, signed only by Sant'Elia, finally specifies – without once using the word 'Futurist' – the rigorous form that architecture should adopt in the future. The most specific parts of this text, now categorically anti-Secessionalist, read:

*The problem of modern architecture is not a problem of rearranging its lines; not a question of finding new mouldings, new architraves for doors and windows; nor of replacing columns, pilasters and corbels with caryatids, hornets and frogs, etc. ... but to raise the new built structure on a sane plane, gleaned every benefit of science and technology ... establishing new forms, new lines, new reasons for existence solely out of the special conditions of modern living and its projection as aesthetic value in our sensibilities.<sup>5</sup>*

The text then turns to contemplate the invigorating large-scale landscape of a new industrial world, paraphrasing the spirit if not the letter of Marinetti's diatribe against Ruskin and the whole of the English Arts and Crafts movement, delivered at the Lyceum Club in London in 1912. Against the passéism of Morris's 'Nowhere', Marinetti asserted that

*cosmopolitan travel, the spirit of democracy and the decay of religions had made completely useless the vast permanent and ornate buildings that once used to express royal authority, theocracy and mysticism ... the right to strike, equality before the law, the authority of numbers, the usurping power of the mob, the speed of international communications and the habits of hygiene and comfort demand instead large well-ventilated apartment houses, railways of absolute reliability, tunnels, iron bridges, vast high-speed liners, hillside villas open to the breeze and view, immense meeting halls and bathrooms designed for the rapid daily care of the body.<sup>6</sup>*

In short, he correctly recognized the implacable advent of a new cultural milieu dedicated to a large-scale and highly mobile society: a society to be equipped in detail according to Sant'Elia's *Messaggio*, in which he wrote:

*Calculations of the resistance of materials, the use of reinforced concrete and iron exclude 'Architecture' as understood in the Classical or traditional sense. Modern structural materials and our scientific concepts absolutely do not lend themselves to the disciplines of historical styles ... We no longer feel ourselves to be the men of the cathedrals and ancient moot halls, but men of the Grand Hotels, railway stations, giant roads, colossal harbours, covered markets, glittering arcades, reconstruction areas and salutary slum clearances. We must invent and rebuild ex novo our modern city like an immense and tumultuous shipyard, active, mobile and everywhere dynamic, and the modern building like a gigantic machine. Lifts must no longer hide away like solitary worms in the stairwells, but the stairs - now useless - must be abolished, and the lifts must swarm up the façades like serpents of glass and iron. The house of cement, iron and glass, without carved or painted ornament, rich only in the inherent beauty of its*

*lines and modelling, extraordinarily brutish in its mechanical simplicity, as big as need dictates, and not merely as zoning rules permit, must rise from the brink of a tumultuous abyss: the street which, itself, will no longer lie like a doormat at the level of the thresholds but plunge storeys deep into the earth, gathering up the traffic of the metropolis connected for necessary transfers to metal cat-walks and high-speed conveyor belts.*<sup>7</sup>

This prescription, specifying the form of Sant'Elia's *casa a gradinata* designs of 1914 [67], is of such a dynamic nature as to suggest precedents other than Henri Sauvage's set-back apartment block completed in Rue Vavin, Paris, in 1912. The subtitle of the Nuove Tendenze exhibition, 'Milano l'anno due mille', suggests the precedent of Antoine Moilin's book *Paris, l'an 2000* (1896), a work which Marinetti would have known through his contact with the Parisian poet Gustave Kahn.

**67** Sant'Elia, *casa a gradinata* for the Città Nuova, 1914.

Sant'Elia's sketches for the Città Nuova are not entirely consistent with his precepts. Where the *Messaggio* took a stand against all commemorative architecture and, in consequence, against all static and pyramidal forms, Sant'Elia's drawings are replete with such monumental images. In retrospect it seems but a step from Sommaruga's Faccanoni Mausoleum to the soaring, massive and often symmetrical powerhouses and tall blocks that rise like mirages out of the scenographic landscape of the Città Nuova. In this context, it is fitting and ironic that Sant'Elia's memory should have been honoured in a monument to the dead of the First World War, which was erected on the shores of Lake Como in 1933 – to a design by Giuseppe Terragni based on one of Sant'Elia's sketches.

The official *Manifesto dell'architettura futurista* (*Manifesto of Futurist Architecture*), published in July 1914, seems to have had as its prime goal the public recognition of Sant'Elia as a Futurist. It amounted to a new version of the *Messaggio*, edited, to all appearances, by Marinetti and signed by Sant'Elia alone. Apart from the interjection of the word 'Futurist' on every possible occasion, this text added little to the original save a number of militant propositions at the end, including the contradictory opposition to any kind of permanence, the assertion that 'our houses will last less time than we do and that every generation will have to make its own'.

By now Sant'Elia was fully involved in Futurism and in 1915 he signed, with Boccioni, Marinetti, Piatti and Russolo, the Futurist proto-Fascist political manifesto, *Italian Pride*. In July of that year he enlisted with other Futurists in the Lombardy Volunteer Cyclist Battalion and entered on a military career that ended with his front-line death in 1916. With the loss of Boccioni two months before (in a riding accident) the generative period of Futurism was brought to an abrupt end, ironically divested of its major talent in part by the first industrialized war. Out of this Futurist holocaust, Marinetti survived to remind his fellow Futurists, such as Balla, Carrà, Severini and Russolo, of their duty to lead the post-war generation towards the final fulfilment of Italian nationalism in the triumph of a Fascist state.

Typical of the confusion of Futurism in its decline, which undoubtedly paralleled Mussolini's rapprochement with the Vatican, was Marinetti's 1931 *Manifesto of Sacred Futurist Art*, where he urged that church candlelight 'must be replaced by powerful electric bulbs of brilliant white and blue light', that 'for the representations of Hell, Futurist painters must depend on their memories of shell-scarred battlefields', and that 'only Futurist artists ... can give form to interpenetrated space-time, to the super-rational mysteries of the Catholic dogmas'.

That this absurd bravado had been anticipated in the initial manifesto (with its violence reminiscent of Georges Sorel) does not entirely account for the state of decadence to which Futurist ‘culture’ had descended by 1931. After 1919 it was the revolutionary Russian Constructivists, and not the Italians, who took up the early militant modernism of Marinetti, Boccioni and Sant’Elia. Some time was to elapse before the Italian Rationalist movement would begin to respond to the images of the Città Nuova, and even then it would do so only in a climate that was concerned for the integration of modern values into the Classical traditions of Italian architecture.

# Chapter 8

## Adolf Loos and the Crisis of Culture 1896-1931

*May I lead you to the shores of a mountain lake? The sky is blue, the water green and everything is profoundly peaceful. Mountains and clouds are reflected in the lake, and so are houses, farmyards, court-yards and chapels. They do not seem man made, but more like the product of God's workshop, like the mountains and trees, the clouds and the blue sky. And everything breathes beauty and tranquillity.*

*Ah, what is that? A false note in this harmony. Like an unwelcome scream. In the centre, beneath the peasants' homes which were created not by them, but by God, stands a villa. Is it the product of a good or a bad architect? I do not know. I only know that peace, tranquillity and beauty are no more. ...*

*And I ask yet again: Why does the architect both good and bad violate the lake? Like almost every town dweller, the architect possesses no culture. He does not have the security of the peasant to whom this culture is innate. The town dweller is an upstart.*

*I call culture, that balance of inner and outer man, which alone can guarantee reasonable thought and action.*

Adolf Loos  
*Architektur, 1910*<sup>1</sup>

Adolf Loos, the son of a stonemason, was born in Brno, Moravia, in 1870. Following a technical education at the

Royal and Imperial State Technical College and further studies at the Dresden College of Technology, he left for the United States in 1893 – apparently to visit the World's Columbian Exposition in Chicago. Although he seems not to have found work as an architect during his three-year stay in the States, he nonetheless became familiar with the pioneer achievements of the Chicago School and with the theoretical writings of Louis Sullivan, in particular with Sullivan's essay *Ornament in Architecture* (1892), which patently influenced his own essay *Ornament und Verbrechen (Ornament and Crime)*, published sixteen years later.

After his return to Vienna in 1896, Loos began his career by designing interiors and writing articles for the liberal *Neue Freie Presse*, on a wide variety of topics ranging from clothes to architecture and from manners to music. In 1908 he published *Ornament and Crime*, in which he elaborated the nature of his quarrel with the artists of the Viennese Secession, an argument that he had already enjoined by 1900 in the form of an anti-*Gesamtkunstwerk* fable, 'The Story of a Poor Rich Man'. There Loos portrayed the fate of a wealthy businessman who had commissioned a Secessionist architect to design a 'total' house for him, including not only the furnishings but also the clothes of the occupants:

*Once it happened that he was celebrating his birthday. His wife and children had given him many presents. He liked their choice immensely and enjoyed it all thoroughly. But soon the architect arrived to set things right, and to take all the decisions in difficult questions. He entered the room. The master greeted him with pleasure, for he had much on his mind. But the architect did not see the man's joy. He had discovered something quite different and grew pale. 'What kind of slippers are these you've got on?' he ejaculated painfully. The master of the house looked at his embroidered slippers. Then he breathed in relief. This time he felt quite*

*guiltless. The slippers had been made to the architect's original designs. So he answered in a superior way. 'But Mr Architect! Have you already forgotten? You yourself designed them!' 'Of course,' thundered the architect, 'but for the bedroom! They completely disrupt the mood here with these two impossible spots of colour. Can't you see that?'<sup>2</sup>*

The Belgian artist Henry van de Velde is as much the unidentified cultural martinet of this sardonic piece as Joseph Maria Olbrich. For it was he and not Olbrich who designed special clothes for his wife to harmonize with the lines of their house, built at Uccle in 1895 (see p. 105). Nonetheless, Olbrich remained the essential focus of Loos's anti-Secessionist attacks throughout the next decade: he was even cited by name in *Ornament and Crime* as the progenitor of illegitimate ornament. 'Where will Olbrich's work be in ten years' time?' wrote Loos. 'Modern ornament has no forebears and no descendants, no past and no future. It is joyfully welcomed by uncultivated people to whom the true greatness of our time is a closed book, and after a short time is rejected.'

Loos's ultimate argument against ornament was not only that it was wasteful in labour and material, but that it invariably entailed a punitive form of craft slavery that could be justified only for those to whom the highest achievements of bourgeois culture were inaccessible – for those craftsmen who could find their aesthetic fulfilment only in the spontaneous creation of ornament. Loos justified the ornamentation of his bespoke footwear – which he would have preferred to be plain – in the following terms: 'We go to Beethoven or *Tristan* after the cares of the day. My shoemaker can't. I must not take away his joy as I have nothing to replace it with. But whoever goes to the Ninth Symphony and then sits down to design a wallpaper is either a rogue or a degenerate.'

Such challenging ethical and aesthetic pronouncements isolated Loos not only from the Secession and his conservative contemporaries, but also from his true successors, those latter-day ‘purists’ who even now have yet to comprehend fully the profundity of his insights. By the time of his critical essay *Architektur* of 1910, Loos had already begun to sense the full force of a modern predicament, which persists to this day. Given, as Loos argued, that the architect from the city was uprooted by definition and hence categorically alienated from the innate agrarian (or alpine) vernacular of his distant forebears, then it followed that he could not compensate for this loss by pretending to inherit the aristocratic culture of Western Classicism. For the urban bourgeoisie – whence he invariably came and whom he naturally served – were, whatever else they might be, patently *not* aristocrats. That much was already clear to Loos in 1898 when he wrote in *Die potemkinsche Stadt*, his satire on the Ringstrasse:

*Whenever I stroll along the Ring, I always feel as if a modern Potemkin had wanted to make somebody believe he had been transported into a city of aristocrats. All that the Italian Renaissance could produce in noble mansions had been plundered in order to conjure up for her Highness the common people a New Vienna which only people in a position to own an entire palace from the cellars to the chimney-pots could inhabit. ... Viennese landlords were delighted with the idea of owning a mansion and the tenants were equally pleased to be able to live in one.*<sup>3</sup>

Loos’s solution to this dilemma, as posited in *Architektur*, was to argue that most modern building tasks were appropriate vehicles for *building* rather than architecture: ‘Only a very small part of architecture belongs to art: the tomb and the monument. Everything else, everything that

serves a purpose, should be excluded from the realms of art.'

At the same time Loos considered that all culture depended on a certain continuity with the past, above all, on a consensus as to a typification. He could not accept the romantic notion of the highly gifted individual transcending the historical limits of his own epoch. Instead of self-conscious ornamental design, Loos favoured understated dress, anonymous furniture and efficient plumbing of the Anglo-Saxon middle class. Naturally in this respect he had America in mind rather than England. In this he anticipated Le Corbusier's notion of the *objet-type*, the refined, normative object, spontaneously produced by the craft-based industries of the society. To this end, objects of Anglo-Saxon affinity, such as clothing, sportswear and personal accessories, appeared as advertisements in Loos's short-lived periodical *Das Andere* ('The Other') of 1903 [69], which was significantly subtitled 'A Journal for the Introduction of Western Civilization into Austria'.

Despite all his Anglophilia, the 'vernacular' of the English Arts and Crafts movement (as documented in Hermann Muthesius's book *Das Englische Haus* of 1904) presented Loos with a problem: where was one to draw a line between such architecture, however sensible and convenient, and the self-conscious, craft-based, hermetic fantasies of the Secession? Since for Loos the last Western architect of stature had been Schinkel, his self-imposed predicament seems to have been how to combine the informal comfort of the Anglo-Saxon interior with the asperities of Classical form.

Until 1910, Loos's practice was largely confined to the conversion of existing interiors. His best works of this period were the luxury shops that he designed in Vienna around the turn of the century, and his famous Kärntner or American Bar of 1907. Externally these works, designed for the purveyors of Anglocentric civilization, were finished in

elegant, unobtrusive materials, while internally the style varied from the Japanese ambience of his first interior for Goldman & Salatsch [68] in the Graben (1898) to the classicized club-room elegance of the Kärntner Bar.

**68** A 1911 cartoonist's comment on Loos's Goldman and Salatsch façade (1910–11). The original caption read: 'Brooding about art, the most modern man walks through the streets. Suddenly he stops transfixed. He has found that for which he has searched so long.'

**69** Cover of *Das Andere*, edited by Loos, Vienna, 1903.

In Loos's domestic interiors the expression was even more eclectic, reflecting the fundamental split in his work between a comfortable rusticity on the one hand and a severe monumentality on the other. He invariably panelled his walls up to dado or picture-rail level in polished stone or wood; above this they were either left blank or topped with an ornamental pattern or Classical frieze in plaster. (In *Ornament and Crime*, Loos had admitted the eclectic appropriation of archaeological ornament, while categorically excluding the invention of modern decoration.) Ceilings, where public, were often blank; where private, they were coffered in wood or metal. On other occasions, particularly in dining spaces, they might be relieved by Richardsonian timber beams, which were often of grotesque proportions, as in the Steiner House in Vienna of 1910 [70, 71]. Floors were generally of stone or parquet and always covered with oriental carpets, while fireplace surrounds, frequently of brick, stood out in textured contrast to the highlights invariably provided by vitrines, mirrors, lamps and sundry metalware. As far as possible furniture was always built in. Otherwise it was selected by the client, although where it was movable and the building public, Loos restricted himself to standard Thonet bentwood furniture, as

in his somewhat Wagner-like Café Museum of 1899. In his essay on the abolition of furniture he wrote: ‘The walls of a building belong to the architect. There he rules at will. And as with walls so with any furniture that is not movable.’ Of movable pieces he wrote: ‘The wrought-iron bedstead, table and chairs, hassocks and occasional chairs, desks and smoking stands – all items made by our craftsmen in the modern idiom (never by architects); everyone may buy these for himself according to his own taste and inclination.’ This categorical anti-*Gesamtkunstwerk* attitude was complemented by Loos’s passion for rich materials of which he wrote in the vein of Semper: ‘Rich material and good workmanship should not only be considered as making up for lack of decoration, but as far surpassing it in sumptuousness.’

**70, 71** Loos, Steiner House, Vienna, 1910. *Below*, dining room.

The Steiner House initiated a series of houses in which Loos gradually evolved his conception of the *Raumplan* or ‘plan of volumes’, a complex system of internal organization that culminated in the split-level houses realized towards the end of his life: the Moller House in Vienna and the Müller House near Prague. By the time of the Steiner House, Loos had already arrived at a highly abstract external idiom – his white unadorned prism, which anticipated by at least eight years the so-called ‘International Style’. He began to elaborate his *Raumplan* concept in his Rufer House, Vienna (1912), where, in contrast to his later houses, the openings are quite freely disposed, following the free disposition of the internal volumes – an elevational counterpoint that anticipated the canonical works of De Stijl.

Loos’s *Raumplan* reached its apotheosis in his last domestic works, the Moller and Müller houses of 1928 and 1930. As anticipated in the open stair hall of the Rufer

House, both these works are organized about displacements in the respective levels of their principal floors, elisions that serve not only to create spatial movement but also to differentiate one living area from the next. The typically irregular Gothic Revival plan, documented in Muthesius's *Das Englische Haus*, clearly inspired Loos's wholly unprecedented development of the *Raumplan*, yet with his Classical predilection for cubic form he could not accept the picturesque massing that was its natural consequence. From this, no doubt, came the tortuous manipulation of the available volume of the prism as though it were just so much raw material from which to create a dynamic composition in section.

Such plastic intentions were basically incompatible with an architecture of consistent distinction between structural and non-structural elements, and while Loos strove to maintain such distinctions in his public work, at a domestic level he gave primacy to the sensation of space, rather than to the revelation of architectonic structure. The principles of Viollet-le-Duc were in any event alien to him, since he deliberately contorted plans for the sake of providing an architectural promenade of sensual significance as Le Corbusier was to do. In almost all his domestic work structural junctions are invariably masked by revetment, either with the aim of hiding unresolved conditions or out of a desire to provide an appropriate level of decorum.

During his tenure as chief architect to the Housing Department of Vienna, from 1920 to 1922, in the austere aftermath of the war, Loos applied his as yet undeveloped *Raumplan* to the problem of mass housing. The result was a number of remarkable housing studies, in which his preferred form, the cube, became transformed into a stepped terrace section. In 1920 he designed a brilliant and economical housing scheme, known as the Heuberg Estate [72]. Terrace houses were integrated with greenhouses and allotments, in which the occupants were expected to grow

their own food – a typical urban survival strategy of the inflationary post-war period, which became adopted as general policy in many German housing settlements during the 1920s.

**72** Loos, Heuberg Estate, Vienna, 1920, showing conservatories and allotments.

It is one of the paradoxes of Loos's career that he, the bourgeois architect and man of taste, should create his most sensitive larger projects in the service of the underprivileged. His disillusioned resignation as housing architect in 1922 and his subsequent migration to Paris, at the invitation of the Dadaist poet Tristan Tzara – for whom he was to design a house in 1926 – restored him to the cosmopolitan circles of the high bourgeoisie. There he became part of the fashionable world that surrounded the dancer Josephine Baker, for whom he designed a rather ostentatious villa in 1928. Save for Tzara and his old Viennese client, the internationally famous tailor Knižé, for whom he had first designed a store in Vienna in 1909, none of his Parisian patrons had either the resources or the faith to realize any of the large-scale projects that he designed during his expatriate years. In 1928 he returned to Vienna, five years before his death, his career virtually at an end.

In the final analysis Loos's significance as a pioneer depended not only on his extraordinary insights as a critic of modern culture, but also on his formulation of the *Raumplan* as an architectural strategy for transcending the contradictory cultural legacy of bourgeois society which, having deprived itself of the vernacular, could not claim in exchange the culture of Classicism. No one was better prepared to receive this hyperconscious sensibility than the post-war Parisian avant garde, in particular the circle editing *L'Esprit Nouveau*, namely the proto-Dadaist poet Paul Dermée and the Purist painters Amédée Ozenfant and

Charles-Edouard Jeanneret (Le Corbusier), who in 1920 reprinted the 1913 French translation of *Ornament and Crime*. And while (as Reyner Banham has observed) the roots of Purism lay in the abstract classicizing tendencies of Parisian culture, notwithstanding the ‘ready-made’ sensibility of Marcel Duchamp, there is little reason to doubt that the influence of Loos was decisive in refining the typological programme of Purism: that impulse to synthesize, at every conceivable scale, the ‘type-objects’ of the modern world.

Above all, Loos must now be seen as the first to postulate the problem that Le Corbusier was eventually to resolve with his full development of the free plan. The typological issue posited by Loos was how to combine the propriety of Platonic mass with the convenience of irregular volume. This proposition was never more lyrically stated than in his 1923 project for a villa on the Lido in Venice [[73](#), [74](#)]; and this house was destined to become the type-form for Le Corbusier’s canonical Purist villa, his villa at Garches of 1927.

**73, 74** Loos, villa project for the Venice Lido, 1923. *Above*, transverse section and plan of first floor; *below*, model.

## Chapter 9

# **Henry van de Velde and the Abstraction of Empathy 1895-1914**

*I tell you that the time will come, when the furnishing of a prison cell by Professor Van de Velde will be considered an aggravation of the sentence.*

Adolf Loos

*Trotzdem*, 1931<sup>1</sup>

The Belgian designer and theorist Henry van de Velde set out on what he called the *voie sacrée* of architecture in 1894, at the age of thirty-one, when after ten years as a Neo-Impressionist painter he published his famous essay, 'Déblaiement d'art', in the Belgian Nietzschean journal *La Société nouvelle*. This essay, which called for the redeployment of art in the service of the society, was clearly influenced by those Pre-Raphaelite precepts which Van de Velde would have learned through his association with the avant-garde group, Les XX. Since its inception in 1889, this Belgian group of artists had had strong ties with England and in particular with William Morris's protégé Walter Crane. Under Crane's influence, the group turned from its fine art preoccupations to a concern for the design of the environment as a whole. Reorganized under the leadership of Octave Maus, Les XX became the Salon de la Libre Esthétique, whose first exhibition in 1894 featured the work

of the Belgian cabinetmaker Gustave Serrurier-Bovy. Serrurier-Bovy brought back to Belgium an Arts and Crafts sensibility that he had acquired in England during the second half of the 1880s. In 1894 he displayed the exceptional qualities of his unpainted furniture in a suite of strikingly sculptural pieces that recalled that Anglo-Japanese style, developed some twenty years before by Edward Godwin and Christopher Dresser.

Van de Velde made his débüt as an architect and as a designer in 1895, when he designed and built a house for himself at Uccle near Brussels. This without question was intended to demonstrate the ultimate synthesis of all the arts, for apart from integrating the house with all its furnishings, including the cutlery, Van de Velde attempted to consummate the whole *Gesamtkunstwerk* through the flowing forms of the dresses that he designed for his wife. The fall, cut and decoration of these clothes [75] already exhibited that energetic serpentine line that was to be Van de Velde's prime contribution to the vocabulary that he inherited from Serrurier-Bovy. Derived from Gauguin, it was used as an expressive device for imparting a more vigorous profile to the formal legacy of the Arts and Crafts.

**75** Van de Velde's wife, Maria Sèthe, wearing a dress to his design, c. 1898.

For Van de Velde the ameliorative thrust of the English Arts and Crafts movement was complemented by the more anarchic but equally reformist visions of Tolstoy and Kropotkin. While he could share with the Pre-Raphaelites their intense antipathy to all architecture after the Gothic, he could not accept their conscious drive towards the medievalization of the present. As a socialist, he was more influenced by the young militants of the Belgian Socialist Party, with whom he had been in contact since the mid-1880s: Emile Vandervelde, the socialist client of Horta's

Maison du Peuple, and the poet-critic Emile Verhaeren, whose critical study of urbanization, *Les Villes tentaculaires*, had been published in 1895. Yet in spite of these radical affiliations, Van de Velde still believed in the reform of society through the design of the environment; that is, he still adhered to a sensationalist faith in the primacy of physical form over programmatic content. For him, as for the whole of the Arts and Crafts tradition, the single family house was the prime social vehicle through which the values of the society could be gradually transformed. ‘Ugliness’, he held, ‘corrupts not only the eyes but also the heart and mind.’ In his fight against ugliness, Van de Velde concentrated on the design of every aspect of the domestic environment [76, 77]. He was ill-equipped, either by temperament or training, to think at an urban scale: in his layout for the Hohenhagen garden colony, built at Hagen in Germany for Karl Ernst Osthaus in 1906, he singularly failed to demonstrate how the individual house might be aggregated into larger and more significant social units. And he was no more successful than William Morris in reconciling the contradictions between his socialist commitments and his patronage by the upper middle class.

**76** Van de Velde’s furniture atelier, Brussels, c. 1897. He is bending over a drawing on the right.

**77** Van de Velde, desk for Meier-Graefe, 1896, and Ferdinand Hodler’s Symbolist painting *Day*, c. 1896.

From the mid-1890s on, Van de Velde was profoundly influenced by the aesthetic theories of the Viennese art historian Alois Riegl and the Munich psychologist Theodor Lipps. Where the one stressed the creative primacy of the individual *Kunstwollen* or ‘will to form’, the other postulated

*Einfühlung* or ‘empathy’ as the quasi-mystical projection of the creative ego into the art object. These complementary ideas had already been given a more specific context in Nietzsche’s essay of 1871, *Die Geburt der Tragödie aus dem Geiste der Musik*, wherein the Apollonian and the Dionysian were seen as the irreducible duality of Hellenic culture, the former aspiring to the typical and freedom within the law and the latter to superabundance and pantheistic expression. These loosely related ideas, which vaguely informed Van de Velde’s work after 1896, found a certain synthesis in Wilhelm Worringer’s *Abstraktion und Einfühlung* (*Abstraction and Empathy*), published in 1908. Van de Velde studied Worringer’s text assiduously and found that his own work seemed to combine in a single entity the two antagonistic aspects of Worringer’s cultural model – on the one hand the impulse towards the *empathetic* expression of vital psychic states, and on the other the tendency towards achieving transcendence through *abstraction*.

While Van de Velde strove for an empathetic and vital culture of form, he was nonetheless aware of the innate tendency of all architecture towards abstraction. In this context, his lifelong respect for the Gothic may be regarded as a nostalgia for an architecture in which the immediate vitality of the form-force would come to be transcended by the sublime structural abstraction of the whole. The embodiment of such a force was the mainspring of his own aesthetic, from its initial appearance in the so-called ‘Yachting Style’ suite of furniture that he designed in 1895 for Samuel Bing’s Maison de l’Art Nouveau in Paris to his theoretical formulation in 1902, in Weimar, of the principles of what he called ‘structurally linear ornament’.

Van de Velde maintained a subtle distinction between *ornamentation* and *ornament*, arguing that the former, by virtue of being applied, was unrelated to its object, while the latter, by virtue of being functionally (i.e. structurally) determined, was integrated into it. This definition of

functional ornament was inseparable from the importance that Van de Velde attached to the gestural ‘crafted’ line, as the necessary anthropomorphic trace of human creation. ‘The line’, he wrote in 1902, ‘carries the force and the energy of that which has traced it.’ For him the ‘quasi-erotic’ impluses governing the course of a line were to be regarded as a literature without an alphabet.

The powerful anti-decorative tendency of this purist view of culture was reinforced in 1903 when Van de Velde returned from a tour of Greece and the Middle East, overwhelmed by the power and the purity of Mycenaean and Assyrian form. From this point on he tried to avoid both the gestural fantasy of the Secession and the rationality of Classicism. He attempted to create ‘pure’ organic form, such form as could be found, in his opinion, only in the cradle of civilization or in the monumental cryptic gestures of Neolithic man. This no doubt accounts for the telluric forms of the houses that he built in Chemnitz and in Hagen between 1903 and 1906. Yet despite the curious megalithic quality of these works, there remained in all of Van de Velde’s work after 1903 a trace of Classicism that was not entirely mediated by his feeling for the archaic. This is most evident in the domestic objects that he designed between 1903 and 1915, pieces that seem to reflect his passionate reaction to the classic, not to say ineffable, qualities that he found in the Parthenon:

*On the Acropolis the living standing columns teach us that they do not exist, that they do not carry load, or rather that they are interspaced according to and end very different from that for which they were apparently erected. Even where they are still joined by an entablature, they proclaim in evidence that the columns around the Parthenon do not exist, but that between them gigantic perfect vases are poised, containing life, space and sun, sea and mountains, night and the stars. The entasis of the columns is*

*transformed until the resultant space between one and the other has attained a perfect, eternal form.*<sup>2</sup>

Van de Velde's Apollonian conversion, so to speak, coincided with the climax of his career at Weimar. After having been consultant to the craft industries of the Grand Duchy of Saxe-Weimar since 1901, he was nominated in 1904 to serve as the professor to the newly created Grand Ducal School of Arts and Crafts. This appointment gave him the commission to design new premises for both the school and the existing Academy of Fine Art – the nucleus that fourteen years later would become the Weimar Bauhaus. Prior to the opening of these buildings in 1908, Van de Velde continued to lecture in Weimar and to give his *Kunstseminar* for the cultural instruction of trained artisans. Yet this most triumphant moment of his entire career was overshadowed by profound inner doubts, in which he began to question the artist's prerogative to determine the form of objects. In 1905 he wrote: 'At what point do I have this right to impose on the world a taste and a wish which is so personal. Suddenly I no longer see the ties between my ideal and the world.'

After Gottfried Semper and Peter Behrens, Van de Velde had always sought to strengthen such socio-cultural ties through the agency of the theatre, conceiving its union of actors and spectators as the highest form of social and spiritual life. Directly influenced by scenographers such as Max Reinhardt and Gordon Craig, he devoted himself to the development of the tripartite stage, first formulated in a project for the Dumont Theatre in Weimar in 1904. He returned to this theme in 1911 in his compromise design for the Théâtre des Champs-Elysées, Paris (realized by Auguste Perret in a modified form in 1913), and again in his Cologne Werkbund Exhibition Theatre of 1914 [78]. The highly expressive but short-lived Werkbund Theatre was the apotheosis of all his pre-war work. Erich Mendelsohn wrote

of it: ‘Only Van de Velde, with his theatre, is really searching for new form. Concrete used in the Art Nouveau style, but strong in conception and expression.’ Its surging masses demonstrated Van de Velde’s masterly control over form in a manner that later served as a model for the profiling of Mendelsohn’s Einstein Tower, built at Potsdam in 1919.

**78** Van de Velde, Werkbund Exhibition Theatre, Cologne, 1914.

The much admired Werkbund Theatre was to be the last formulation of Van de Velde’s ‘form-force’ aesthetic. Fusing actor with audience and auditorium with landscape, as in the open-air arenas of Neolithic man, it appeared as a unique empathetic expression. Such expression could of course find no place in the modest modular prefabricated house that Van de Velde built for himself after the First World War. The Werkbund dream of a world transformed by *gute Form* and industrial monopoly had proven just as vain as the reformist hopes of the socially conscious bourgeoisie whose fifty-year-old patronage of the Arts and Crafts and Art Nouveau had been brought to an abrupt end by the first industrialized war. One could no longer fantasize about a society transformed through art, industrial design and the theatre, at a time when the provision of minimum shelter was a matter of the greatest urgency.

# Chapter 10

## Tony Garnier and the Industrial City 1899-1918

*The city is imaginary: let us assume that the towns of Rive-de-Gier, St-Etienne, St-Chaumont, Chasse and Givors have conditions similar to those of this town. The site of this study is located in a region of southeast France, and regional materials have been used in its construction.*

*Determining factors in the establishment of a similar city should be the proximity of raw materials, or the existence of a natural force capable of being used for energy, or the convenience of methods of transportation. In our case the determining factor in the location of the city is the force of the tributary river that is the power source; there are also mines in the region, but they could be located further away.*

*The tributary is dammed; a hydroelectric plant distributes power, light, and heat to the factories and to the entire city. The principal factories are situated in the plain at the confluence of the river and its tributary. A mainline railroad passes between the factories and the town, which is located above the factories on a plateau. Higher still are placed the hospitals; they, as well as the city, are sheltered from cold winds, and have their terraces oriented to the south. Each of these main elements (factories, town, hospitals) is isolated so that it can expand. ...*

*Investigation of the most satisfactory programme for the material and moral needs of the individual has resulted in the creation of rules concerning road use, hygiene, and so on; the assumption is that a certain progress of social order*

*resulting in an automatic adoption of these rules already has been realized, so that it will not be necessary to enact the actual laws. Distribution of land, everything related to the distribution of water, bread, meat, milk, and medical supplies, as well as the re-utilization of refuse, will be given over to the public domain.*

Tony Garnier

Preface to *Une Cité industrielle*, 1917<sup>1</sup>

It would be hard to imagine a more concise statement of the basic economic and technical precepts for the foundation and organization of a modern city. The very lucidity of this outline – the sole theoretical statement of Garnier’s career – reflects in its tone and content the fundamentally radical nature of his life and work. Born in Lyons in 1869 and raised in a radical workers’ quarter, he remained consistently committed to the socialist cause up to his death in 1948.

Garnier’s education and the commitment of his professional career are both inseparable from the city of Lyons. The radical syndicalism and socialism that Lyons nurtured stemmed from the fact that it was one of the most progressive industrial centres in 19th-century France, with its silk and metallurgical industries well established by the time of Garnier’s birth. In addition to its favourable location in the Rhône-Saône corridor, the growth of Lyons had been stimulated soon after mid-century by one of the first main railway links in France. By the 1880s, with the electrification of its trams and local railway systems, it was well placed to become a main centre for technical and industrial innovation. Photography, cinematography, hydroelectric generation, automobile production and aviation all saw their first beginnings there between 1882 and the turn of the century. The influence of this technical milieu certainly found its reflection in Garnier’s project for a ‘Cité Industrielle’, first exhibited in 1904, a project which

demonstrated his belief that the cities of the future would have to be based on industry.

Other aspects of Lyons culture were also featured in the plans of Garnier's Cité, most notably the French regionalist movement in favour of reviving local culture, which was as a result committed to the broader political policies of federalism and decentralization. Thus Garnier included an old medieval town within the confines of his industrial city. The importance that he attached to such foundations is reflected in his location of the main railway station in close proximity to this regional centre.

The municipality of Lyons was also important, even in Garnier's youth, for its progressive approach to urbanization. Its streets had been regularized between 1853 and 1864; after 1880 – as part of a slum clearance programme – the city began to improve its water and sanitation systems; and about 1883 it began to provide a range of welfare facilities, such as schools, workers' housing, baths, hospitals and abattoirs.

Entering the Ecole des Beaux-Arts, first at Lyons in 1886 and then at Paris in 1889, Garnier came under the influence of Julien Guadet who, as Professor of Theory after 1894, taught not only the precepts of Rational Classicism but also programmatic analysis and the classification of building types. Guadet's *Eléments et théories de l'architecture* of 1902 was a programmatic updating of Durand's methods of 1805 for the rational combination of typified architectural forms, and it was this common elemental approach to design that was to inform the careers of Guadet's foremost pupils, Garnier and Auguste Perret. These two men, however, were to have very different careers, for while Garnier, after ten years in Paris, won the Prix de Rome in 1899 and spent another four years at the French Academy in the Villa Medici, Perret left the Beaux-Arts in 1897 after only three years of formal education to work for his father. Thus when the Cité Industrielle was first exhibited, in 1904,

Perret had already made his mark as an architect and a builder with his pioneer reinforced-concrete-frame apartment building in the Rue Franklin.

From the time when Garnier was first a *logiste* for the Prix de Rome in 1892, he had been immersed in the increasingly radical climate of Paris, presided over by the figure of Jean Jaurès, who became a socialist deputy in 1893. The Parisian political scene was galvanized after 1897 by the Dreyfus affair, an event which converted Emile Zola into a passionate advocate of radical reform. Out of this came Zola's first utopian socialist novel, *Fécondité*, which was serialized in 1899 in the socialist journal *L'Aurore*. Given Garnier's long-standing affiliation with the Société des Amis d'Emile Zola, it is certain that he would have read these excerpts. In any event, the early sketches for the industrial city that he made in the same year seem to reflect Zola's vision of a new socio-economic order, which the writer was to elaborate in his second utopian socialist novel, *Travail* (1901).

Against great opposition at the Villa Medici, Garnier continued to work on his city project throughout his stay. For the required 'testimony of academic study' he prepared an imaginative and equally unprecedented reconstruction of the Roman hill city of Tusculum. Tusculum and the first version of the Cité Industrielle were jointly exhibited in Paris in 1904, the year when Garnier returned in triumph to Lyons. Over the next thirty-five years he was to work exclusively in and for this city, largely at the command of the progressive mayor, Edouard Herriot, and it was in Lyons, at the beginning of his public career, that Le Corbusier first met him in 1908.

Set on a river escarpment, in a mountainous landscape that corresponded generally to that of the Lyons region, Garnier's industrial city of 35,000 inhabitants was not only a regional centre of medium size, sensitively related to its environment, but also an urban organization that

anticipated in its separate zoning the principles of the CIAM Athens Charter of 1933 [79]. It was above all a socialist city, without walls or private property, without church or barracks, without police station or law courts, a city where all the unbuilt surface was public parkland. Within the built area Garnier eventually established a varied and comprehensive housing typology, in accordance with strict standards for the provision of light, ventilation and green space. These codes and the combinational patterns they generated were inflected by a hierarchy of tree-lined streets of varying widths. At an average height of only two storeys, such an open layout yielded a low density, and Garnier supplemented a 1932 edition of his scheme with residential sectors at a higher density. Integral to the residential quarters were different categories of schools, sited to serve specific districts, while facilities for technical and professional education were located between the residential and industrial sectors.

**79** Garnier, Cité Industrielle: schematic plan, 1904–17. Below the hospitals is the administrative/cultural centre, flanked by housing.

It has recently been shown that Garnier did not arrive at the concept of his city in isolation, and that among the remarkable young *pensionnaires* who were his colleagues at the French Academy in Rome must be counted Léon Jaussely, whose Prix de Rome entry of 1903, ‘A Metropolitan Square in a Large Democratic State’, resembled in many respects the layout, content and ethos of the cultural and administrative centre of Garnier’s Cité [80], which was rendered as a ‘space of public appearance’ where a museum, a library, a theatre, a stadium and a vast public indoor swimming pool or *hydrothérapie* building are grouped around the axis of an assembly complex [81]. The prime organizing principle of this last, lozenge-shaped structure is

a peristyle of reinforced-concrete columns which enclose a cluster of union meeting rooms and a central circular 3,000-seat assembly hall, flanked on one side by an auditorium seating 1,000 and on the other by two 500-seat amphitheatres set side by side. Ostensibly dedicated to different democratic purposes, from parliamentary debate to conferences, committee work and cinematic display, the various kinds of assembly would have taken place here beneath the rationalistic image of a twenty-four-hour clock and an entablature which bore Courbet-like reliefs and was inscribed with two quotations from Zola's *Travail*. The first of these texts alluded to the Saint-Simonian programme for achieving international harmony through industrial production and communication, and the second to the ritualistic celebration of a utopian socialist harvest:

**80** Garnier, Cité Industrielle: the centre (with lozenge-shaped assembly building) and housing, 1917.

**81** Garnier, Cité Industrielle: detail of assembly building, 1904-17.

*This was the incessant production suitable for epochs of peace, rails and yet more rails, so that all frontiers might be passed over, and so that all peoples, reunited, might form a single people, on an earth entirely furrowed by routes.*

*These were the great steel ships, no longer the abominable ships of war carrying devastation and death, but ships of solidarity and fraternity, exchanging the products of continents, increasing the domestic riches of humanity ten-fold, to that point when tremendous abundance reigned throughout.*

*It was resolved that the feast would take place in the open air, near to the town, in a vast field, where the high corn sheaves stood, like the symmetrical columns of a giant*

*temple, the colour of gold under the clear sun. The colonnade stretched to infinity, to the far horizon, sheaves and yet more sheaves, telling of the inexhaustible fertility of the earth. And there it was that they sang and danced, with the good smell of the ripe corn, in the middle of the immense fertile plain, from which the labour of men, reconciled at last, obtained enough bread for the happiness of all.*<sup>2</sup>

This last passage directly evoked that Classical arcadian life and landscape that Garnier had first fully understood after his visit to Greece in 1903. Like the agora, of which it was intended to be the modern counterpart, Garnier's assembly building was depicted as being populated by shadowy figures whose latter-day Biedermeier clothing evoked an appropriately Classical atmosphere. Their houses were to be equally plain, without cornices and mouldings and in many instances planned around courtyards and drained by *impluvia*. In short, despite its use of advanced constructional methods, its adoption of reinforced-concrete construction throughout (Hennebique) and its use of large steel spans in the industrial sector, after Contamin's Galerie des Machines of 1889, the Cité Industrielle remained above all else the vision of a Mediterranean socialist arcadia.

For all that Garnier in Rome had been influenced by other important French urbanists, such as Léon Jaussely and Eugène Hénard, whose first articles on urban transformation appeared in 1903, the unique contribution of his city lay as much in the extraordinary level of detail to which it was developed as in the 'modernity' of its vision. Garnier's project not only stipulated the principles and the layout for a hypothetical industrial city; it also delineated, at many different scales, the specific substance of its urban typology, while giving at the same time precise indications as to the mode of its construction in concrete and steel. Nothing as comprehensive as this had been attempted since Claude-

Nicolas Ledoux's ideal city of Chaux of 1804. While *Une Cité industrielle* was not published until 1917, its author's contribution to contemporary urbanism was already being acknowledged by 1920, when Le Corbusier published material from the Cité folio in the Purist review *L'Esprit Nouveau*.

Despite the obvious impact of the Cité on the urbanistic thought of Le Corbusier, its overall influence was limited since, aside from Garnier's isolated works in Lyons, its basic propositions were never tested or extensively published. Unlike Ebenezer Howard's garden city model of 1898, which was realized as a developmental strategy at Letchworth Garden City in 1903, it could hardly be referred to as a proven model. These two alternatives could not in fact have been more opposed, for where Garnier's Cité was inherently expandable and graced with a certain autonomy due to its base in heavy industry, Howard's Rurisville was limited in size and economically dependent, with its base in light industry and small-scale agriculture. And where Garnier's Cité, in conjunction with Jaussely's Barcelona project of 1904, was to influence the theoretical planning models developed during the first decade of the Soviet Union, Howard's schema was to lead to the reformist proliferation of 'garden city' communities and eventually to the equally pragmatic New Town programme that emerged in England after the Second World War.

Garnier's urbanistic thought was expressed in his *Grands travaux de la ville de Lyons* of 1920, his abattoirs of 1906-32 [82], his Grande Blanche hospital of 1909-30 and his Etats-Unis quarter, designed in 1924 and built by 1935. Each of these complexes amounted to a city in miniature that reasserted through its amenities the sovereignty of the city as a civilizing force - a mission for which the Anglo-Saxon garden city had little capacity.

**82** Garnier, abattoir, La Mouche, Lyons, 1917.

# Chapter 11

## **Auguste Perret: the Evolution of Classical Rationalism 1899-1925**

*In the beginning architecture is only wooden framework. In order to overcome fire one builds in hard material. And the prestige of the wooden frame is such that one reproduces all the traits, including the heads of the nails.*

Auguste Perret

*Contribution à une théorie de l'architecture*, Paris, 1952<sup>1</sup>

In 1897, after abruptly terminating a brilliant career at the Ecole des Beaux-Arts, Auguste Perret left the academic guidance of his master Julien Guadet to work for his father. This move consolidated his previous part-time involvement in the family contracting firm. Of his works from this period, starting as early as 1890, those designed after Perret left the Beaux-Arts are the most interesting; since they set the stage for the rest of his career. Of these, two are of considerable significance: a casino at St Malo, of 1899 [83], and an apartment building in the Avenue Wagram, Paris, of 1902. Where the one was a Structural Rationalist essay in the 'national-romantic' style then being popularized in the rustic villas of Hector Guimard, the other was an eight-storey Louis-Quinze-cum-Art-Nouveau essay in dressed stone. Of the two, the latter has to be regarded as Perret's essential point of departure, since it demonstrated his

conscious return to the Classical tradition, a return that even anticipated, by a few years, the 1907 'crystallization' of the Secession Style in the work of such men as Behrens, Hoffmann and Olbrich.

**83** Perret, Casino, St Malo, 1899.

The Avenue Wagram building projected by a bay-window depth over the pavement as it ascended to its colonnaded sixth floor. This swelling stone profile was subtly complemented by a carved vine ornament which rose sinuously from the threshold to blossom forth in petrified abundance under the plinth of the sixth-floor colonnade. Attached to Symbolism, Perret had designed the masonry of this structure so as to evoke the floral imagery of the Belle Epoque. At the same time, not wishing to violate the *ordonnance* of a Parisian street, he took care to align its moulded openings with those of the Classical façades on either side. All this, however, contradicted the Structural Rationalist canon, for it was patently not the architecture of articulate structure such as had been advocated by Viollet-le-Duc. Nor was it the naturally expressive and vernacular use of structure which Perret had displayed in the Casino at St Malo.

Two books seem to have been influential in bringing Perret to adopt a trabeated concrete structure for his apartment block in the Rue Franklin of 1903: Auguste Choisy's monumental *Histoire de l'architecture* (1899) and Paul Christophe's text on the Hennebique system, *Le Béton armé et ses applications* (1902). Where the first cited Greek trabeation as the Classical precedent for such structures, the second provided a definitive technique for the fabrication and design of a reinforced-concrete frame.

Choisy, Professor of Architecture at the Ecole des Ponts et Chaussées, cultivated a deterministic view of history in

which he argued that the various styles had arisen not as the sports of fashion but as the logical consequence of developments in building technique. His preferred examples of such technically determined styles were (after Viollet-le-Duc) the Greek and the Gothic, although it was, of course, his reference to the former that made him the last influential theorist of Classical Rationalism. Choisy succeeded a long line of such Rationalists, dating back like Guadet and Labrouste to the 18th-century theorists Cordemoy and Laugier. Like most proponents of this school, Choisy saw nothing irrational in the Greek transposition of timber forms into the masonry components of the Doric order.

Perret's initial use of ferroconcrete accorded more closely with Choisy's characterization of the Gothic as an architecture of ribwork and infill. In compositional terms, the Rue Franklin block compressed the format adopted one year earlier in the Avenue Wagram. In each case street façades, divided into five bays, with end bays corbelling out over the pavement, rise five or six storeys in height and terminate in an additional 'capping' floor, before setting back. This floor in the Avenue Wagram is emphasized through an attached colonnade, while in the Rue Franklin its elemental character is stressed by the frame of two open loggias. There, however, all correspondence ends, for whereas the Wagram building is monolithic and horizontally expansive, the Rue Franklin block is articulated and vertically attenuated [84]. The articulation of its columns and the rise of its high pitched set-back roof give something of a Gothic feeling to this otherwise orthogonal structure, recalling the 17th-century work of Mansart. This was the closest that Perret was to come to the detailed prescription of Viollet-le-Duc. The reason for its hollow U-form front, so suggestive of the attenuations of the Gothic, was in fact eminently pragmatic: Perret could get more floor area by providing the regulation court at the front, rather than the rear. With equal

ingenuity, he clad the rear wall of the building with glass lenses in order not to infringe an easement.

**84** Perret, 25 bis Rue Franklin, Paris, 1903.

After 1903 Perret, like Choisy, regarded the *charpente* or structural frame as the quintessential expression of built form. The ferroconcrete frame of the Rue Franklin block was tiled in such a way as to suggest post-and-lintel construction in wood – the remainder being either windows or solid panels faced in ceramic mosaic. While the tessellated sunflowers of the latter gave the building that quality of fossilized Art Nouveau so peculiar to the end of the Belle Epoque, the frame itself, and the open planning it permitted, pointed towards Le Corbusier's later development of the free plan.

The firm of Perret Frères, consisting of Auguste and his brother Gustave, played an essential role in the development of Perret's style. In 1905 they erected a remarkable four-storey mechanical stacking garage in the Rue de Ponthieu. This was followed in 1912 by a house designed by Paul Guadet, Julien Guadet's son. Executed in reinforced concrete and rising in each instance to an attic floor or frieze capped by a projecting cornice, these works show the progressive refinement of a rational, trabeated Perret '*house-style*'. Where the former may be regarded as having anticipated the format of Perret's later ecclesiastical style, the latter must be seen as the prototypical Perret façade, a modulated format that was given its ultimate expression in his reconstruction of Le Havre after the end of the Second World War.

In 1911–13 came the tour de force of the Théâtre des Champs-Elysées, following the unhappy confrontation between Auguste Perret and Henry van de Velde. Commissioned by the theatrical director G. Astruc in 1910,

Van de Velde soon realized that on such a restricted site it was necessary to work in reinforced concrete, and he therefore hired Perret Frères as contractors. The decision was unfortunate, for Perret challenged the structural feasibility of his design, and proposed a similar scheme of his own. Within six months Perret's views had prevailed and Van de Velde had been reduced in status from collaborating architect to *architecte-consultant*.

While the plan and elevation of the Théâtre des Champs-Elysées were essentially Van de Velde's, its realization proved both Perret's mastery of detail and the technical prowess of the firm of Perret Frères. The programme required three auditoria, seating 1,250, 500 and 150 people respectively, with full ancillary space comprising stage, backstage, foyers, cloakrooms, etc., all on a site some 37 metres wide and 95 metres deep (120 by 310 feet). Perret suspended his main circular auditorium [85] within a perimeter of eight columns and four bowspring arches, both elements being integral with a continuous monolithic frame that rose from a raft foundation. The basic matrix of the skeleton was augmented by the intelligent application of cantilevers and trussed girders, so that the required volumes could be accommodated exactly within the confines of the site. Little of this dynamic structure is expressed on the exterior, which at the back and sides is generally rendered as a trabeated frame filled with brick. The main façade, however, is Classically treated, being faced with stone in a regular manner which is only tenuously related to the rich columnar subdivision of the foyer within. At the same time, the Symbolist culture of Paris, inherited from the Belle Epoque, still found a certain expression – both internally and externally – in the low reliefs and friezes of Antoine Bourdelle, and in the mural paintings of Maurice Denis. This nostalgia for a mythological antiquity found further reflection in the handrails, light fittings and furnishings designed by Perret himself.

**85** Perret, Théâtre des Champs-Elysées, Paris, 1911–13. Section of the large auditorium, with reliefs by Bourdelle.

In the decade following the inauguration of this theatre in 1913, Perret Frères were occupied with a remarkable series of utilitarian ferroconcrete structures, including dock buildings in Casablanca and various workshops in the vicinity of Paris. Then suddenly, in 1922, came Auguste Perret's first church commission, Notre-Dame du Raincy, completed in 1924. Here Perret arrived at the most pure formulation of his ferroconcrete style, almost twenty years after it first appeared in the Rue Franklin. The church was important not only for its elegant proportions and syntactic refinement but also for its formulation of the cylindrical column articulated within a non-load-bearing envelope. The precepts of Choisy were respected throughout, from the perforated, prefabricated wall screens to the fluted, tapered columns – each component reduced to its most explicit structural essence.

Immediately after Le Raincy there came two temporary structures which were the climax of Perret's early career: his art gallery, the Palais de Bois, built in 1924 of standard timber scantlings which were reused after dismantling, and his small arena theatre in the Exposition des Arts Décoratifs of 1925 [86]. Whereas the art gallery, like the Le Raincy church, was one of Perret's most articulate structures, the temporary theatre of lightweight construction was designed to simulate a heavy monolithic frame. The actual structure consisted of circular timber columns carrying a grid of steel-reinforced light-weight clinker beams. The whole was finished internally in lathe and plaster and clad externally in synthetic stone. As such it was certainly removed from the structural purity that had always been essential to the Rationalist thesis. This 'deception' was excused by the

designer on the grounds that had it been permanent he would have built it in reinforced concrete.

**86** Perret, theatre, Exposition des Arts Décoratifs, Paris, 1925.

For all its impurity, the Arts Décoratifs theatre was the most lucid and lyrical statement that Perret ever made. Eight internal free-standing columns supported a ceiling ‘ring’ beam which through ingenious transformations across its four diagonal corners supported a gridded and coffered skylight over the cruciform arena. The transverse loads of this inner structure were to be transferred to a perimeter beam, supported by a system of free-standing columns regularly spaced around the outside of the auditorium. Externally, however, the expression remained awkward and these apparently ‘redundant’ columns that articulated the blank exterior reflected Perret’s preoccupation with the creation of a new ‘national-classical’ style, an obsession that was severely to limit the development of his later work.

Apart from the lucidity of his architecture, and the extraordinary refinement attained in his built work, Perret’s significance as a theoretician lay in his aphoristic, dialectical turn of mind – in the importance that he attached to such polarities as order versus disorder, frame versus infill, permanent versus impermanent, mobile versus immobile, reason versus imagination, and so on. Comparable oppositions may be found throughout the entire corpus of Le Corbusier’s work. In the Exposition des Arts Décoratifs of 1925, however, the ways of these two figures had already begun to diverge, and not only in their respective exhibition structures, but also at the level of theory, for nothing could have been more removed from Perret’s precepts than *Les 5 points d’une architecture nouvelle* that Le Corbusier published a year later, in 1926.

# Chapter 12

## The Deutsche Werkbund 1898-1927

*Britain, the pioneer, found it more profitable to invest her surpluses abroad than to modernise her home environment and production. This meant that the élan of 20th-century industrialism did not emerge in Britain. It emerged in a newer industrial nation like Germany, which, wishing to penetrate into new overseas markets traditionally preserved by the older maritime powers, systematically studied the products of her competitors, and by typological selection and re-design helped to forge the machine aesthetic of the 20th century.*

C.M. Chipkin

'Lutyens and Imperialism', *RIBA Journal*, 1969<sup>1</sup>

With the Prussian suppression of the Saxon Revolt in 1849 – a revolt in which both Mikhail Bakunin and Richard Wagner played prominent roles – Gottfried Semper, architect and liberal revolutionary, fled from Dresden, first to Paris, and then two years later, as the result of a special commission, to London. There, on the occasion of the 1851 Exhibition, he wrote his famous essay *Wissenschaft, Industrie und Kunst* (*Science, Industry and Art*), published in German in 1852, where he examined the impact of industrialization and mass consumption on the entire field of applied art and architecture. A decade before William Morris and his associates produced their first domestic objects, Semper

crystallized his critique of industrial civilization: ‘We have artists but no actual art.’ In tough-minded opposition to the Pre-Raphaelite dream of returning to a pre-industrial era, Semper took the view that

*Unremittingly science enriches itself and life with newly discovered useful materials and natural powers that work miracles, with new methods and techniques, with new tools and machines. It is already evident that inventions no longer are, as they had been in earlier times, means for warding off want and for helping consumption; instead, want and consumption are the means to market the inventions. The order of things has been reversed.*<sup>2</sup>

Later in the same text, he analyzed the impact on design of new methods and materials:

*The hardest porphyry and granite are cut like chalk and polished like wax. Ivory is softened and pressed into forms. Rubber and gutta-percha are vulcanized and utilized in a thousand imitations of wood, metal and stone carvings, exceeding by far the natural limitations of the material they purport to represent. ... The abundance of means is the first great danger with which art has to struggle. This expression is illogical, I admit (there is no abundance of means but only inability to master them); however, it is justified in that it correctly describes the inverted state of our conditions.*<sup>3</sup>

He then went on to ask:

*Where will the depreciation of material that results from its treatment by machines, from substitutes for it from so many new inventions, lead? And where the depreciation of labour, of paintings, of fine art and furnishings, which originates from the same causes ... How will time or science bring law and order into this until now thoroughly confused state of*

*affairs? How will it prevent the general devaluation from expanding into the area of work which is executed by hand in the true old fashion, so that one may find in it more than affection, antiquarianism, superficial appearance and obstinacy?*<sup>4</sup>

In this militant and incisive manner Semper raised the prime issues of the century, and touched on a range of cultural problems which even today are far from resolved. His ideas gradually became integrated into 19th-century German cultural theory, largely through the publication of his major theoretical text, *Der Stil in den technischen und tektonischen Künsten oder praktische Ästhetik* ('Style in industrial and structural arts or practical aesthetics') of 1860–63.

His general thesis of the socio-political influence on style was misunderstood until after the intense industrial expansion that occurred in Germany during the last quarter of the century. At the Philadelphia Centennial Exhibition of 1876 German industrial and applied art products were regarded as inferior to those from England and America. Franz Reuleaux, a mechanical engineer, who by then had been Semper's colleague for ten years at the Eidgenössische Technische Hochschule in Zürich, wrote from Philadelphia in 1877 that German products were 'cheap and nasty'. 'German industry must relinquish the principles of competition in price alone' and instead use 'the intellectual power and the skill of the worker to refine the product and this to a greater degree the more it approaches art'.

For twenty years after the unification of Germany in 1870, German industry had neither the time nor the cause to heed such criticism. Under Bismarck's stable leadership it was concerned solely with the task of development and expansion. A crucial factor in this development was the founding by Emil Rathenau in 1883 of the Allgemeine Elektricitäts Gesellschaft (AEG) in Berlin. This electrical

company grew, in the space of seven years, into a vast industrial combine, with a wide range of products and interests extending all over the world.

After the resignation of Bismarck in 1890, a great change occurred in the cultural climate of Germany. Numerous critics held that improved design in both craft and industry was essential to future prosperity, and that Germany, without a cheap source of materials or a ready outlet for inexpensive goods, could only begin to compete for a share of the world market with products of exceptionally high quality. This argument was enlarged upon by the nationalist and Christian-Social Democrat Friedrich Naumann in his 1904 essay *Die Kunst im Maschinenzeitalter* ('Art in the Epoch of the Machine'). There he argued, in opposition to William Morris's Luddism, that such quality could only be economically achieved by an artistically cultivated people, orientated towards machine production.

This spur of industrialism and pan-German nationalism made the Prussian bureaucracy react against the Philistinism of Wilhelmine Germany and encourage the incipient Arts and Crafts revival of an 'intrinsic' Germanic culture. To this end, in 1896, Hermann Muthesius was sent to London as an attaché to the German Embassy, with a charge to study English architecture and design. He returned to Germany in 1904 and took up the post of privy councillor to the Prussian Board of Trade, with a special assignment to reform the national programme of education in applied art. This official *Kunstgewerbeschule* (school of arts and crafts) reform movement had been anticipated by Karl Schmidt's foundation in 1898 of the Dresdner Werkstätten für Handwerkskunst (Dresden Workshop for Manual Art) at Dresden. In 1903 the whole movement had gained considerable impetus from the appointment of Peter Behrens as principal of the Düsseldorf Kunstgewerbeschule. In 1904 Muthesius propagated his ideal model of a native craft culture in his book *Das Englische Haus*. For him the

importance of British Arts and Crafts architecture and furniture lay in its demonstration of craftsmanship and economy as the basis of good design.

Two years later, in 1906, as *Arbeitskommissar* to the third German Exhibition of Arts and Crafts in Dresden, Muthesius aligned himself with Naumann and Schmidt against the conservative and protectionist group of artists and craftsmen known as the Alliance for German Applied Arts by severely criticizing the state of applied art in Germany, while at the same time advocating the adoption of mass production. In the following year the three men founded the Deutsche Werkbund, whose initial membership comprised twelve independent artists and twelve craft firms. The individuals were Peter Behrens, Theodor Fischer, Josef Hoffmann, Wilhelm Kreis, Max Laeuger, Adelbert Niemeyer, J. M. Olbrich, Bruno Paul, Richard Riemerschmid, J. J. Scharvolgel, Paul Schultze-Naumburg and Fritz Schumacher. The firms were Peter Bruckmann & Söhne, Deutsche Werkstätten für Handwerkskunst Dresden-Hellerau und München, Eugen Diederichs, Gebrüder Klingspors, Kunstdruckerei Kunstlerbund Karlsruhe, Poeschel & Trepte, Saalecker Werkstätten, Vereinigte Werkstätten für Kunst und Handwerk München, Werkstätten für deutschen Haustrat Theophil Müller Dresden, Wiener Werkstätten, Wilhelm & Co. and Gottlob Wunderlich.

The Werkbund members dedicated themselves to the betterment of craft education and to the establishment of a centre for advancing the aims of their institution. As one might suspect from the heterogeneous nature of the founding group, the Werkbund was by no means totally committed to Muthesius's ideal of normative design for industrial production. It is significant that the site first proposed for the founding ceremony of the Werkbund was in Nuremberg - the setting of Wagner's guild opera *Die Meistersinger*.

The subsequent development of the Werkbund, particularly in its relationship to industry, is inseparable from that phase of Behrens's career which started in 1907 with his appointment as architect and designer to AEG, for whom he was to evolve a house style ranging from graphics to product design and industrial plant [87]. He brought to this challenging task his innate graphic ability and his experience as a precocious Jugendstil designer during his period at the Darmstadt colony in 1899–1903. His Darmstadt style was to be transformed under the influence of the Beuronic monastic school of geometrical proportion, as then practised by the Dutch architect J.L.M. Lauweriks, who joined Behrens in Düsseldorf when the latter became principal of the applied arts school there in 1903.

**87** Behrens, poster for AEG bulbs, before 1910.

Behrens's 'empathetic' manner, his so-called 'Zarathustrastil', was epitomized in his Vorhalle for the Turin International Exhibition of 1902. Here energetic sinuous line and expressive arcuated form were combined in an attempt to evoke the Nietzschean 'will to form'. This rhetoric gave way, under the influence of Lauweriks, to an airless atectonic style, first manifest in the pavilions that Behrens built at Oldenburg in 1905. This Neo-Quattrocento-Beuronic manner was elaborated by Behrens in his design for a crematorium built at Hagen in 1906 and adapted, with Neo-Classical overtones, to the pavilion he designed for AEG at the Berlin shipbuilding exhibition of 1908.

On joining AEG, Behrens was confronted with the brute fact of industrial power. In exchange for his youthful visions of revitalizing German cultural life through an elaborately staged mystic ritual, he had to accept industrialization as the manifest destiny of the German nation, or, as he conceived of it, as the composite issue of *Zeitgeist* and

*Volksgeist*, to which it was his duty as an artist to give form. Thus the Turbine Factory that he built for AEG in 1909 was a deliberate reification of industry as the one vital rhythm of modern life [88, 89]. Far from being a straightforward design in iron and glass (such as the 19th-century railway shed), Behrens's Turbine Factory was a conscious work of art, a temple to industrial power. While accepting the ascendancy of science and industry with pessimistic resignation, Behrens sought to bring the factory under the rubric of the farm – to restore to factory production that sense of common purpose innate in agriculture, a feeling for which the newly urbanized semi-skilled labour of Berlin would supposedly still have a certain nostalgia. How else should one account for the faceted gable roof of the Turbine Hall or for the Sittesque farmyard layout of the AEG Brunnenstrasse complex of 1910? On joining AEG, Behrens had modified his Oldenburg manner, retaining its formal strength but dispensing with its rigid geometry. Thus the light steel frame of the street façade of the Turbine Factory is terminated at the ends by solid battered corner elements whose surfaces are rendered in such a way as to deny any capacity for sustaining load. This atectonic formula of flanking light trabeated frames with massive corners characterizes virtually all the industrial structures that Behrens designed for AEG. Where the skeletal frame was not a functional prerequisite, as in his Neo-Classical German Embassy in St Petersburg of 1912, this Schinkelesque corner emphasis is evident but less pronounced.

**88** Behrens, AEG Factory complex, Berlin, in 1912. Left, the high-voltage works; right, the assembly plant.

**89** Behrens, AEG Turbine Factory, Berlin, 1908–09.

In 1908 Behrens revealed his essentially conservative nature in an essay entitled *Was ist monumentale Kunst?* ('What is Monumental Art?'), where he defined such art as an expression of the dominant power group in any given epoch. In this same text he took issue with Semper's theoretical derivation of environmental form from technical and material exigencies. He rejected the importance which Semper attached to the typical tectonic element – to the expressive load-bearing column as it appears in Classical architecture. Instead Behrens was profoundly influenced by Alois Riegl's élitist theory of the *Kunstwollen* or 'will to form' which acts through the agency of talented individuals as an ordained 'atectonic' principle. For Riegl this force was destined to oppose the specific technical propensities of an epoch. Consistent with this thesis, Behrens's contribution to AEG product design was to be in the realm of style rather than technique.

This split between *Norm* and *Form*, between *type* and *individuality*, was soon to preoccupy the Deutsche Werkbund. The issue came to a head with Hermann Muthesius's address to the Werkbund assembly on the occasion of the Deutsche Werkbund Exhibition, held in Cologne in 1914. Muthesius's ten-point programme, highly influenced by the writings of Naumann, concentrated on the need for refining typical objects (compare Le Corbusier's *objet-type*). In points 1 and 2 he argued that architecture and industrial design can attain significance only through the development and refinement of types (*Typisierung*), and in points 3–10 he dealt with the national need for products of high standard, so that these could be readily sold on the world market. Point 9 dealt with mass production: 'A precondition for export is the existence of efficient big firms, whose taste is impeccable. Particular single objects designed by artists would not even cover the demand in Germany.'

This opportunistic emphasis on designing cultural objects for an international middle class was immediately challenged by Henry van de Velde who, in presenting his counter-thesis, at once rejected 'export' art and proclaimed the essential creative sovereignty of the individual artist. For him, as for Behrens, only the natural process of Riegl's *Kunstwollen* could gradually bring about the evolution of a civilized *Norm*. Despite much controversy over this issue, there was enough support for Van de Velde's position, from figures as diverse as Walter Gropius and Karl Ernst Osthaus, for Muthesius to be forced to withdraw his programme. In his ten-point presentation Muthesius had elaborated his idea of type as follows: 'The way from individualism to the creation of types is the organic way of development', he argued. 'This is, today, the way in manufacture, where the product ... is steadily being improved'. Again, he declared: 'Essentially, architecture tends towards the typical. The type discards the extraordinary and establishes order.' Thus for Muthesius, as for Semper before him, 'type' had two connotations: the 'product object' gradually refined through use and production, and the 'tectonic object', which was an irreducible building element functioning as a basic unit of architectural language.

The need for such a syntax, in the face of the sudden collapse of the Jugendstil, brought most of the architects at the 1914 Deutsche Werkbund Exhibition, including Muthesius, Behrens and Hoffmann, to express themselves in the language of a reinterpreted Neo-Classicism. The only two exceptions to this were Van de Velde's Werkbund Theatre, endowed by his form-force aesthetic with a quasitheosophical aura, and its close rival, Bruno Taut's Glass Pavilion, which evoked the ritualistic mysticism of Behrens's Turin Vorhalle of 1902.

The 1914 Exhibition introduced to a wide public a new generation of Werkbund artists, including in particular Gropius and Adolf Meyer, who up to 1910 had worked

together in the office of Behrens. Gropius's activity between 1910 and 1914 followed along the lines of Behrens's Berlin career. In March 1910 he submitted to Emil Rathenau of AEG a memorandum on rationalized house production, as exemplified by workers' houses that he had projected for Janikow in 1906. This text, written by Gropius at the age of twenty-six, remains even today one of the most exhaustive and lucid expositions ever made of the essential preconditions for the successful prefabrication, assembly and distribution of standardized housing units. In 1911 the new partnership of Gropius and Meyer was commissioned by Karl Benscheidt to design the Fagus shoe-last factory, at Alfeld-an-der-Leine. In 1913 the Deutsche Werkbund *Jahrbuch* carried an article by Gropius on industrial building, illustrated by grain silos and multistorey factories taken from the industrial vernacular of the New World. In the same year he started to work as an industrial designer, designing the bodywork and layout of a diesel locomotive and then the interior of a railway sleeping car. Finally, he and Meyer designed a model factory for the Werkbund Exhibition of 1914.

In the Faguswerk, Gropius and Meyer adapted the syntax of Behrens's Turbine Factory to a more open architectural aesthetic. The corners still serve to contain the composition, as in all of Behrens's large AEG structures, but where Behrens's corners are invariably of masonry here they are of glass. The vertical panels of glazing, set forward from the battered brick facing, give the illusion of being miraculously suspended from the upstand at roof level. This 'pendant' effect, plus the translucent corner, inverts the composition of the Turbine Factory, the sheer planar quality of the vertical glass façade being accentuated by the 'Classical' entasis of the brick-faced frame. Despite such transpositions, the Faguswerk, with its atectonic glazing and its nostalgia for the Classical, remained subject to the influence of Behrens.

This particular disposition, which manifested itself compositionally in emphatic corners and string courses, was to characterize all the public work of Gropius and Meyer up to Gropius's design for the Dessau Bauhaus in 1924. Certainly it was the stratagem adopted in their model factory complex designed for the Werkbund Exhibition of 1914 [90]. Here the corporeality of the glass skin was developed as a continuous membrane to embrace spiral staircases at either end of the building. Within this sheer glass envelope stood a brick armature, its separateness being accentuated by two end pavilions, each capped by a flat roof overhang after the style of Frank Lloyd Wright. In spite of this dramatic reversal of the roles of glass and masonry, the factory layout was highly conventional, not only in its axiality but also in its hierarchic and syntactical separation into 'administrative' and 'productive' elements. The public, 'Classical', 'white-collar' façade was placed to the fore, thus screening the private, utilitarian, 'blue-collar' steel-frame structure to the rear. Such a dualistic solution, however well articulated, would never have been acceptable to Behrens.

**90** Gropius and A. Meyer, part of model factory complex, Werkbund Exhibition, Cologne, 1914, with office block on the left.

The split between Muthesius and Van de Velde effectively exposed the reactionary spirit that was already evident in much of the Werkbund work by the time of the 1914 Exhibition. Whereas the yearbooks of 1913 and 1914 were respectively devoted to 'Art in Industry and Trade', and 'Transport' recording the design of the *furnishing of industrial structures, rolling stock, shipping and aircraft*, the 1915 yearbook bore the ominous title 'German Form in the War Year', and nostalgically devoted its pages to the predominantly Neo-Biedermeier work of the 1914 Exhibition.

That the promise and triumph of a progressive industrial state would soon be consumed by an industrialized war seems hardly to have been foreseen. This tragedy was not to be transcended by the quality of the war graves that the Werkbund artists were commissioned to design, which formed the exclusive subject of the Werkbund yearbook issued in 1916/17.

After the war Behrens was a changed man, for the *Volksgeist* was patently no longer the same. Accordingly he gave up his frigid Classicism and his preoccupation with symbolizing the authority of industrial power. His renewed search for an art of building which would express the true spirit of the German people led back, via the pages of Bruno Taut's magazine *Frühlicht*, beyond Behrens's own Neo-Romantic Nietzschean past to forms of medieval origin and association. However, his faith in the redeeming power of Riegl's 'will to form' remained unshaken. When I.G. Farben commissioned him to design their new premises at Frankfurt-Höchst in 1920 he attempted in a brick and stone structure to reinterpret the lost syntax of medieval civic architecture. The building has at its core a mystic space of public ritual and renewal (going back to Behrens's Turin Vorhalle of 1902) in the form of a faceted five-storey hall of corbelled brickwork, capped by a crystalline roof light. This was an allusion to that theatrical space of public appearance which had inspired his youth, to the *Kultursymbol* that obsessed, with equal intensity, the members of Bruno Taut's Glass Chain (see [Chapter 13](#)). A similar impulse informed his small exhibition structures of the 1920s – his steeply pitched Dombauhütte (cathedral masons' lodge) with its diagonal banded brickwork, designed for the Munich Kunstgewerbeschau of 1922, and his Wrightian glass conservatory built for the Paris Exposition des Arts Décoratifs in 1925. From then on Behrens's work was to remain close to the Art Deco style, while the future of the Deutsche Werkbund was to be

inseparable from the Neue Sachlichkeit movement, which saw its apotheosis, under Werkbund auspices, in the international housing exhibition (including the famous Weissenhofsiedlung) that opened at Stuttgart in 1927.

# Chapter 13

## The Glass Chain: European Architectural Expressionism 1910-25

*If we want our culture to raise to a higher level, we are obliged, for better or for worse, to change our architecture. And this only becomes possible if we take away the closed character from the rooms in which we live. We can only do that by introducing glass architecture, which lets the light of the sun, the moon, and the stars, not merely through a few windows, but through every possible wall, which will be made entirely of glass - of coloured glass.*

Paul Scheerbart  
*Glasarchitektur*, 1914<sup>1</sup>

The poet Paul Scheerbart's vision of a culture elevated through the use of glass served to consolidate those aspirations towards a non-repressive sensibility that had first emerged in Munich in 1909 with the foundation of the Neue Künstler Vereinigung. This proto-Expressionist art movement, led by the painter Wassily Kandinsky, gained immediate support in the following year from two anarchist publications, Herwarth Walden's journal *Der Sturm* and Franz Pfemfert's paper *Die Aktion*. These Berlin journals promoted a counterculture, in opposition to the state culture that had been initiated with the foundation of the Deutsche Werkbund. In 1907 Scheerbart had independently proffered

a ‘science-fiction’ image of a utopian future that was equally inimical to both bourgeois reformism and the culture of the industrial state.

The Cologne Werkbund Exhibition in 1914 gave expression to an ideological split within the Werkbund between the collective acceptance of normative form (*Typisierung*), on the one hand, and the individually asserted, expressive ‘will to form’ (*Kunstwollen*) on the other. This opposition, reflected in the contrast between Behrens’s Neo-Classical Festhalle and the organic form of Van de Velde’s theatre, was comparable in many respects to the difference between the Gropius and Meyer model factory and Bruno Taut’s phantasmagoric pavilion for the glass industry [91], a parallelism which confirms that the split affected more than one generation of Werkbund designers. Where Behrens and Gropius tended towards the normative mode, that is, the Classical, Van de Velde and Taut in their buildings manifested a freely expressed *Kunstwollen*.

**91** Taut, Glass Pavilion, Werkbund Exhibition, Cologne, 1914. Elevation and plan.

The aphoristic text of Scheerbart’s *Glasarchitektur* was dedicated to Taut, whose Glass Pavilion was inscribed with Scheerbart’s aphorisms: ‘Light wants crystal’; ‘Glass brings a new era’; ‘We feel sorry for the brick culture’; ‘Without a glass palace, life becomes a burden’; ‘Building in brick only does us harm’; ‘Coloured glass destroys hatred’. These words dedicated Taut’s pavilion to the light that filtered through its faceted cupola and glass-block walls to illuminate an axial seven-tiered chamber, lined with glass mosaic. According to Taut this crystalline structure, modelled after his Leipzig Steel Pavilion of 1913, had been designed in the spirit of a Gothic cathedral. It was in effect a *Stadtkrone* or ‘city crown’, that pyramidal form postulated

by Taut as the universal paradigm of all religious building, which together with the faith it would inspire was an essential urban element for the restructuring of society.

The socio-cultural implications of Scheerbart's vision were enlarged on in 1918 by the architect Adolf Behne:

*It is not the crazy caprice of a poet that glass architecture will bring a new culture. It is a fact! New social welfare organizations, hospitals, inventions, or technical innovations and improvements - these will not bring a new culture- but glass architecture will. ... Therefore, the European is right when he fears that glass architecture might become uncomfortable. Certainly, it will be so. And that is not its least advantage. For first of all the European must be wrenched out of his cosiness.*<sup>2</sup>

With the armistice of November 1918, Taut and Behne began to organize the Arbeitsrat für Kunst, which eventually merged with the somewhat larger Novembergruppe formed at the same time. This Workers' Council for Art declared its basic aims in Taut's *Architektur-programm* of December 1918, which argued for a new total work of art, to be created with the active participation of the people. In the spring of 1919 the manifesto of the Arbeitsrat für Kunst reasserted this general principle: 'Art and people must form an entity. Art shall no longer be a luxury of the few, but should be enjoyed and experienced by the broad masses. The aim is the alliance of the arts under the wing of a great architecture'. Led by Behne, Gropius and Taut, and affiliated to the painters of Die Brücke, the Arbeitsrat für Kunst comprised some fifty artists, architects and patrons living in and around Berlin, including the artists Georg Kolbe, Gerhard Marcks, Lyonel Feininger, Emil Nolde, Hermann Finsterlin, Max Pechstein and Karl Schmidt-Rottluff, and the architects Otto Bartning, Max Taut, Bernhard Hoetger, Adolf Meyer and Erich Mendelsohn. In April 1919, these last five

staged an exhibition of visionary works under the title 'An Exhibition of Unknown Architects'. The introduction that Gropius wrote for this exhibition was, in effect, the first draft of his Weimar Bauhaus programme, published in the same month:

*We must want, imagine, and create the new architectural concept co-operatively. Painters, sculptors, break down the barriers around architecture and become co-builders and comrades-in-arms towards art's ultimate goal: the creative idea of the Cathedral of the Future [Zukunftskathedrale], which will once more encompass everything in one form - architecture and sculpture and painting.*<sup>3</sup>

This call for a new religious building, capable of unifying the creative energy of the society as in the Middle Ages, was echoed by Behne in 1919, in his reply to a group opinion poll, published under the title *Ja! Stimmen des Arbeitsrates für Kunst in Berlin* ('Yes! Voices from the Art Soviet in Berlin'):

*The most important thing seems to me to be to construct an ideal House of God, not a denominational one, but a religious work. ... We must not wait until a new religiosity is upon us, for it may be waiting for us while we are waiting for it.*<sup>4</sup>

The suppression of the Spartacist Revolt in 1919 put an end to the overt activities of the Arbeitsrat für Kunst, and the energies of the group were channelled into a series of letters, known as 'Die Gläserne Kette' or the Glass Chain. This was Bruno Taut's 'Utopian Correspondence,' which began in November 1919 after his suggestion that 'everyone of us will draw or write down at brief intervals of time, informally and as the spirit moves him ... those ideas which he would like to share with our circle.' The

correspondence involved fourteen people, of whom only about half created works of enduring importance. Apart from Taut, who called himself *Glas*, there was Gropius (*Mass*), Finsterlin (*Prometh*), and Bruno Taut's brother Max, who wrote under his own name. This inner circle was complemented by architects who had previously only had a peripheral involvement with the *Arbeitsrat*, notably the brothers Hans and Wassili Luckhardt and Hans Scharoun. Apart from providing material for Taut's magazine *Frühlicht* ('Early Light'), the Utopian Correspondence served to expose and develop the various attitudes represented by the circle. Taut and Scharoun especially stressed the important creative role of the unconscious, Scharoun writing in 1919:

*We must create just as the blood of our ancestors brought on waves of creativity; and we shall be content if we are ourselves thereafter able to reveal a complete comprehension of the character and the causality of our creations.*<sup>5</sup>

By 1920, however, the solidarity of the Glass Chain began to break, with Hans Luckhardt's recognition that free unconscious form and rational prefabricated production were in certain respects incompatible. In that year he wrote:

*Opposite to this profoundly spiritual striving is the trend toward automatic processes. The invention of the Taylor System is a typical characteristic of this. It would be completely erroneous to refuse to recognize this tendency of the time, as it is a historic fact. Moreover, it can in no way be proven to be hostile toward art.*<sup>6</sup>

While Luckhardt's rationalism had the effect of returning the debate to the issues that had divided the Werkbund in 1914, Taut maintained the Scheerbartian views first

expressed in books such as *Alpine Architektur* and *Die Stadtkrone* of 1919, publishing his famous *Die Auflösung der Städte* ('The dissolution of cities') in 1920. In common with the socialist planners of the Russian Revolution, he recommended the break-up of cities and the return of the urbanized population to the land. At his most practical, he attempted to formulate models for agrarian and handicraft-based communities; at his most fantastic, he projected the building of glass temples in the Alps. Typical of Taut's Kropotkinian propositions was his model of a circular, radially subdivided, agricultural settlement. In its core were three separate residential sections, one for each class of citizen - *Künder, Künstler und Kinder* (the 'enlightened', artists and children) - each grouped around lozenge-shaped courts. This tripartite organization led axially to the central crystalline 'Haus des Himmels' or 'House of Heaven', where the governors of the community convened. It is one of the paradoxes of Taut's anarchic socialism that the hierarchic, not to say authoritarian, social institutions imagined for these communities contained the seeds of a fascism that was soon to find its vulgarization in the 'blood and soil' culture of the National Socialist movement.

After becoming city architect to Magdeburg in 1921, Taut attempted to realize his *Stadtkrone* in the form of a municipal exhibition hall, designed in the following year. By that date, however, the movement propagated by *Frühlicht* was losing its impetus. Taut, like Hans Luckhardt before him, was beginning to come to terms with the harsh reality of the Weimar Republic, where pragmatic social need gave little scope for the achievement of Scheerbart's glass paradise. This much became explicit in 1923, when he started to work with his brother on the design of the first low-cost housing schemes commissioned by the government.

Paradoxically, it was not Taut but Hans Poelzig who was to realize the quintessential image of the crystalline 'city crown'. The 5,000-seat theatre that he designed for Max

Reinhardt in Berlin in 1919 [92] came closer to Scheerbart in its scintillating, luminous dissolution of form and space than any post-war achievement by Taut. Of its fantastic stalactite interior, Wassili Luckhardt wrote:

**92** Poelzig, Grosse Schauspielhaus, Berlin, 1919.

*The interior of the large dome is hung with an infinite variety of pendants which are given a softly curving movement by the hollow of the cupola onto which they are fastened so that especially when light is thrown against the tiny reflectors on each tip, the impression of a certain dissolution and infinity results.<sup>7</sup>*

After establishing himself as an architect in Breslau in 1911, Poelzig had realized two seminal works which anticipated the later formal language of both Taut and Mendelsohn: a water tower for Posen (a *Stadtkrone* image if ever there was one) and an office building for Breslau, which led to the architectural format of Mendelsohn's *Berliner-Tageblatt* building of 1921. In addition, Poelzig's highly articulated brick chemical plant built at Luban in 1912 came close to rivalling the industrial style that Behrens had just invented for AEG.

After the war, in his address as chairman of the Werkbund in 1919, Poelzig returned to the controversy over *Typisierung* and effectively argued yet again for the principle of the *Kunstwollen*. A year later, he announced his affinity with the artists of the Glass Chain, in his Salzburg Festspielhaus project where his newly invented pendentive motif was piled up into a *Stadtkrone* image of heroic proportions. As in his Istanbul 'Freundschaftshaus' (House of Friendship) project of 1917, these arched forms were assembled in such a way as to create a ziggurat whose interior was a prismatic cavern made up entirely of

pendentive elements. Apart from his sets for Paul Wegener's film *The Golem* (1920), the Schauspielhaus for Reinhardt was Poelzig's last fully Expressionist work. By 1925, with his Capitol Cinema for Berlin, he had already returned to the crypto-Classical fold.

Mendelsohn realized his own version of the *Stadtkrone* in the observatory that he built for Albert Einstein at Potsdam in 1917-21 [93]. Combining as it did the sculptural forms of Van de Velde's Werkbund Theatre and the overall profile of Bruno Taut's Glass Pavilion, the design's point of departure lay in the 1914 Werkbund Exhibition. In its final silhouette, however, the Einstein Tower displayed a certain formal affinity to the thatched-roof vernacular of the Dutch architects Eibink and Snellebrand, who, with Theo Wijdeveld, represented the extreme organic wing of Dutch Expressionism, centred around Wijdeveld's magazine *Wendingen* ('Turnings'). It is hardly surprising, therefore, that soon after the completion of the observatory Mendelsohn visited Holland, at Wijdeveld's invitation, to see the work of the *Wendingen* circle for himself. In Amsterdam he visited a number of Expressionist housing schemes which were then under construction, as part of Berlage's plan for Amsterdam South, including Michel de Klerk's Eigen Haard (1913-19) and Piet Kramer's De Dageraad (1918-23). Executed in moulded brickwork and tile hanging, they exemplified a much more structural approach than the highly plastic and folkish preoccupations of Wijdeveld's 'vernacular' architects. Outside the Amsterdam School of Wijdeveld, De Klerk and Kramer, Mendelsohn met and was influenced by a number of Dutch architects of quite different persuasion, such as the rationalist Rotterdam architect J.J.P. Oud and the Wrightian architect W.M. Dudok, practising in Hilversum. In a letter to his wife, Mendelsohn explained how neither the Amsterdam nor the Rotterdam school met with his full approval:

**93** Mendelsohn, Einstein Tower, Potsdam, 1917-21. Front and side elevations and half-plan.

*Analytical Rotterdam refuses vision; visionary Amsterdam does not understand objectivity. Certainly the primary element is function but function without sensibility remains mere construction. More than ever I stand by my reconciliatory programme. ... Otherwise, Rotterdam will pursue the way of mere construction, with deathly chill in its veins, and Amsterdam will be destroyed by the fire of its own dynamicism. Function plus dynamics is the challenge.<sup>8</sup>*

As this letter suggests, the more structural of the Dutch Expressionists had an immediate impact on Mendelsohn's own development: after his visit to Holland he turned from the plasticity of his Potsdam observatory towards a concern for the intrinsic structural expressiveness of materials. The hat factory that he built at Luckenwalde in 1921-23 [94] reflects this influence. Its ridged and pitched-roofed dye shop and production sheds, modelled in the manner of De Klerk, stood in strong contrast to the smooth flat-roofed power house whose layered 'cubist' expression in brick and concrete recalls the early work of Dudok. The principle established here, of setting dramatic tall pitched industrial forms against horizontal administrative elements, was repeated by Mendelsohn in his Leningrad textile mill project of 1925. In this instance, however, a further step was taken, for the banded modelling of the administration block anticipated the profiling of his metropolitan department stores, built in Breslau, Stuttgart, Chemnitz and Berlin between 1927 and 1931 [95]. From now on, as Reyner Banham has observed, he thought 'in terms of structural assemblies of geometrical, simple units which presented themselves as tidily profiled edges'.

**94** Mendelsohn, hat factory, Luckenwalde, 1921–23. *Above*, section; *below*, elevation from front to back, and rear elevation of building at front.

**95** Mendelsohn, Petersdorff Store, Breslau (Wrocław), 1927.

In the masterwork of Hugo Häring, the farm complex at Garkau near Lübeck built in 1924 [96], we find a somewhat similar expressive use of pitched-roof forms contrasted with bulky tectonic elements and rounded corners. A few years earlier, Häring had shared an office in Berlin with Ludwig Mies van der Rohe, who was four years his junior, and there is evidence that for a brief while the two men exercised a certain influence on each other. This is particularly noticeable in their entries to the famous Friedrichstrasse office building competition of 1921, where they adopted a similar organic approach to the genesis of form. As one might expect, however, it was Mies rather than Häring who put forward a structure made entirely of glass. Mies's Scheerbartian obsession with the reflectivity of this material also manifested itself in an extraordinary project for a glass skyscraper which was published in 1922 in the last issue of Taut's magazine *Frühlicht*.

**96** Häring, farm at Garkau, 1924. Buildings for animals (upper left) and barns.

Although Häring, like Mendelsohn, believed in the ultimate primacy of function, he sought to transcend the primitive nature of mere utility by evolving his forms from a more profound understanding of the programme. Like Scharoun, however, his attitude to massing was often naively imitative of biological form. In this respect, one may see Scharoun's Home and Work Exhibition building at

Breslau of 1928 as influenced by Häring's Prinz Albrecht Garten residential project of 1924. Despite an overtly Expressionist tendency, Häring remained preoccupied with the inner source of form, with that which he termed the *Organwerk* or the programmatic essence of the 'organism', as opposed to its surface expression or *Gestaltwerk*. Of this duality he wrote:

*We now attempt not to allow our attitudes towards function to conflict with our needs for expression, but to keep them side by side. We try to relate our ideas about expression to life, creation, movement and nature; for in our creation of functional forms we follow the path of nature. In nature form is the result of the organisation of many individual entities in space in order that life can unfold and action take place, a fulfilment of both part and whole, (whereas in the world of geometrical cultures form is derived from laws of geometry). If we prefer to search for shapes rather than to impose them, to discover forms rather than to construct them, we are in harmony with nature and act with her rather than against her.<sup>9</sup>*

At the Berlin Secession Exhibition in 1923 Hans and Wassili Luckhardt, with Mies and some of his contemporaries, had begun to show a more functional and objective mode of building, a development which led in the following year to their formation of the Zehnerring. By 1925, when the Zehnerring became Der Ring, with Häring as its secretary, no divisions between the various positions had appeared, as their collective energy was devoted to overcoming the reactionary policies of the Berlin city architect, Ludwig Hoffmann.

In 1928, however, when this battle had been won, Häring's concern for the 'organic' naturally led him into conflict with Le Corbusier when, as secretary of Der Ring, he participated in the foundation of the Congrès Internationaux

d'Architecture Moderne, at La Sarraz, Switzerland. While Le Corbusier here proclaimed an architecture of functionalism and pure geometrical form, Häring tried in vain to win the Congress over to his own conception of 'organic' building. His failure to do so not only emphasized the non-normative, 'place'-orientated nature of his approach but also denoted the final eclipse of the Scheerbartian dream. For all that Scharoun extended this vision into the post-war period, in his Romeo and Juliet apartments, built in Stuttgart in 1954–59, and his last masterwork, the Philharmonie, built in Berlin in 1956–63, the idiosyncratic nature of the 'organic' approach has since been given little chance to prevail.

# Chapter 14

## The Bauhaus: the Evolution of an Idea 1919-32

*Let us create a new guild of craftsmen, without the class distinctions which raise an arrogant barrier between craftsman and artist. Together let us conceive and create the new building of the future, which will embrace architecture and sculpture and painting in one unity and which will rise one day toward heaven from the hands of a million workers like the crystal symbol of a new faith.*

Proclamation of the Weimar Bauhaus, 1919<sup>1</sup>

The Bauhaus was the outcome of a continuous effort to reform applied art education in Germany around the turn of the century, first with the establishment in 1898 of Karl Schmidt's Dresdner Werkstätten (which became the Deutsche Werkstätten, and moved to the garden city of Hellerau in 1908), then with the appointment in 1903 of Hans Poelzig and Peter Behrens to the directorships of applied art schools in Breslau and Düsseldorf, and finally, in 1906, with the founding of the Grand Ducal School of Arts and Crafts in Weimar under the direction of the Belgian architect Henry van de Velde.

Despite the ambitious structures that he designed for both the Fine Arts Building and the School of Arts and Crafts, Van de Velde did little more in his tenure than establish a

relatively modest *Kunstseminar* for craftsmen. After his enforced resignation as an alien in 1915, he advised the Saxon State Ministry that Walter Gropius, Hermann Obrist or August Endell would make a suitable successor. Protracted discussions took place throughout the war between the Ministry and Fritz Mackensen, head of the Grand Ducal Academy of Fine Art, as to the relative pedagogical status of fine and applied art, with Gropius arguing for the relative autonomy of the latter. Gropius advocated a workshop-based design education for both designers and craftsmen, while Mackensen stuck to the Prussian idealist line, insisting that artist-craftsmen should be trained in a fine art academy. This ideological conflict was resolved in 1919 in compromise: Gropius became director of a composite institution, consisting of the Academy of Art and the School of Arts and Crafts, an arrangement that was to divide the Bauhaus, conceptually, throughout its existence.

The principles of the Bauhaus Proclamation of 1919 [97] had been anticipated in Bruno Taut's architectural programme for the *Arbeitsrat für Kunst*, published late in 1918. Taut argued that a new cultural unity could be attained only through a new art of building, wherein each separate discipline would contribute to the final form. 'At this point,' he wrote, 'there will be no boundaries between the crafts, sculpture and painting; all will be one: Architecture.'

**97** Feininger, woodcut for the Bauhaus Proclamation, 1919. *Zukunfts-kathedrale*, the cathedral of the future as the cathedral of socialism.

This anarchic reworking of the *Gesamtkunstwerk* ideal was elaborated by Gropius first in the pamphlet written in April 1919 for the 'Exhibition of Unknown Architects', organized by the *Arbeitsrat für Kunst*, and then in his Bauhaus Proclamation of about the same date. Where the

one called on all fine artists to reject salon art and to return to the crafts in the service of a metaphorical cathedral of the future - 'to go into buildings, endow them with fairy tales ... and *build in fantasy* without regard for technical difficulty' - the other exhorted the members of the Bauhaus 'to create a new guild of craftsmen, without the class distinctions which raise an arrogant barrier between craftsman and artist'.

Even the word *Bauhaus*, which Gropius persuaded the reluctant state government to adopt as the official title of the new institution, intentionally recalled the medieval *Bauhütte* or masons' lodge. That such connotations were deliberate is confirmed by a letter written by Oskar Schlemmer in 1922:

*Originally the Bauhaus was founded with visions of erecting the cathedral of socialism and the workshops were established in the manner of the cathedral building lodges [Dombauhütten]. The idea of the cathedral has for the time being receded into the background and with it certain definite ideas of an artistic nature. Today we must think at best in terms of the house, perhaps even only think so. ... in the face of the economic plight, it is our task to become pioneers of simplicity, that is, to find a simple form for all life's necessities, which at the same time is respectable and genuine.<sup>2</sup>*

For the first three years of its existence the Bauhaus was dominated by the charismatic presence of the Swiss painter and teacher Johannes Itten, who arrived in the autumn of 1919. Three years earlier he had started his own art school in Vienna, under the influence of Franz Cizek. In a highly charged milieu, coloured by the anarchic anti-Secessjonist activities of the painter Oskar Kokoschka and the architect Adolf Loos, Cizek had developed a unique system of instruction based on stimulating individual creativity

through the making of collages of different materials and textures. His methods had matured in a cultural climate impregnated with progressive educational theory, from the systems of Froebel and Montessori to the 'learning-through-doing' movement, initiated by the American John Dewey and vigorously propagated in Germany after 1908 by the educational reformer Georg Kerschensteiner. The teaching in Itten's Viennese school and in the *Vorkurs*, or preliminary course, that he initiated in the Bauhaus was derived from Cizek, although Itten enriched the method with the form and colour theory of his own master Adolf Hözel. The aims of Itten's foundation course, mandatory for all first-year students, were to release individual creativity and to enable each student to assess his own particular ability.

Up to 1920, when, at Itten's request, the artists Schlemmer, Paul Klee and Georg Muche joined the Bauhaus, he taught, single-handed, four separate craft courses in addition to the *Vorkurs*, while Gerhard Marcks and Lyonel Feininger gave marginal courses in ceramics and printing respectively. Itten's anarchic position at the time may be gleaned from his 1922 response to a referendum on the provision of state welfare for artists:

*The mind stands outside any organization. Where it has nevertheless been organized (religion, church), it has become estranged from its innate nature. ... The state should take care that none of its citizens starve but it should not support art.<sup>3</sup>*

Itten's anti-authoritarian, even mystical, position was substantially reinforced in 1921 by his extended stay in the Mazdaznan centre at Herrliberg near Zürich [98]. He returned in the middle of the year to convert his pupils and his colleague Muche to the rigours of this updated version of an archaic Persian religion. The cult demanded an austere lifestyle, periodic fasting, and a vegetarian diet flavoured

with cheese and garlic. The physical and spiritual well-being deemed to be essential to creativity was further assured by breathing and relaxation exercises. Of this inner-directed orientation Itten later wrote:

**98** Itten, in the Mazdaznan work costume that he designed, 1921.

*The terrible losses and horrible events of World War I and a close study of Spengler's Decline of the West made me realize that we had reached a crucial point in our scientific-technological civilization. For me, it was not enough to embrace the slogans 'return to craft' or 'art and technology, hand in hand'. I studied Eastern philosophy, delved into Persian Mazdaism and Indian yoga teachings, and compared them with early Christianity. I reached the conclusion that we must counter-balance our externally-orientated scientific research and technological speculation with inner-directed thought and practice. I searched for something, for myself and my work, on which to base a new way of life.*

The growing division between Gropius and Itten was exacerbated by the appearance in Weimar of two equally powerful personalities: the Dutch De Stijl artist Theo van Doesburg, who took up residence in the winter of 1921, and the Russian painter Wassily Kandinsky, who joined the Bauhaus, at Itten's instigation, in the summer of 1922. Where the former postulated a rational, anti-individualist aesthetic, the latter taught an emotive and ultimately mystical approach to art. Although the two men did not come into direct conflict, Van Doesburg's extramural De Stijl polemic instantly appealed to many Bauhaus students. His teaching not only had an immediate impact on the production of the workshops, but also directly challenged the open-ended precepts of the original Bauhaus programme. His influence was even reflected in the

furnishing of Gropius's own office, and in the asymmetrical composition [99] of Gropius's entry for the 1922 *Chicago Tribune* competition, designed with Adolf Meyer.

**99** Gropius and A. Meyer, project for the *Chicago Tribune* Building, 1922.

In 1922, after Van Doesburg had been proselytizing for nine months, the generally critical socio-economic situation brought Gropius to modify the craft orientation of the original programme. His initial attack on Itten appeared in his circular to the Bauhaus masters, where he indirectly criticized Itten's monastic rejection of the world. This text was in effect a draft for his essay *Idee und Aufbau des Staatlichen Bauhauses Weimar* ('The Theory and Organization of the Bauhaus'), published on the occasion of the first Bauhaus exhibition held in Weimar in 1923. He wrote:

*The teaching of craft is meant to prepare for designing for mass production. Starting with the simplest tools and least complicated jobs, he [the Bauhaus apprentice] gradually acquires ability to master more intricate problems and to work with machines, while at the same time he keeps in touch with the entire process of production from start to finish.<sup>4</sup>*

This carefully worded argument by Gropius for the reconciliation of craft design and industrial production brought about Itten's immediate resignation.

His position on the faculty was immediately filled by the Hungarian artist and social radical László Moholy-Nagy. On his arrival in Berlin in 1921 (as a refugee from the short-lived Hungarian revolution), Moholy-Nagy had come into contact with the Russian designer El Lissitzky, who was then in Germany for the preparations of the Russian Exhibition of

1922. This encounter encouraged him to pursue his own Constructivist leanings, and from this date forward his paintings featured Suprematist elements, those modular crosses and rectangles soon to become the substance of his famous 'telephone' pictures, executed in enamelled steel. Of these he wrote:

*In 1922 I ordered by telephone from a sign factory five paintings in porcelain enamel. I had the factory's colour chart before me and I sketched my paintings on graph paper. At the other end of the telephone the factory supervisor had the same kind of paper divided into squares. He took down the dictated shapes in the correct position.*<sup>5</sup>

This spectacular demonstration of programmed art production seems to have impressed Gropius, for in the following year he invited Moholy-Nagy to take over both the preliminary course and the metal workshop. Under Moholy-Nagy's leadership the products of the latter were at once orientated towards a 'Constructivist Elementarism', which was tempered over the years by a mature concern for the convenience of the objects produced. In the meantime he introduced into the preliminary course, which he shared with Josef Albers, exercises in equilibrium structures in a variety of materials, including wood, metal, wire and glass. The aim was no longer to demonstrate a feeling for contrasting materials and forms, usually assembled as reliefs, but rather to reveal the statical and aesthetic properties of free-standing asymmetrical structures. The epitome of such 'exercises' was the building of his own 'Light-Space Modulator', on which he was to be occupied from 1922 to 1930.

The 'Constructivist Elementarist' style, which Moholy-Nagy had partly derived from the Vkhutemas (Higher Technical and Artistic Studios) of the Soviet Union, was complemented elsewhere in the Bauhaus by the De Stijl

influence of Van Doesburg and by a post-Cubist approach to form, as evidenced in the sculpture workshops under Schlemmer's direction from 1922. An early manifestation of this 'Elementalist' aesthetic, instantly adopted as a house style after Itten's resignation, was the sans serif typography used by Herbert Bayer and Joost Schmidt for the Bauhaus Exhibition of 1923.

Two model houses, largely built and furnished by the Bauhaus workshops, characterize this period of transition, revealing common elements and striking dissimilarities. They are the Sommerfeld House, designed by Gropius and Meyer and completed in Berlin-Dahlem in 1922, and the Bauhaus 'Versuchshaus' or Experimental House, designed by Muche and Meyer for the Bauhaus Exhibition of 1923 [100]. Where the first was designed as a traditional *Heimatstil* log house, with an interior enriched with carved wood and stained glass so as to create a *Gesamtkunstwerk*, the second was conceived as a *sachlich*, smoothly rendered object, furnished with the latest labour-saving devices so as to be a *Wohnmaschine*, or living machine. This minimum-circulation house was organized around an 'atrium' – not an open court but a clerestory-lit living-room surrounded on all sides by bedrooms and other ancillary spaces. Each of these perimeter rooms was equipped in an austere manner, with exposed metal radiators, steel windows and door frames, elemental furniture, and unshaded tubular light fittings. While most of these pieces were handmade in the Bauhaus workshops, Adolf Meyer, in his report on the house in *Bauhausbücher 3* (1923), emphasized its furnishing with standard bathroom and kitchen equipment and its construction with entirely new materials and methods.

**100** Muche and A. Meyer, Experimental House, Bauhaus Exhibition, Weimar, 1923.

The changing ideology of the Bauhaus was further demonstrated in an article by Gropius in the same issue of *Bauhausbücher*; entitled 'Wohnhaus-Industrie', it illustrated a remarkable round house projected by Karl Fieger, the centralized, light-weight conception of which anticipated Buckminster Fuller's Dymaxion House of 1927. In addition, Gropius published his own 'Serienhäuser', or extending house units, intended as prototypes for the Bauhaussiedlung, a housing estate which he hoped to build on the outskirts of Weimar. These serial houses were finally realized as masters' residences built at the Dessau Bauhaus in 1926.

After 1923 the Bauhaus approach became extremely 'objective', in the sense of being closely affiliated to the Neue Sachlichkeit movement. This affiliation, which was reflected, despite their rather formalistic massing, in the buildings for the Dessau Bauhaus itself, was to become more pronounced after Gropius's resignation in 1928. The last two years of Gropius's tenure were distinguished by three major developments: the politically enforced and well-orchestrated move from Weimar to Dessau, the completion of the Dessau Bauhaus [101, 102], and finally the gradual emergence of a recognizable Bauhaus approach, in which a greater emphasis was placed on deriving form from productive method, material constraint and programmatic necessity.

**101, 102** Gropius, Bauhaus, Dessau, 1925–26. Exterior showing the pinwheel composition (see p. 148); right, bridge linking administration and workshop blocks, on inauguration day, 1926.

The furniture workshops, under Marcel Breuer's brilliant direction, started in 1926 to produce tubular steel lightweight chairs and tables which were convenient, easy to clean and economical. These pieces, together with the

light fittings [103, 104] from the metal workshop, were used to furnish the interior of the new Bauhaus buildings [105]. By 1927 the 'licensed' industrial production of such Bauhaus designs was in full swing, including the Breuer furniture, the textured fabrics of Gunta Stadler-Stölzl and her colleagues, and the elegant lamps and metalware of Marianne Brandt. In that year too, Bauhaus typography finally matured with Bayer's austere layout and sans serif type, about to become world famous for its exclusion of upper-case letters. The year 1927 also saw the formation of the architectural department, under the leadership of the Swiss architect Hannes Meyer. A number of Breuer's prefabricated house designs of around this time reflect the immediate impact of Meyer's influence. Meyer brought with him his talented colleague Hans Wittwer who, like him, had been a member of the left-wing ABC group in Basle (see p. 142).

**103** Jucker, adjustable piano lamp, 1923.

**104** Bauhaus light fittings, of pressed metal and opalescent glass, mass-produced under the direction of H. Meyer.

**105** Gropius, Bauhaus, Dessau, 1925–26. Main hall with Breuer furniture.

Early in 1928 Gropius tendered his resignation to the Mayor of Dessau and appointed Meyer as his successor. The relative maturity of the institution, the unremitting attacks on himself and the growth of his practice all convinced him that it was time for a change. This move radically transformed the Bauhaus and, paradoxically enough, given the growing reactionary climate of Dessau, shifted its orientation still further left and even closer to the Neue

Sachlichkeit position. For a variety of reasons Moholy-Nagy, Breuer and Bayer followed Gropius's lead and resigned. As Moholy-Nagy indicated in his letter of resignation, he disliked Meyer's immediate insistence on the adoption of a rigorous design method:

*I can't afford a continuation on this specialized purely objective and efficient basis - either productively or humanly. ... Under a programme of increased technology I can only continue if I have a technical expert as my aide. For economic reasons this will never be possible.*

Largely liberated from the inhibiting influence of Gropius's star faculty, Meyer was able to steer the work of the Bauhaus towards a more 'socially responsible' design programme. Simple, demountable, inexpensive, plywood furniture came to the fore and a range of wallpaper was produced. More Bauhaus designs were being manufactured than ever before, although the emphasis was now placed on social rather than aesthetic considerations. Meyer organized the Bauhaus into four major departments: architecture (now called 'building' for polemical reasons), advertising, wood and metal production, and textiles. Supplementary scientific courses, such as industrial organization and psychology, were introduced into all departments, while the building section shifted its emphasis to the economic optimization of plan arrangements and to methods for the precise calculation of light, sunlight, heat loss/gain and acoustics. This ambitious programme required an increase in faculty, so that Wittwer's appointment as a technician was soon complemented by that of the architect-planner Ludwig Hilberseimer, the engineer Alcar Rudelt, and a studio staff comprising Alfred Arndt, Karl Fieger, Edvard Heiberg and Mart Stam.

Despite Meyer's concern to prevent the Bauhaus from becoming a tool of left-wing party politics (he resisted an

attempt to form a student Communist cell), a remorseless campaign against him finally forced the mayor to demand his resignation. Meyer revealed his understanding of the situation in an open letter to the mayor, Fritz Hesse:

*It was no use explaining [to you] that a ‘Bauhaus Dessau’ group of the German Communist Party was an impossibility from the party organization point of view, no use my assuring you that my political activities were of a cultural and never a party character. ... Municipal politics wants you to provide resounding Bauhaus successes, a brilliant Bauhaus façade and a prestigious Bauhaus director.<sup>6</sup>*

Municipal politics and German right-wing reaction in the event required considerably more. They required the Bauhaus closed and its *sachlich* façade capped by an ‘Aryan’ pitched roof. They required the Marxists impeached and the liberal émigrés banished along with their obscure art works – later to be designated as decadent. The desperate attempt of the Mayor of Dessau to shore up the Bauhaus, in the name of liberal democracy, through the patriarchal directorship of Mies van der Rohe, was doomed to failure. The Bauhaus remained in Dessau for but two more years. In October 1932 what was left of it moved into an old warehouse on the outskirts of Berlin, but by now the floodgates of reaction were open, and nine months later the Bauhaus was finally closed [**106**].

**106** Yamawaki, ‘The End of the Dessau Bauhaus’, collage, 1932.

## Chapter 15

# The New Objectivity: Germany, Holland and Switzerland 1923-33

*The expression Neue Sachlichkeit was in fact coined by me in the year 1924. A year later came the Mannheim exhibition which bore the same name. The expression ought really to apply as a label to the new realism bearing a socialist flavour. It was related to the general contemporary feeling in Germany of resignation and cynicism after a period of exuberant hopes (which had found an outlet in expressionism). Cynicism and resignation are the negative side of the Neue Sachlichkeit, the positive side expresses itself in the enthusiasm for the immediate reality as a result of a desire to take things entirely objectively on a material basis without immediately investing them with ideal implications. This healthy disillusionment finds its clearest expression in Germany in architecture.*

G.F. Hartlaub

Letter to Alfred H. Barr, Jr, July 1929<sup>1</sup>

The term *Sachlichkeit* had been current in German cultural circles long before 1924, when the art critic G.F. Hartlaub hit upon the phrase ‘die neue Sachlichkeit’ (‘the new objectivity’) to identify a post-war school of anti-Expressionist painting. *Sachlichkeit* seems to have been first used in an architectural context in a series of articles written

by Hermann Muthesius for the journal *Dekorative Kunst* between 1897 and 1903. These articles attributed the quality of *Sachlichkeit* to the English Arts and Crafts movement, particularly as manifest in the handicraft guilds (such as that of Ashbee) and the early garden suburbs. *Sachlichkeit* for Muthesius seems to have meant an 'objective', functionalist and eminently yeoman attitude to the design of objects, tending towards the reform of industrial society itself. The term was given somewhat different connotations by Heinrich Wölfflin, in his book, *Kunstgeschichtliche Grundbegriffe (The Principles of Art History)* of 1915, when he wrote of the 'linear' vision of 1800: 'The new line comes to serve a new objectivity.' *Sachlichkeit* had thus been qualified by the objective 'new' well before Hartlaub gave the title 'Die Neue Sachlichkeit' to his 1925 exhibition in Mannheim of 'Magical Realist' painters, artists who since the First World War had depicted both the appearance and the essence of an austere social reality. Yet, as Fritz Schmalenbach has observed,

*In reality, it was not the 'objectivity' of the new painting which the term was intended in the first place and above all to formulate, but something more universal underlying this objectivity and of which it was the expression, a revolution in the general mental attitude of the times, a general new Sachlichkeit of thought and feeling.*<sup>2</sup>

By the early 1930s, the expression had achieved wide circulation and had come to connote, as Hartlaub had intended, an unsentimental approach to the nature of society. In 1926 the phrase was first used to designate a 'new-objective' and explicitly socialist attitude to architecture, although, as Schmalenbach has noted, this transference did not derive from a community of style between Magical Realism and the new architecture. The first polemical post-1918 use of the word 'object' (*Gegenstand*)

in Germany came directly from a Russian source, and this interjected into the development of Neue Sachlichkeit architecture a specific set of sociopolitical connotations.

With the advent of the Russian Revolution in 1917 and the military collapse of Germany in the following year, Russia and Germany both found themselves confronted by hostile Western powers. While the Soviet Union had to contend with foreign intervention in the midst of a civil war and with the deprivations of an economic blockade, Germany was crippled by the punitive reparation agreements of Versailles. The end of the Russian Civil War in 1921 and the easing of foreign pressure induced Lenin to proclaim his new Economic Policy, designed to attract foreign capital into corporate partnership with the Soviet Union. Soon afterwards Germany ratified a series of earlier negotiations with the Soviets, signing in 1922 the Treaty of Rapallo, which re-established diplomatic relations and pledged both countries to economic co-operation. With the opening up of Russo-German relations at the end of 1921, El Lissitzky and Ilya Ehrenburg came to Berlin as unofficial cultural ambassadors of the Soviet Union, their immediate task being to organize an official exhibition of Russian avant-garde art. In May 1922 they published the first number of a trilingual art review, *Veshch/Gegenstand/Objet*, which featured on its cover two significant images: a photograph of a snow plough locomotive, and the basic icons of Suprematism, a black square and a black circle [107]. *Veshch* thus invoked the *sachlich* engineered object and the Suprematist ‘non-objective’ world.

**107** Lissitzky, cover of *Veshch/Gegenstand/Objet*, 1922.

In 1923 Lissitzky became further involved with such cultural propaganda, editing, with Hans Richter and Werner Graeff, the first issue of the Berlin magazine *G* (for

*Gestaltung*, ‘Form’) and demonstrating his architectural ideas in the Prounenraum built for the Grosse Berliner Kunstausstellung of that year. By his invented term ‘Proun’ (from *Pro-Unovis*, ‘for the school of the new art’), Lissitzky evoked a new realm of art somewhere between painting and architecture. Of the Proun room, comprising a small rectilinear cell, articulated and animated by a continuous relief extending over the floor and ceiling, Lissitzky wrote:

*The room ... is designed with elementary forms and materials ... and with surfaces which are spread flat on to the wall (colour) and surfaces which are perpendicular to the wall (wood) ... the equilibrium which I seek to attain in the room must be elementary and capable of change so that it cannot be disturbed by a telephone or a piece of standard furniture. The room is there for the human being - not the human being for the room.*<sup>3</sup>

Here, as on the cover of *Veshch*, Suprematist abstraction is seen as being compatible with standard objects. Unlike Frank Lloyd Wright in the Larkin Building, Lissitzky did not feel any need to restyle such manufactured objects as telephones, although as early as 1920 he had rejected the ‘anti-art’ utilitarianism proclaimed by Tatlin’s Productivist Group. While he recognized that empirically engineered (*sachlich*) structures could possess both spatial beauty and symbolic significance, his Lenin Tribune of 1920 exemplified his own subtle combination of engineering and Suprematism: the basic structure consisted of an inclined lattice girder, with Lenin photomontaged into position at its crown, while the rostrum and the base were treated as Elementalist forms, miraculously suspended in space. This incongruous juxtaposition of abstract, non-objective elements with empirically engineered form was to characterize Lissitzky’s work until the early 1930s. Although this synthesis was not strictly compatible with the notion of

*Sachlichkeit*, Lissitzky's approach came to be a point of departure for an international and 'objective' style of building.

In 1922 the Dutch architect Mart Stam, then twenty-three years old, went to work for Max Taut in Berlin. There, while working independently on a competition for an office block in Königsberg, he met Lissitzky and for the rest of their stay in Berlin the two men remained in close contact. In 1923 Lissitzky projected his 'suspended' office block for Moscow, the 'Wolkenbügel', of which two separate versions were eventually produced, one by Lissitzky alone and the other in conjunction with Stam. When, late in 1923, Lissitzky contracted tuberculosis and was forced to move to Zürich, Stam went with him. During the next year they acquired a Swiss following and in 1925, largely at Lissitzky's instigation, they formed the left-wing ABC group, centred on Basle. The Swiss members of the group included Emil Roth of Zürich and Hans Schmidt, Hannes Meyer and Hans Wittwer of Basle. These men dedicated themselves to the design of socially relevant buildings in accordance with scientific principles.

In 1924 the ABC group began to propagate their views in the magazine *ABC: Beiträge zum Bauen*, edited by Stam, Schmidt and Lissitzky in collaboration with Roth. Although they did not adopt the phrase 'Neue Sachlichkeit', they nonetheless made their *sachlich* orientation explicit. The first number contained Stam's essay 'Kollektive Gestaltung' ('Collective Design') and Lissitzky's seminal text, 'Element und Erfindung' ('Element and Invention'), in which he outlined the duality of his approach, his synthesis of functional structure with abstract elements. The second issue introduced the group's characteristic preoccupation with normative standards, particularly in Paul Artaria's essay on the standardization of paper sizes, while Nos 2 and 3, a double issue, included an essay on reinforced-concrete construction, as exemplified in Le Corbusier's 'Dom-Ino'

system of 1914–15, as well as in Mies van der Rohe's glass skyscraper projects of 1922 and Stam's Königsberg block and extendable house proposals of the same date. By dramatically comparing the relative weights and thicknesses of metal and wooden window frames the magazine stressed the intrinsic economy of modern building technology. Soon afterwards the ABC group summed up its distaste for massive architecture in the equation: 'building × weight = monumentality'.

With the publication of Meyer and Wittwer's Petersschule project for Basel of 1926 [109], the ABC group crystallized its Functionalist and anti-monumental programme. Meyer's description reveals the ABC preoccupation with precise calculation and social relevance, both to be made manifest through light-weight technique:

*The ideal would be to skylight all the rooms ... and to set aside a new site as part of a planned development of the town. At present there appears to be no prospect of such demands being realized and the following is a compromise solution on the basis of the old building. ...*

*The School itself is raised as far as possible above the ground to a level where there is sunlight and fresh air.*

*On the ground floor there is only the swimming bath and the gymnasium in an enclosed space. The remaining area of the playground is released for public traffic and parking. Instead of a playground, two open spaces (suspended platforms) and all the flat roofs of the building are assigned to the children for recreation. ... The dead weight of the building is used to carry on four cables the unsupported steel structure of the two suspended platforms.<sup>4</sup>*

This steel-frame 'Constructivist' work recalls a Soviet Vkhutemas project for a suspended restaurant, published by Stam in the ABC magazine in 1924. The machine-like furnishing of the Petersschule proposal, its steel windows,

aluminium doors, rubber floors and asbestos-cement cladding, anticipated the finishes proposed in the Meyer/Wittwer entry for the League of Nations competition of 1927 [108].

**108** H. Meyer and Wittwer, project for the League of Nations Building, Geneva, 1926-27. (Compare Le Corbusier's entry, [p. 174](#).)

**109** H. Meyer and Wittwer, project for the Petersschule, Basel, 1926.

The claim by Meyer and Wittwer that their League of Nations design was a scientific solution merits examination. Structurally the assertion appears tenable, inasmuch as their use of a standard module throughout would have been highly suitable for prefabrication. As in Paxton's Crystal Palace, the modular extension or contraction of any section would have been possible without altering the basic order of the building. The raising of the assembly building on columns was more than adequately justified by the provision of parking beneath. Meyer's much-proclaimed 'objectivity' also found reflection in the determination of the auditorium profile through elaborate acoustical calculation. But one may question the designer's 'objectivity' when elevator shafts are glazed (after Russian Constructivist models) so as to reveal the 'machine aesthetic' in action. Further doubts arise when one considers the undeniably picturesque qualities of the composition. And although Meyer claimed in his report that 'our building symbolizes nothing', and that its objective indifference to the site lay beyond aesthetic evaluation, he disclosed a certain symbolizing intent when he wrote:

*If the intentions of the League of Nations are sincere, then it cannot possibly cram such a novel social organization into*

*the straitjacket of traditional architecture. No pillared reception rooms for weary monarchs but hygienic work-rooms for the busy representatives of their people. No back corridors for backstairs diplomacy but open glazed rooms for public negotiation of honest men.*<sup>5</sup>

The latent symbolism of Meyer's functional approach also finds expression in his proposal to classify the users of the assembly building by their parking position and to conduct them inconspicuously from this point to their assigned places in the auditorium above.

The ABC commitment to an objective approach to both building and life arose out of a determination to serve only collective necessity, of which Stam wrote in 'Kollektive Gestaltung':

*The dualistic view of life - heaven and earth, good and evil - the idea that there is an eternal inner conflict, has thrown the emphasis on the individual and drawn him away from society. ... The individual's isolation has led him to be dominated by his emotions. But the modern outlook ... sees life as the single reaching out of a single force. This means that what is special and individual must yield to what is common to all.*<sup>6</sup>

Meyer expressed a similar view in his essay 'Die neue Welt' ('The New World') published in *Das Werk* (1926):

*The standardization of our requirements is shown by: the bowler hat, bobbed hair, the tango, jazz, the co-op product, the DIN standard size, etc. ... Trade union, co-operative, Ltd., Inc., cartel, trust, and the League of Nations are the forms in which today's social conglomerations find expression, and the radio and the rotary press are their media of communication. Co-operation rules the world. The community rules the individual.*<sup>7</sup>

In 1925, Stam returned to Holland to work under L.C. van der Vlugt, as job captain on the reinforced-concrete mushroom-columned Van Nelle Factory, completed in 1929 [110, 111]. If the Meyer/Wittwer project for the League of Nations can be regarded as the canonical work of the ABC group, then the Van Nelle tobacco, tea and coffee packing plant may be considered as the realization of similar technical and aesthetic premises. As in the Meyer/Wittwer design, the structure and the movement systems were explicitly revealed, although naturally in a packing process the prime movers were not elevators but glazed conveyors, running diagonally between the curtain-walled packing block and the canal warehouse. The significance of such an open and dynamic expression was not lost on an observer as sensitive as Le Corbusier, who saw it as a confirmation of his own utopian socialist convictions, and wrote in 1931:

**110, 111** Brinkman and Van der Vlugt (architect in charge: Stam), Van Nelle Factory, Rotterdam, 1927-29. Transverse section showing concrete mushroom column construction, and exterior.

*The road that runs into the factory is smooth, flat, bordered with brown-tiled sidewalks; it is as clean and bright as a dance floor. The sheer façades of the building, bright glass and gray metal, rise up ... against the sky.... The serenity of the place is total. Everything is open to the outside. And this is of enormous significance to all those who are working, on all eight floors inside. ... The Van Nelle tobacco factory in Rotterdam, a creation of the modern age, has removed all the former connotations of despair from that word 'proletarian'. And this deflection of the egoistic property instinct towards a feeling for collective action leads to a most happy result: the phenomenon of personal participation in every stage of the human enterprise.<sup>8</sup>*

Despite Stam's major participation in this design, the role of Van der Vlugt cannot be discounted, particularly as he later designed a work of comparable 'objectivity' without the aid of Stam – his *Existenzminimum* Bergpolder flats, built in Rotterdam in 1933. Nonetheless Stam must be credited for introducing the polemic of objectivity into Dutch architecture, for all that J.J.P. Oud had by this date already built extensive amounts of flat-roofed Functionalist workers' housing, most particularly his Kieffhoek Estate in Rotterdam, under construction by 1925. In all this work Oud, as Rotterdam City Architect, remained committed to Berlage's traditional urban precept of the street, regarded as an enclosed, external room.

The full measure of Stam's revolt against this tradition may be judged from his 1926 project for the Rokin district of Amsterdam, where the continuity of the existing street is vitiated by a continuously elevated office block, served by escalator access and an aerial railway, the ground being reserved for traffic parking, display and pedestrian movement. This provocative yet economically questionable project was typical of Stam's preoccupation with the subversion of the traditional urban pattern. It epitomized his concept of the 'open city'.

Stam's extreme materialism served to isolate him from the Functionalist Opbouw group, already established in Rotterdam by 1920. Despite their commitment to the 'Nieuwe Zakelijkheid' ('New Objectivity'), Opbouw members such as Brinkman and Van der Vlugt and their industrialist client Kees van der Leeuw sought to transcend 'objectivity' through a concern for universal 'spiritual' values. This they expressed through their participation in the Dutch theosophical movement and through their building, in 1930, of a small retreat at Ommen for Krishnamurti and his followers.

Similar spiritual aspirations were inherent in the work of Johannes Duiker and Bernard Bijvoet, who departed from

their initial Wrightian manner in the boarded house that they built at Aalsmeer in 1924 [112]. This asymmetrical, monopitched house initiated the Zakelijkheid period of Duiker's career, a period that culminated in two reinforced-concrete and glass structures of a decidedly Constructivist character – his Zonnestraal Sanatorium at Hilversum of 1928 [113] and his Open Air School in Amsterdam of 1930 [114]. Despite his receptivity to the necessity for programmatic distortion, as in the asymmetrical gymnasium wing of the Open Air School, Duiker's latent idealism found expression in his preference for symmetrical organization. Only at the end of his life did he begin to abandon his characteristic 'butterfly' *parti*, in favour of the more serial, aformal approach of Stam. This came with his Cineac Cinema, Amsterdam, of 1934 and with the Gooiland Hotel, Hilversum, completed in 1936 by Bijvoet after Duiker's death.

**112** Duiker and Bijvoet, house, Aalsmeer, 1924.

**113** Duiker, Zonnestraal Sanatorium, Hilversum, 1928. Administration and medical complex with radiating ward blocks.

**114** Duiker, Open Air School, Amsterdam, 1930.

In 1928, having designed housing for the 1927 Weissenhofsiedlung at Stuttgart, Stam once again left Holland for Germany, this time for Frankfurt, where he was to work under the City Architect Ernst May on the Hellerhof housing scheme – a residential sector within May's large 'Neue Frankfurt' development. Later that year, in the curious company of Rietveld and Berlage, Stam represented Holland at the foundation meeting of the Congrès

Internationaux d'Architecture Moderne (CIAM) at La Sarraz in Switzerland. Soon after this meeting the Dutch Nieuwe Zakelijkheid movement became consolidated through the fusion of the Amsterdam Functionalist circle known as De 8 with the Opbouw group. This formation, called De 8 en Opbouw, remained active as the Dutch wing of CIAM until 1943.

The emergence of the Neue Sachlichkeit in Germany was inseparable from the Weimar Republic's crash housing programme, initiated by the stabilization of the Rentenmark in November 1923. In that year, Otto Haesler, the pioneer of *Zeilenbau* (row) housing, completed the Siedlung Italienischer Garten at Celle, near Hanover. Flat-roofed, with polychromatic rendered façades, its modernistic formula was to be adopted by Ernst May as a model for the first units to be built in Frankfurt, in 1925. In 1924, in the Siedlung Georgsgarten, his second work at Celle, Haesler developed Theodor Fischer's Alte Heide row housing model of 1919 into a general system, the housing being laid out in rows an optimum distance apart for sun penetration and ventilation. This pattern, based on Heilgenthal's rule ([fig. 119](#), p. 149) that the rows should be spaced no less than twice their block height apart, became the normative Neue Sachlichkeit formula, to be repeated in any number of housing schemes realized in Germany between 1925 and 1933. In such layouts, following Haesler's example, south- or west-facing living rooms open onto communal green space. In Georgsgarten, Haesler added short south-facing blocks to the terraces, which ran north-south, thereby creating a series of L-shaped green courts, extending out into adjacent allotments. These allotments were subdivided into family plots for the cultivation of food (compare Adolf Loos's Heuberg Estate, Vienna, of 1926). At Georgsgarten, Haesler also evolved the basic apartment type, of which he was to design many variations throughout his career. His typical apartment, stacked on three floors, with staircase

access in pairs, consisted of a living/dining room, a small kitchen, a WC, and three to six bedrooms. The replacement of the traditional *Wohnküche* by a separate kitchen was a radical departure in mass housing, and had the critical social impact of shifting the household focus towards an austerity version of the bourgeois 'salon'. Haesler was to upgrade his typical apartment in the Siedlung Friedrich Ebert-Ring at Rathenow, built in 1929, where a separate bathroom was introduced into the standard walk-up unit.

Both these early settlements were equipped with communal facilities such as laundries, meeting rooms, libraries, sports fields, etc., while Georgsgarten was further provided with a kindergarten, a café and a hairdresser. The sparse furnishing of these spaces, with their standard Thonet furniture and bare light bulbs, relieved by carefully detailed pipework and electrical conduit, synthesized the typical Neue Sachlichkeit interior: cold and austere and yet at the same time scintillating. Such qualities were echoed on the exterior, where plain rendered surfaces, steel windows, patent glazing and metal railing were combined to create the universal *sachlich* syntax.

Despite the national and ideological divergence of the seventeen architects involved – including, from Germany alone, figures as diverse as Behrens, Döcker, Gropius, Hilberseimer, Rading, Scharoun, Schneck, Mies van der Rohe and the brothers Taut – this objective mode of expression was more or less universally adopted in the Deutsche Werkbund Weissenhofsiedlung, erected outside Stuttgart in 1927.

In the subsequent development of his own work, Haesler began to move away from the expression of the *Siedlung* as a corporate entity to the assertion of the terraced block as a free-standing, infinitely repeatable unit. His initial plan of 1929 for the Siedlung Rothenberg at Kassel is typical in this respect, not only of his own work, but of most other Neue Sachlichkeit housing of comparable date.

With May's appointment as City Architect of Frankfurt in 1925, the building of workers' settlements began there on an unprecedented scale. Yet, owing to his early training with both Theodor Fischer in Munich and Raymond Unwin in England, May's rationalism was tempered by a feeling for tradition. Whereas Haesler had created an indented but continuous form at Georgsgarten and a serried open-ended layout at Rothenburg, May (like Bruno Taut and Martin Wagner in their contemporary Berlin-Britz housing) was more concerned with the creation of self-contained urban space, after the model of the traditional Prussian *Anger* village. Thus May's first work for Frankfurt, his Bruchfeldstrasse development of 1925 [115], designed with C.H. Rudloff, consisted of a large courtyard of 'zigzag' housing, enclosing an elaborately landscaped communal garden. This unique layout, formally reminiscent of the Cité Moderne designed by Victor Bourgeois for Brussels in 1922, gave way to a more generalized approach in May's master plan for Neue Frankfurt of 1926 and in his Römerstadt, Praunheim, Westhausen and Höhenblick settlements built as parts of the Nidda Valley complex between 1925 and 1930.

**115** May and Rudloff, Bruchfeldstrasse Estate, Frankfurt, 1925.

The 15,000 units completed under May's direction account for more than ninety per cent of the housing built in Frankfurt over the entire period. This impressive figure could hardly have been achieved without May's insistence on efficiency and economy in both design and construction. Such an objective approach, reinforced by the realities of building costs, led inevitably to the formulation of 'existence-minimum' space standards, which became the contentious theme of the CIAM Frankfurt Congress of 1929. In contrast to Le Corbusier's 'idealistic' appeal for an 'existence-maximum', May's minimum standards were

dependent on the extensive use of ingenious built-in storage, foldaway beds and above all on the development of the ultra-efficient, laboratory-like kitchen, the *Frankfurter Küche*, designed by the architect G. Schütte-Lihotzky [116]. Escalating costs finally led May to pioneer prefabricated concrete slab construction, the so-called ‘May System’ being used for the Praunheim and Höhenblick housing sectors started in 1927.

**116** Schütte-Lihotzky, *Frankfurter Küche*, 1926.

Walter Gropius’s Bauhaus complex of 1926 and his Törten housing of 1928 [117] represent two stages in his gradual conversion to the principles of the Neue Sachlichkeit. While the ‘railroad’ layout of Törten reflected not only the standardization of its units but also the linear process of their prefabricated assembly by travelling crane, the Dessau Bauhaus still amounted to a formalist composition of asymmetrical elements. Its centrifugal, pinwheeling form, reminiscent of De Stijl planning, had first been attempted by Gropius and Meyer in their *Chicago Tribune* project of 1922 (fig. 99, p. 135) and reformulated by them as an asymmetrical, horizontal distribution of masses in their Erlangen Academy design of 1924. While the expression of a comparable aesthetic in the Dessau Bauhaus necessitated the wilful suppression of its structural frame, this was compensated for by the *sachlich* detailing of its secondary components, such as the radiators, the fenestration, the balustrading and the light fittings. All the same, the ultimate articulation of these large intersecting masses could not be achieved without recourse to changes in colour or to a shallow modelling of the façade that effectively recalled the Neo-Classical *modenature* of the Gropius and Meyer Werkbund Building of 1914.

**117** Gropius, rationalized housing, Dessau-Törten, 1928. The site layout is apparently organized around tower crane tracks.

Gropius's most unequivocal Neue Sachlichkeit work was his 1927 Total Theatre project, designed for Erwin Piscator's Volksbühne in Berlin. Piscator had founded his Proletarian Theatre in 1924 after the model of the Russian revolutionary producer Vsevolod Meyerhold, whose October Theatre had been proclaimed in Moscow in 1920. Thus Gropius's 'Piscatorbühne' was largely designed to satisfy the requirements of a biomechanical stage, to provide the space for a 'theatre of action' as outlined by Meyerhold and his Proletkult colleagues. The actor-acrobat was the ideal type for such a theatre, in which a circus-like mechanized performance was presented on an apron stage.

In his remarkably elegant and flexible solution, Gropius provided Piscator with an auditorium which could be rapidly transformed into any one of the three 'classic' stage forms, the proscenium, the apron or the arena [118]. How this provision was to be made, and to what theatrical ends, has been best described in Gropius's own words. In 1934, at a conference in Rome, he stated:

**118** Gropius, Total Theatre project, 1927. View from above, and alternative plans showing proscenium, apron and arena stages.

*A complete transformation of the building occurs by turning the stage platform and part of the orchestra through 180°. Then the former proscenium stage becomes a central arena entirely surrounded by rows of spectators! This can even be done during the play. ... This attack on the spectator, moving him during the play and unexpectedly shifting the stage area, alters the existing scale of values, presenting to*

*the spectator a new consciousness of space and making him participate in the action.*<sup>9</sup>

The convertible auditorium was also equipped with a peripheral stage, on which the action could encircle the audience. Alternatively this *Spielring* could be sealed off by a segmented back-projection screen, for the display of cinematic images complementary to the action on the stage. A similar demountable cyclorama was also available for the stage itself. The adaptability of this auditorium was to be further augmented by the provision for acrobatic display, just above the central arena. This aerial stage would have had the effect of transforming Gropius's egglike void into a truly three-dimensional 'play' space, with the audience either surrounding or surrounded by the action on every side. Finally, the auditorium itself was a transparent box, through which its basic structure could be easily perceived, the open lattice of the ovoid roof being ingeniously reconciled with the column nodes of its elliptical 'ring' support (compare the Meyer/Wittwer League of Nations auditorium).

Of approximately the same date as the Total Theatre were the Haselhorst housing and Elberfeld Hospital projects, designed by Marcel Breuer and Gustav Hassenpflug in 1928, and Hannes Meyer's Trades Union School, completed at Bernau in 1930. Breuer's unrealized Elberfeld project and Meyer's Bernau school were comparable *sachlich* works, inasmuch as they each comprised asymmetrical sequences of repeated elements, arranged in stepped formation, responding 'simultaneously' to the respective demands of the programme, orientation and topography. Where the ward units of the sanatorium, supported on a concrete superstructure, were set back to provide a stepped sequence of sun decks, one for each ward, the bulk of Meyer's school was made up of three-storey residential blocks, set back at their corners in such a

way as to break up the overall length. Both these buildings were stepped in relation to gently sloping sites, and yet both were freely and functionally related to their major atypical elements, such as operating suites and x-ray units in the sanatorium or lecture halls and common facilities in the case of the school.

After his resignation from the Bauhaus at the end of 1927, Gropius became increasingly involved with the problem of housing [119], so that apart from the extensive low-cost schemes that he designed and saw built in the late 1920s, in Dessau, Karlsruhe and Berlin, he became theoretically concerned with the improvement of housing standards and the development of the housing block into a classless system for community settlement. His unrealized housing projects for Berlin of 1929 were a significant advance over his previous work, offering higher living standards and more comprehensive social services, while his 1931 proposal for high-rise middle-class housing, on the Wannsee near Berlin, constituted his first attempt at a self-contained commune block equipped with a restaurant and a gymnasium-solarium on the roof. Gropius's views in the late 1920s lay to the left of the Social Democratic position, as his essay, *Die Soziologischen Grundlagen der Minimalwohnung* (*The Sociological Bases of Minimum Housing*), of 1929 makes clear. There he put forward the familiar socialist argument in favour of state involvement in the provision of housing:

**119** Gropius, diagram presented at CIAM in 1930 demonstrating the increased density and open space to be obtained by using high-rise slabs.

*Since technology operates within the frame-work of industry and finance and since any cost reduction achieved must first of all be exploited for the benefit of private industry, it will only be able to provide cheaper and more varied*

*dwellings if the government increases private industry's interest in dwelling construction by increased welfare measures. If the minimum dwelling is to be realized at rent levels which the population can afford, the government must therefore be requested to: (1) prevent the waste of public funds for apartments of excessive size ... for which an upper limit of apartment size must be established; (2) reduce the initial cost of roads and utilities; (3) provide the building sites and remove them from the hands of speculators; (4) liberalize as far as possible the zoning regulations and building codes.*<sup>10</sup>

These prescriptions were only barely in advance of the official housing policy of the Weimar Republic, which, between 1927 and 1931, was to subsidize publicly through social insurance and property tax the design and erection of around one million dwellings – about seventy per cent of the new housing starts made over the entire period.

Such an extensive welfare state system could not, however, be maintained in the face of the stock market collapse, which accompanied the world economic depression of 1929. Foreign trade slumped, loans were called in, and Germany was once more plunged into economic and political chaos. This had the effect of swinging the opinion of the country to the right, and with this political shift the fate of the German Neue Sachlichkeit architects was more or less sealed. Nothing remained for them but to emigrate, and this they did, each according to the colour of his political conviction [120]. May left for the Soviet Union early in 1930, with a team of architects and planners, to work on a master plan for a steel smelting plant and town at Magnitogorsk in the Urals. His team included Fred Forbat, Gustav Hassenpflug, Hans Schmidt, Walter Schwagenscheidt and Mart Stam. At the same time Meyer left to take up a teaching post in Moscow. Others, such as Arthur Korn and Bruno Taut, followed suit in the early 1930s.

On the National Socialist seizure of power in 1933, the remaining Neue Sachlichkeit architects of more moderate persuasion were either forced to retire or compelled to leave the country, Gropius and Breuer hurriedly migrating to England in 1934, en route to the United States.

**120** An architect leaves Germany for the Soviet Union: cover of *Das Neue Frankfurt*, Sept. 1930, devoted to 'Germans building in the USSR'.

# Chapter 16

## Modern Architecture in Czechoslovakia 1918-38

*Until recently, historical narratives often described twentieth century art more in terms of the intentions of artists and movements than anything else. For instance, there was an uncritical acceptance of avant-garde internationalism's self-proclaimed vision of the world as a homogenous continuum developing in a linear progression, a vision that disregarded regional idiosyncrasies. In reality, however, internationalism frequently devolved into centralism, in which the center exerted authority over its peripheries while overlooking their contributions ... Czechoslovakia between the wars can serve as a case study for these exchanges for three reasons. First, it was located in the middle of Europe and its cultural heritage included contributions from Western and Eastern, as well as southern and northern Europe. Second, it was a multi-national country, whose population consisted of several ethnic groups, notably Czechs, Slovaks, Germans, Hungarians, Ruthenians, and Jews. Third, it was the only democracy in Central Europe which, thanks to relatively favorable political and economic circumstances, allowed artists to further develop their ideas throughout the 1930s.*

Jaroslav Andel  
*Introduction to the Art of the Avant-Garde in Czechoslovakia 1918-1938*, 1993<sup>1</sup>

The two most salient aspects of the Czech avant garde in the 20th century were the Poetism of the Devětsil association of artists and the Constructivism advocated by the Left Front political movement. The latter was culturally complex, poised between the Neue Sachlichkeit (New Objectivity) of German-speaking Europe and the more utopian drive of Russian Constructivism as projected by Soviet avant-garde architects between 1918 and 1932. The key Czech critic mediating between Devětsil and Constructivism was the polemical polymath Karel Teige. During the first half of the 1920s, Teige was an advocate of the ‘picture poem’ collages of Poetism, an amalgam of graphics, typography and photography that veered into kinetic art and film. Jaroslav Andel informs us that another key figure at this time was Zdeněk Pešánek, whose drive towards a more dynamic form of art split the Devětsil movement into its surrealist and functionalist factions, with the latter tending towards Constructivism in architecture. This last line was advanced by the journal *Stavba* (*Construction*), edited by Oldřich Starý and Oldřich Tyl of the Architects’ Club and strongly supported by the young architect Ludvík Kysela. The second number of this magazine, published in 1923, featured a Constructivist Manifesto signed by Starý, Kysela, Bedřich Feuerstein and the ubiquitous Teige, who was the journal’s managing editor. This polemical publication was paralleled by the anthology *Život II* (*Life II*), edited by the architect Jaromír Krejcar [121]. Krejcar straddled the divide between the so-called emotional functionalism of Devětsil and the objective functionalism of *Stavba*, the adherents of which included Kysela, Tyl, Jan Koula, František Libra and Josef Fuchs. Mediating between the two factions, Krejcar arrived at his own emotionally expressive form of Constructivism, as found in the villa he designed for the writer Vladislav Vančura on a site near Prague [123]. The brilliance of this Constructivist design, which was realized in a somewhat

modified form, can only be fully appreciated if one compares it to the Neo-Plastic formalism of the Rietveld-Schröder House of 1924 and the Purism of Le Corbusier's Maison Cook of 1926. Krejcar's talent for invention in both technical and tectonic terms remained with him throughout his career, as seen in the high-tech, steel-framed Czech State Pavilion that he built for the Paris World Exhibition of 1937 [122], quite distinct from the significant pavilions designed for the same event by Alvar Aalto, Le Corbusier and Junzo Sakakura.

**121** Život II, 1922.

**122** Krejcar, Czech State Pavilion, Paris World Exhibition of 1937.

**123** Krejcar, Villa for Vančura, Zbraslav, near Prague, 1923.

Krejcar and Kysela both came to the fore with medium-rise commercial structures in the second half of the 1920s, the former through his Olympic and Jednota buildings and the latter through his Lindt and Bata department stores, erected next to each other in the centre of Prague (see pp. 285-86). Where Kysela's Lindt store of 1926 incorporated a top-lit arcade running through the block, and his Bata store of 1929 was faced with large sheets of plate glass – spanning from floor to ceiling – Krejcar's Olympic building had a basement cinema and his Jednota building featured an elegant *café dansant* at ground level. This combination of commercial space with cultural amenities testifies to the urbanity of the Prague bourgeoisie.

One of the most notable aspects of the Czech architectural avant garde between the wars was the wide scope of their production, with regard not only to the broad

spectrum of the society they served, but also to their conceptual and technological capacity. They were able not only to conceive but also to construct the necessary institutional needs of a rapidly modernizing society, such as we find in Josef Havlíček and Karel Honzík's Pensions Institute of 1933 and in Adolf Benš and Josef Kříž's Electricity Board Headquarters of 1935 [124, 125]. This was an atrium office complex built around a seven-storey, top-lit monumental stair hall. This last was roofed by a concrete slab, perforated by inset cylindrical glass lenses. It employed the same technique as the reinforced-concrete shell vaults covering the city arcades. This is surely the lost art of *ferro cemento*, perfected by Czech architects and engineers of the interwar period. A typical arcade in this regard was Oldřich Tyl's Bondy Passage completed in Prague two years before.

**124, 125** Benš and Kříž, Electricity Board Headquarters, Prague, 1926–35. Aerial perspective, and top-lit galleria and stair hall of main entrance.

In 1928, one year after the Deutsche Werkbund's Weissenhof housing exhibition in Stuttgart, a similar demonstration of prototypical residences was constructed in Brno and the comparable Baba housing estate was built outside Prague. It is characteristic of the period that the Dutch architect Mart Stam also designed a house in the Baba estate. However, this impulse to build housing stock comparable to that of the Weimar Republic was undercut by the worldwide stock market crash of 1929. This fundamental change in the cultural and political climate was summed up in 1993 by Alena Kubová when she wrote:

*In its quest for a social function for architecture, the development of which would define its modernity, European avant-garde theory had come up with the ideal of minimal*

*housing. Teige thought instead of modernity in terms of class struggle ... This became clear in 1929 when Devetsil was replaced by Leva fronta (Left Front) and Czech functionalism became intimately bound up with housing. The Left Front dispatched its plans for a collective dwelling to CIAM's third congress.*

The one Czech architect whose work transcended the post-1929 economic and ideological crisis was the architect-cum-industrial designer Ladislav Žák, whose Villa Hain of 1933 [126] was realized for an aeronautical engineer. As Vladimír Šlapeta has remarked, Žák's work as an architect went beyond the principles of instrumental economic production to engage in a more comprehensive approach to psycho-physiological needs. According to Šlapeta, this approach was inspired by Honzík's theory of biotechnics and seems to have been close to similar theories then being advanced by Moholy-Nagy. The Villa Hain was as ergonomic as possible within the confines of a tight prism, combining horizontal double-glazed windows with built-in ventilation grilles and integrated curtain tracks. The cantilevered sunbathing terrace at the end of the house was equipped with roller blinds in order to shade it from the sun and to ensure privacy. This house may be seen as a kind of technological *architecture parlante*, as the cantilevered viewing platform on top of the house enabled the engineer to view his prototypes taking off from Prague's Ruzyně Airport, completed to the designs of Adolf Benš between 1932 and 1934. The other prolific architect of the period based in Brno was the local architect Bohuslav Fuchs, whose most accomplished work was the narrow fronted Hotel Avion built in the downtown of the city in 1928. The modern architecture of Brno rivalled that of Prague, as was made evident in the Brno Exhibition of 1928, designed in part by Fuchs.

**126** Žák, Villa Hain, Prague, 1933.

Situated to the political left of Fuchs was the architect Jiří Kroha, who, as a professor of architecture at Brno Technical University, was affiliated with Karel Teige's Marxist-Constructivist position. This led him to initiate a programme of rigorous research within the architectural school. With Hannes Meyer and Mart Stam coming frequently to Brno and Kroha visiting the Soviet Union in 1930, contacts between the Czech progressive figures, the German left and the Soviet Union were particularly intense during this period. All this activity led to the foundation in 1933 of the Czech Union of Socialist Architects, with Kroha at its head. In the following year Kroha's radical politics led to his imprisonment for publically proclaiming Communist sympathies. Although he was restored to his professorship in 1937, he was arrested yet again in 1938 by the Gestapo and sent to a concentration camp soon after the annexation of Czechoslovakia by Germany in that year.

## Chapter 17

# De Stijl: the Evolution and Dissolution of Neo-Plasticism 1917-31

- 1 *There is an old and a new consciousness of the age. The old one is directed towards the individual. The new one is directed towards the universal. The conflict of the individual and the universal is reflected in the World War as well as in art today.*
- 2 *The war is destroying the old world with all that it contains: the pre-eminence of the individual in every field.*
- 3 *The new art has revealed the substance of the new consciousness of the age: an equal balance between the universal and the individual.*
- 4 *The new consciousness is ready to be realized in everything, including the everyday things of life.*
- 5 *Traditions, dogmas and the pre-eminence of the individual (the natural) stand in the way of this realization.*
- 6 *Therefore the founders of Neo-Plasticism call on all those who believe in the reform of art and culture to destroy those things which prevent further development, just as in the new plastic art, by removing the restriction of natural forms, they have eliminated what stands in the way of the expression of pure art, the extreme consequence of every concept of art.*

From the first manifesto of De Stijl, 1918<sup>1</sup>

The Dutch De Stijl movement, which lasted for barely fourteen years, was centred about the work of three men: the painters Piet Mondrian and Theo van Doesburg and the cabinetmaker and architect Gerrit Rietveld. The other artists who constituted the original formation, in 1917, under Van Doesburg's leadership – the painters Bart van der Leck, Georges Vantongerloo and Vilmos Huszar, the architects J.J.P. Oud, Robert van 't Hoff and Jan Wils, and the poet Antony Kok – soon departed in their various ways from the main line of the movement. All, however, with the exception of Van der Leck and Oud, were signatories of the eight-point manifesto published in 1918 in the second issue of the magazine *De Stijl*. This, the first manifesto of De Stijl, called for a new balance between the individual and the universal and for the liberation of art from both the constraints of tradition and the cult of individuality. Influenced as much by the philosophical thought of Spinoza as by the Dutch Calvinistic background from which they all came, they sought a culture that would transcend the tragedy of the individual by its emphasis on immutable laws. This universal and utopian aspiration was succinctly summed up by their aphorism: 'The object of nature is man, the object of man is style.'

By 1918 the movement had already been influenced by the Neo-Platonic, not to say theosophical, philosophy of the mathematician M.H. Schoenmaekers, whose major works, *Het nieuwe Wereldbeeld* ('The New Image of the World') and *Beeldende Wiskunde* ('The Principles of Plastic Mathematics'), had been published in 1915 and 1916 respectively. Schoenmaeker's metaphysical world view was complemented by more concrete attitudes and concepts drawn directly from Berlage and Wright, the latter having become known in Europe through the publication in 1910 and 1911 of the two famous Wasmuth volumes dedicated to

his work. Berlage, on the other hand, was more influential for his sociocultural criticism, and it was from him that the De Stijl artists had appropriated the title 'The Style', which he in turn had probably taken from Gottfried Semper's critical study, *Der Stil in den technischen und tektonischen Künsten oder praktische Ästhetik*, of 1860.

The appearance of Mondrian's first post-Cubist compositions, consisting largely of broken horizontal and vertical lines, coincided with his return to Holland from Paris in July 1914 and with the period that he and Van der Leck spent in Laren in almost daily contact with Schoenmaekers. From Schoenmaekers came the term 'Neo-Plasticism' – from his coinage of *nieuwe beelding* – and from him too came the restriction of the palette to the primary colours of whose cosmic significance he wrote in *Het nieuwe Wereldbeeld*: 'The three principal colours are essentially yellow, blue and red. They are the only colours existing ... yellow is the movement of the ray (vertical) ... blue is the contrasting colour to yellow (horizontal firmament) ... red is the mating of yellow and blue.' Elsewhere in the same text he provided a comparable justification for limiting Neo-Plastic expression to orthogonal elements: 'The two fundamental, complete contraries which shape our earth and all that is of the earth are: the horizontal line of power, that is the course of the earth around the sun, and the vertical, profoundly spatial movement of rays that originate in the centre of the sun.'

For all his formative influence Schoenmaekers played no direct role in the aesthetic evolution of De Stijl. This was left to Van der Leck and Vantongerloo, whose very independence as artists caused them to split from Van Doesburg at an early date. Yet without their contributions it is doubtful if the characteristic De Stijl aesthetic could have been formulated with such clarity in so short a time. It is obvious, for example, that Van Doesburg's famous abstraction *The Cow*, of 1916, owes much to Van der Leck, while Vantongerloo's sculpture *Interrelation of Masses*, of

1919, clearly anticipates the general massing of the Van Doesburg and Cor van Eesteren house projects of 1923. And even the aloof Mondrian, in the last number of *De Stijl* (1932) – dedicated to the memory of Van Doesburg – brought himself to acknowledge his debt to Van der Leck, for the latter's use, as early as 1917, of saturated primary colours.

The years 1914–16 had seen Mondrian in Laren, in frequent contact with Schoenmaekers. During this period he wrote his basic theoretical text, 'De Nieuwe Beelding in de Schilderkunst' ('Neo-Plasticism in Painting'), which appeared in 1917 in the first issue of *De Stijl*. The enforced seclusion and meditation of the war years brought Mondrian to a new point of departure. His work now comprised a series of compositions consisting of floating, rectangular, coloured planes. Both he and Van der Leck had now arrived at what they each considered to be a totally new and pure plastic order, with the much younger Van Doesburg closely following their lead. Yet while Mondrian remained involved in planar compositions set within the 'shallow space' of the picture plane, as represented in his *Composition with Coloured Planes on a White Ground* of 1917, Van der Leck and Van Doesburg were to arrive at a linear structuring of the picture plane itself, through the use of narrow bars of colour, etched in a white field. Van Doesburg's *The Cow* dates from this period, as does his *Rhythm of a Russian Dance* of 1918, both works being influenced by Van der Leck.

The first architectural work associated with De Stijl was created by Robert van 't Hoff, who had seen Wright's work on a visit to America before the war and in 1916 built a remarkably convincing Wrightian villa on the outskirts of Utrecht. Aside from this pioneering reinforced-concrete house at Huis ter Heide and a number of less elegant Wrightian works by Wils, there was comparatively little architectural activity in the early phases of De Stijl. Oud,

who became City Architect to Rotterdam in 1918, at the age of twenty-eight, was never wholeheartedly affiliated with the movement. After abstaining from the 1918 manifesto he took pains to establish his artistic independence. He seems to have found in the compositions of the Austrian architect Josef Hoffmann a means for detaching himself from the more 'structural' interests of De Stijl. The single exception to this was his Purmerend factory project of 1919, wherein Neo-Plastic elements were rather diffidently applied to an otherwise bland assembly of masses. There was, in effect, very little Neo-Plastic architecture before 1920, when it made its first appearance in the work of Rietveld. Prior to 1915 Rietveld had taken courses with the architect P.J. Klaarhamer, who, while never associated with De Stijl, was collaborating at the time with Van der Leck.

The year 1917 saw the creation of the famous Red/Blue chair designed by Rietveld. This simple piece of furniture, based on a traditional folding bed-chair, provided the first occasion for a projection of the Neo-Plastic aesthetic into three dimensions. In its form, the bars and planes of Van der Leck's compositions were now realized as articulated and displaced elements in space. Aside from its articulation, the chair was distinguished by its exclusive use of primary colours in conjunction with a black frame - a combination which, with grey and white added, was to become the standard colour scheme of the De Stijl movement. Its structure enabled Rietveld to demonstrate an open architectonic organization that was manifestly free from the influence of Wright. It still predicated a *Gesamtkunstwerk*, but one that was free from the biological analogies of 19th-century synthetic Symbolism, that is to say, from Art Nouveau.

Few, if any, of Rietveld's colleagues could have foreseen the full potential of the modest pieces of furniture that he went on to design between 1918 and 1920 - the buffet [127], baby cart and wheelbarrow which, as direct

developments of the Red/Blue chair, were assembled from rectilinear wooden spars and planes, simply dowelled together. None of these pieces, however, fully anticipated the architectural environment attempted by Rietveld in his design for Dr Hartog's study, built at Maarssen in 1920. In this work each piece of furniture, including the suspended light fitting, appeared to be 'elementarized', and the effect was to imply, like Mondrian's later paintings, an infinite series of coordinates in space.

**127** Rietveld, buffet, 1919.

In many respects Van Doesburg embodied the movement in himself, for by 1921 the composition of the group had radically altered. Van der Leck, Vantongerloo, Van 't Hoff, Oud, Wils and Kok had all by then disassociated themselves from De Stijl, while Mondrian had re-established himself as an independent artist in Paris. This Dutch defection convinced Van Doesburg that it was necessary to proselytize for De Stijl abroad. The fresh blood brought into the movement in 1922 reflected his international orientation. Of the new members of that year only one was Dutch, the architect Van Eesteren; the others were Russian and German - the architect, painter and graphic designer El Lissitzky and the film-maker Hans Richter. It was at Richter's invitation that Van Doesburg first visited Germany in 1920, and from this visit followed an invitation from Gropius to come to the Bauhaus in the following year. Van Doesburg's brief stay in Weimar in 1921 engendered a crisis within the Bauhaus, the repercussions of which have since become legendary, for the impact of his ideas on the students and faculty was both immediate and marked. Even Gropius who, under the circumstances, had reason to be apprehensive, designed in 1923 a suspended light for his own study which

displayed an undeniable affinity to the Rietveld fitting designed for Hartog.

Of greater importance for the second phase of the De Stijl movement, lasting until 1925, was Van Doesburg's meeting with Lissitzky. Just two years before this meeting Lissitzky had developed his own form of Elementalist expression, evolved in collaboration with Kasimir Malevich at the Suprematist school in Vitebsk. Although Russian and Dutch Elementarism had quite independent origins – the one Suprematist, the other Neo-Plastic – Van Doesburg's work was transformed. After 1921, under the impact of Lissitzky's Proun compositions, both he and Van Eesteren began to project, as axonometric drawings, a series of hypothetical architectural constructs, each comprising an asymmetrical cluster of articulated planar elements suspended in space about a volumetric centre. Van Doesburg invited Lissitzky to become a member of De Stijl and in 1922 Lissitzky's abstract-typographic children's fable of 1920, 'The Story of Two Squares', appeared in the pages of the magazine. It is significant that the magazine itself changed its format at this juncture, Van Doesburg replacing the frontal composition and woodcut logotype designed by Huszar with an asymmetrical, Elementalist layout and a 'Constructivist' logo.

In 1923 Van Doesburg and Van Eesteren managed to crystallize the architectural style of Neo-Plasticism in an exhibition of their work, at Léonce Rosenberg's Paris gallery, 'L'Effort moderne'. This show was an immediate success and in consequence was restaged elsewhere in Paris and later in Nancy. Apart from the axonometric studies previously mentioned it included their project for a house for Rosenberg and two other seminal works, their study for the interior of a university hall and their project for an artist's house [128].

**128** Van Eesteren and Van Doesburg, preparing for the Rosenberg exhibition in Paris, 1923, with a model of their ‘artist’s house’.

Meanwhile in Holland, Huszar and Rietveld collaborated on the design for a small room to be built as part of the Grosse Berliner Kunstausstellung of 1923, Huszar designing the environment and Rietveld the furniture, including the important Berlin chair. Simultaneously, Rietveld began to work on the design and detailing of the Schröder-Schräder House in Utrecht [129, 130]. This house, built at the end of a late 19th-century terrace, was in many respects a realization of Van Doesburg’s *Naar een beeldende architectuur* (‘16 points of a Plastic Architecture’), published at the time of its completion. It fulfilled his prescription, being *elementary, economic and functional; unmonumental and dynamic; anti-cubic* in its form and *anti-decorative* in its colour. Its main living level on the top floor, with its open ‘transformable plan’, exemplified, despite its traditional brick and timber construction, his postulation of a dynamic architecture liberated from the encumbrance of load-bearing walls and the restrictions imposed by pierced openings. Van Doesburg’s eleventh point reads like an idealized description of the house:

**129, 130** Rietveld, Schröder-Schräder House, Utrecht, 1924. Plans and general view.

*The new architecture is anti-cubic, that is to say, it does not try to freeze the different functional space cells in one closed cube. Rather, it throws the functional space cells (as well as the overhanging planes, balcony volumes, etc.) centrifugally from the core of the cube. And through this means, height, width, depth, and time (i.e. an imaginary four-dimensional entity) approaches a totally ‘new plastic*

*expression in open spaces'. In this way architecture acquires a more or less floating aspect that, so to speak, works against the gravitational forces of nature.*<sup>2</sup>

The third and last phase of De Stijl activity, lasting from 1925 to 1931, was announced by a dramatic rift between Mondrian and Van Doesburg over the latter's introduction of the diagonal into his paintings, in a series of 'counter-compositions' that he had completed in 1924. By now the initial unity had been lost, as much by Van Doesburg's incessant polemical activity as by his arbitrary modification of the Neo-Plastic canon. From his association with Lissitzky he had come to regard social structure and technology as among the prime determinants of form, irrespective of any concerns he might still entertain for the De Stijl ideal of universal harmony. By the mid-1920s he realized that universality could, by itself, only produce an artificially delimited culture, which by virtue of its antipathy to everyday objects could only be against the initial De Stijl concern - subscribed to even by Mondrian - for the unification of art and life. Van Doesburg seems to have opted for a Lissitzkian solution to this dilemma, whereby both the environmental scale and status of the object should determine the degree to which it may be manipulated in accordance with an abstract conception. Thus, while furniture and equipment as produced by the society at large ought to be accepted as the ready-made objects of the culture, the built environment itself could and indeed should still be made to conform to a higher order.

Van Doesburg and Van Eesteren gave an idealized version of this position in their essay *Vers une construction collective* ('Towards a Collective Construction'), published in 1924, in which they tended towards a more objective and technical solution to the problem of architectural synthesis:

*We must realize that life and art are no longer separate domains. That is why the ‘idea’ of ‘art’ as an illusion separate from real life must disappear. The word ‘Art’ no longer means anything to us. In its place we demand the construction of our environment in accordance with creative laws based upon a fixed principle. These laws, following those of economics, mathematics, technique, sanitation, etc., are leading to a new plastic unity.<sup>3</sup>*

Later one reads, under the seventh point of the manifesto, the essence of the spirit that was to inform Van Doesburg's last major work, the Café L'Aubette of 1928:

*We have established the true place of colour in architecture and we declare that painting, without architectural construction (that is, easel painting), has no further reason for existence.<sup>4</sup>*

Rietveld had little association with Van Doesburg after 1925. Nonetheless, his work developed in a similar direction, away from the Elementarism of the Schröder House and his early orthogonal furniture, towards more ‘objective’ solutions arising out of the application of technique. Rietveld started in this direction by redesigning the seats and backs of his chairs as curved planes, not only because such shapes were more comfortable, but also because they possessed greater structural strength. This led naturally to the technique of wood lamination and from there it was but a step, once the inhibiting Neo-Plastic aesthetic had been relinquished, to moulding a chair out of a single sheet of plywood. Rietveld's two-storey chauffeur's house, built in Utrecht in 1927, was largely the product of a similar approach, where despite – or rather because of – its use of advanced technique, little of the original De Stijl aesthetic was left. Instead of primary colours, the exposed steel frame and concrete panels were painted black, and the

surface of the panels themselves overpainted with a grid of white squares. Removed from Van Doesburg's conception of anti-cubic space as set out in his '16 Points of a Plastic Architecture', it was more determined by technique than by any drive towards universal form.

The Café L'Aubette in Strasbourg, designed in 1928, comprised a sequence of two large public rooms and ancillary spaces set within an 18th-century shell. These rooms were designed and realized by Van Doesburg in association with Hans Arp and Sophie Täuber Arp. While Van Doesburg controlled the general theme each artist was free to design his or her own room. With the single exception of Arp's mural, all the rooms were modulated by shallow abstract wall reliefs, colour, lighting and equipment being integrated into each composition. Van Doesburg's own scheme [131] was, in effect, a reworking of his 1923 project for a university hall, in which a diagonal Elementalist composition had been deliberately imposed on all the surfaces of a partially orthogonal space. Van Doesburg's interior in L'Aubette was similarly dominated and distorted by the lines of a huge diagonal relief or counter-composition, passing obliquely over all the internal surfaces. This fragmentation through relief – an extension of Lissitzky's Proun room approach of 1923 – was complemented by the fact that the furnishing was free of any Elementalist pieces. In their place Van Doesburg designed 'standard' bentwood chairs and elsewhere employed extremely objective detailing. The tubular railing throughout was simply welded, while the main lighting consisted of bare light bulbs bracketed off two metal tubes suspended from the ceiling.

**131** Van Doesburg, Café L'Aubette, Strasbourg, 1928–29.

L'Aubette, finished in 1929, is the last Neo-Plastic architectural work of any significance. Thereafter those artists who were still affiliated with De Stijl, including Van Doesburg and Rietveld, came increasingly under the influence of the Neue Sachlichkeit and thereby subject to the cultural values of international socialism. Van Doesburg's own house, built in Meudon about 1929, barely fulfils any of the sixteen points of his 1924 manifesto. It is simply a utilitarian studio, of rendered reinforced-concrete frame and block construction, superficially resembling the type of artisan dwelling that had already been projected by Le Corbusier in the early 1920s. For fenestration Van Doesburg chose to use the standard French industrial sash, and for furniture he designed his own version of a *sachlich* chair in tubular steel. By 1930 the Neo-Plastic ideal of uniting the arts and transcending the division of art and life had been relinquished and returned to its origins in abstract painting, to the *art concert* of Van Doesburg's counter-compositions hung on the walls of his studio in Meudon. Yet Van Doesburg's conscious concern for a universal order remained alive, for in his last polemic, *Manifeste sur l'art concret* (1930), he wrote: 'If the means of expression are liberated from all particularity, they are in harmony with the ultimate end of art, which is to realize a universal language.' How these means were to become liberated in the case of applied art, such as furniture and equipment, was not made clear. A year later, at the age of forty-eight, Van Doesburg died in a sanatorium in Davos, Switzerland, and with him died the moving force of Neo-Plasticism. Of the original De Stijl artists only Mondrian seems to have remained committed to the strict principles of the movement, to the orthogonal and the primary colours which were the constituent elements of his mature work. With these he continued to represent the harmony of an unrealizable utopia. As he wrote in his *Plastic and Pure Plastic Art* (1937): 'Art is only a substitute while the beauty of life is still

deficient. It will disappear in proportion, as life gains in equilibrium.'

# Chapter 18

## Le Corbusier and the Esprit Nouveau 1907-31

*You employ stone, wood and concrete, and with these materials you build houses and palaces. That is construction. Ingenuity is at work.*

*But suddenly you touch my heart, you do me good, I am happy and I say: 'This is beautiful.' That is Architecture. Art enters in. My house is practical. I thank you, as I might thank railway engineers or the telephone service. You have not touched my heart. But suppose that walls rise towards heaven in such a way that I am moved. I perceive your intentions. Your mood has been gentle, brutal, charming or noble. The stones you have erected tell me so. You fix me to the place and my eyes regard it. They behold something which expresses a thought. A thought which reveals itself without word or sound, but solely by means of shapes which stand in a certain relationship to one another. These shapes are such that they are clearly revealed in light. The relationships between them have not necessarily any reference to what is practical or descriptive. They are a mathematical creation of your mind. They are the language of Architecture. By the use of raw materials and starting from conditions more or less utilitarian, you have established certain relationships which have aroused my emotions. This is Architecture.*

Le Corbusier  
*Vers une architecture*, 1923<sup>1</sup>

The absolutely central and seminal role played by Le Corbusier in the development of 20th-century architecture is sufficient cause for us to examine his early development in detail; and the fundamental significance of his achievement only becomes apparent when it is seen against the extremely varied and intense influences to which he was subject in the decade between his first house, built in La Chaux-de-Fonds in 1905, when he was eighteen, and his last works realized there in 1916, one year before moving to Paris. Above all it seems necessary to remark on the distant Albigensian background of his otherwise Calvinist family, on that half-forgotten but latent Manichean view of the world which may well have been the origin of his 'dialectical' habit of mind. I am referring to that ever-present play with opposites – with the contrast between solid and void, between light and dark, between Apollo and Medusa – that permeates his architecture and is evident as a habit of mind in most of his theoretical texts.

Le Corbusier was born in 1887 in the Swiss watchmaking town of La Chaux-de-Fonds, which is situated in the Jura, close to the French frontier. One of the prime images of his adolescence must have been this highly rational gridded industrial town that had been rebuilt after its destruction by fire some twenty years before his birth. During his training as a designer-engraver at the local school of arts and crafts, Charles Edouard Jeanneret (as he then was) became involved in his late teens in the last phases of the Arts and Crafts movement. The Jugendstil manner of his first house, the Villa Fallet of 1905, was a crystallization of all that he had been taught by his master, Charles L'Eplattenier, director of the *cours supérieur* at the applied art school in La Chaux-de-Fonds. L'Eplattenier's own point of departure had been Owen Jones, whose book *The Grammar of Ornament* (1856) was a definitive compendium of decorative art. L'Eplattenier aimed to create a native school of applied art and building for the Jura region and, after Jones, he taught

his students to derive all ornament from their immediate natural environment. The vernacular type and décor of the Villa Fallet were exemplary in this respect: its overall form was essentially a variation on the wood and stone farmhouses of the Jura, while its decorative elements were derived from the flora and fauna of the region.

Despite his admiration for Owen Jones, for the Budapest-trained L'Eplattenier the cultural centre of Europe remained Vienna, and his one ambition was that his prime pupil should be apprenticed there to Josef Hoffmann. Accordingly, in the autumn of 1907 Le Corbusier was dispatched to Vienna. He was cordially received, but he seems to have rejected Hoffmann's offer of work and with it the sophistries of the now classicized Jugendstil. Certainly the designs that he made in Vienna for further houses, to be completed in La Chaux-de-Fonds in 1909, show little trace of Hoffmann's influence. This apparent disaffection with the Jugendstil in its decline was encouraged by a meeting with Tony Garnier in Lyons, in the winter of 1907, just as Garnier was beginning to amplify his 1904 project for a Cité Industrielle. Le Corbusier's utopian socialist sympathies and his susceptibility to a typological – not to say Classical – approach to architecture certainly date from this meeting, about which he wrote: 'This man knew that the imminent birth of a new architecture depended on social phenomena. His plans displayed a great facility. They were the consequence of one hundred years of architectural evolution in France.'

The year 1907 may be regarded as the turning point of Le Corbusier's life, for in that year he not only met Garnier, but he also made a crucial visit to the Charterhouse of Ema, in Tuscany. There he experienced for the first time the living 'commune' which was to become the socio-physical model for his own reinterpretation of the utopian socialist ideas that he had inherited in part from L'Eplattenier and in part from Garnier. Later he was to describe the Charterhouse as

an institution in which ‘an authentic human aspiration was fulfilled: silence, solitude, but also daily contact with men.’

In 1908, Le Corbusier obtained part-time employment with Auguste Perret in Paris, whose reputation had already been made through his ‘domestication’ of the reinforced-concrete frame in his apartment block built in the Rue Franklin in 1904. The fourteen months that Le Corbusier spent in Paris afforded him a totally new outlook on both life and work. Aside from receiving a basic training in reinforced-concrete technique the capital gave him the chance to broaden his knowledge of French Classical culture, by visiting the museums, libraries and lecture halls of the city. At the same time, much to the disapproval of L'Eplattenier, he became convinced through his contact with Perret, that *béton armé* was the material of the future. Aside from its malleable monolithic nature, durability and inherent economy, Perret valued the concrete frame as an agent for resolving the age-old conflict between the structural authenticity of the Gothic and the Humanist values of Classical form.

The impact of all these diverse experiences may be gauged from the project that he made for his alma mater, on his return to La Chaux-de-Fonds in 1909. This building, evidently conceived in reinforced concrete, consisted of three stepped tiers of artists' studios, each with its own enclosed garden, arranged around a central communal space covered by a pyramidal glass roof. This free adaptation of the Carthusian cell form, with its connotations of communal, was the first instance in which Le Corbusier reinterpreted a received type in order to accommodate the programme of an entirely new type. Such typological transformations, with their spatial and ideological references, were to become an intrinsic part of his working method. Since this synthetic procedure was impure by definition, it was inevitable that his works should become charged with references to a number of different

antecedents at once. For all that this process may at times have been partly unconscious, the art school must be seen as being as much an heir to Godin's *Familistère* of 1856 as it was a reinterpretation of Ema. Nevertheless Ema was to remain embedded in Le Corbusier's imagination as an image of harmony to be reinterpreted innumerable times, first on a large scale in his 'Immeuble-Villa' project of 1922 and then, less directly, in the residential block types that he designed, throughout the next decade, for his hypothetical city plans.

Le Corbusier went to Germany in 1910 ostensibly to further his knowledge of reinforced-concrete technique, but while he was there he was commissioned by the art school of La Chaux-de-Fonds to study the state of decorative art. This undertaking, which resulted in a book, brought him into contact with all the major figures of the Deutsche Werkbund, above all with Peter Behrens and Heinrich Tessenow, the two artists who were to exercise a strong influence on two of his later works in La Chaux-de-Fonds - the Villa Jeanneret Père of 1912 and the Scala Cinema of 1916. Aside from this, the Werkbund contact made him conscious of the achievements of modern production engineering, the ships, automobiles and aircraft that were to form the substance of his polemical essay 'Des Yeux qui ne voient pas.' At the end of the year, after five months in the office of Behrens, where he would certainly have met Mies van der Rohe, he left Germany to take up a teaching post at La Chaux-de-Fonds, offered him by L'Eplattenier. Before returning to Switzerland, however, he made an extensive tour of the Balkans and Asia Minor, and henceforth Ottoman architecture was to be a muted but decided influence on his work. This much is evident from his lyrical record of the trip, his *Voyage d'Orient* of 1913.

The five years prior to 1916 shaped the orientation of his future career in Paris. His final break with L'Eplattenier and his simultaneous rejection of Frank Lloyd Wright, whose

work he would have known from the Wasmuth volumes of 1910–11, enabled him to remain open to the possibilities for rationalized production in reinforced concrete. In 1913 he established his own office in La Chaux-de-Fonds, ostensibly to specialize in *béton armé*.

In 1915, in conjunction with his boyhood friend, the Swiss engineer Max du Bois, he evolved two ideas that were to inform his development throughout the 1920s – his reinterpretation of the Hennebique frame as the Maison Dom-Ino, which was to be the structural basis of most of his houses up to 1935, and the ‘Villes Pilotis’, a city projected as being built on piles, the concept of the elevated street evidently deriving from Eugène Hénard’s ‘Rue Future’ of 1910.

The year 1916 saw the culmination of his early career in La Chaux-de-Fonds with the building of the Villa Schwob, which was an extraordinary synthesis of all that he had experienced so far. It was, above all else, an elaborate assimilation of the spatial potential of the Hennebique system, permitting its author to impose on a skeleton structure stylistic elements drawn from Hoffmann, Perret and Tessenow. There was even an erotic evocation of a seraglio, from which the building took its nickname of ‘Villa Turque’. At the same time, it was the first occasion on which Le Corbusier conceived a house in honorific terms, that is, as a palace. The alternately wide and narrow bay system and the symmetrical organization of the plan bestowed on the Villa Schwob a structure that was undeniably Palladian. Similar Classical connotations were indicated in the text that accompanied its publication in *L’Esprit Nouveau* in 1921, wherein Julien Caron wrote:

*Le Corbusier had to resolve a delicate problem which was contingent upon making a pure work of architecture, as postulated by a design in which the masses were of a primary geometry, the square and the circle. Such*

*speculation in building a house has rarely been attempted except during the Renaissance.*<sup>2</sup>

For the first time Le Corbusier employed ‘regulating lines’, that Classical device used to maintain proportional control over the façade, manifest for instance in the disposition of the fenestration in accordance with the golden section. In the years that followed, this ‘house-palace’ theme saw its fulfilment in Le Corbusier’s work on two different scales, with related but separate socio-cultural connotations. The first was the free-standing individual bourgeois villa of Palladian precedent, as exemplified in the masterly houses of the late 1920s; the second was the collective dwelling, conceived as a Baroque palace that could evoke through its ‘set-back’ plan the ideological connotations of a phalanstery.

Soon after he moved to Paris in October 1916 to establish a practice, Le Corbusier had the good fortune to be introduced by Auguste Perret to the painter Amédée Ozenfant, with whom he was to evolve the all-embracing machine aesthetic of Purism. Grounded in Neo-Platonic philosophy, Purism extended its discourse to cover all forms of plastic expression from salon painting to product design and architecture. It was nothing less than a comprehensive theory of civilization which strenuously advocated the conscious refinement of all existing types. Hence it was as much against what Le Corbusier and Ozenfant regarded as the unwarranted distortions of Cubism in painting (see their first joint polemic entitled *Après le Cubisme* of 1918) as it was in favour of the ‘evolutionary’ perfection of, say, Thonet bentwood furniture or standard café tableware. Their first full formulation of this aesthetic came with their essay entitled ‘Le Purisme’, which appeared in 1920, in the fourth number of the magazine *L’Esprit Nouveau*, a literary and artistic journal which they were to continue to edit with the poet Paul Dermée until 1925. Without doubt the most fertile

period of their collaboration came with the gestation of *Vers une architecture* which, prior to its publication as a book in 1923, was published in part in *L'Esprit Nouveau* under the double pseudonym of Le Corbusier-Saugnier.

This text – the credit for which in book form was appropriated by Le Corbusier – articulated the conceptual duality around which the rest of his work was to revolve: on the one hand the imperative need to satisfy functional requirements through empirical form, and on the other the impulse to use abstract elements to affect the senses and nourish the intellect. This dialectical view of form, introduced under the heading ‘Esthétique et architecture de l’ingénieur’, was exemplified by the most advanced engineering structures of the epoch, by Eiffel’s Garabit Viaduct of 1884 and by Giacomo Matté Trucco’s Fiat Works of 1915 to 1921.

The other aspect of the Engineer’s Aesthetic – product design – was represented by the ships, automobiles and aircraft which were featured as separate subsections under the general heading ‘Des Yeux qui ne voient pas’. The third section returned the reader to the antithesis of Classical architecture, to the lucid poetry of the Athenian Acropolis, which was appraised in the penultimate chapter under the title ‘Architecture, pure création de l’esprit’. Such was Le Corbusier’s admiration of engineering exactitude that the profiles of the Parthenon were presented as being analogous to those now wrought by machine tools. He wrote: ‘All this plastic machinery is realized in marble with the rigour that we have learnt to apply in the machine. The impression is of naked, polished steel.’

Over the first five years of his intense activity in Paris, during which he painted and wrote in all his spare time, Le Corbusier earned his living during the day as the manager of a brickworks and building materials plant at Alfortville. In 1922 he relinquished this position to enter into practice with his cousin Pierre Jeanneret, a contract which lasted until the

outbreak of the Second World War. One of the earliest undertakings of the office was to advance the ‘constructional’ idea first touched on with du Bois during the early years of the First World War, namely the Maison Dom-Ino [132, 133] and the Villes Pilotis.

**132, 133** Le Corbusier, Maison Dom-Ino, 1915. *Below*, structure of ‘Dom-Ino’ unit; *above*, perspective and plan showing possible grouping.

The Dom-Ino prototype was evidently open to different levels of interpretation. While on the one hand it was simply a technical device for production, on the other it was a play on the word ‘Dom-Ino’ as a patent industrial name, denoting a house as standardized as a domino. This play acquired the force of a literal pun where the free-standing columns could be regarded in plan as domino dots and where the zigzag pattern of an aggregation of these houses resembled the formations of dominoes in play. With their symmetrical arrangement, however, such patterns could also acquire specific connotations by either resembling the typical Baroque palace plan of Fourier’s phalanstery or alternatively by recalling Eugène Hénard’s ‘Boulevard à Redans’ of 1903. With his own ‘rue à redents’ of 1920, Le Corbusier managed to combine the image of the phalanstery with his own ‘anti-corridor street’ polemic. At the same time he wished to see the Dom-Ino as a piece of equipment, analogous in its form and mode of assembly to a typical piece of product design. Such elements were seen by Le Corbusier as *objets-types*, whose forms had already become refined in response to typical needs. In *Vers une architecture* he wrote:

*If we eliminate from our hearts and minds all dead concepts in regard to the house, and look at the question from a critical and objective point of view, we shall arrive at the ‘House Machine’, the mass-production house, healthy (and*

*morally so too) and beautiful in the same way that the working tools and instruments which accompany our existence are beautiful.<sup>3</sup>*

The post-war attempt by the Voisin aeroplane company to break into the French housing market with an assembly-line production of timber houses was enthusiastically acclaimed by Le Corbusier in the second issue of *L'Esprit Nouveau*. Yet at the same time he realized that such production could only be obtained through the exercise of high-grade skills under factory conditions, a combination of circumstances rare in the building industry. He acknowledged these limitations in his Maison Dom-Ino proposal which aside from the formwork and the steel reinforcement was designed to be built by unskilled labour. As early as 1919 he had adopted a comparable 'collagist' approach to construction, when he proposed to use corrugated asbestos sheets as permanent shuttering for the concrete vaulted roof of his Maison Monol.

In 1922 both the Maison Dom-Ino and the Villes Pilotis were further developed as the 'Maison Citrohan' and the 'Ville Contemporaine', both projects being exhibited in the Salon d'Automne of that year. Where the latter was directly evolved, at least in section, out of Hénard's Rue Future of 1910, the former utilized the Hennebique frame to project a long rectilinear volume, open at one end, which approximated to the traditional megaron form of the Mediterranean. Within this basic type - designed in two successive versions - Le Corbusier projected for the first time his characteristic double-height living space, complete with a sleeping mezzanine and children's bedrooms on the roof. Aside from its roots in the Greek vernacular, this type, which he first produced in 1920, seems to have been derived from a workers' café in Paris, in the Rue de Babylone where he lunched each day with his cousin. From this small restaurant they took the section and the basic

arrangement of the Maison Citrohan [134]: ‘Simplification of the light source; one single bay at each end; two lateral bearing walls; a flat roof over; a veritable box which could be used as a house.’

**134** Le Corbusier, Maison Citrohan, 1920. Perspective, ground and floor plans.

While the Maison Citrohan, elevated on *pilotis*, came close to anticipating *Les 5 Points d'une architecture nouvelle*, which Le Corbusier finally formulated in 1926, it was hardly applicable to anything other than ‘suburban’ development. He was soon to use a version of it to this end in the garden city estates he built at Liège and Pessac in 1926 [136]. Among the 130 reinforced-concrete frame houses built at Pessac for the industrialist Henri Frugès, there was one prevalent type known as the ‘skyscraper’ unit which was in effect a combination of the Maison Citrohan and the back-to-back units that he had designed for the ‘city’ of Audincourt in the same year. A true version of the Citrohan type was not realized, however, until his work at the Stuttgart Weissenhofsiedlung of 1927. Pessac, as its mixture of unit types would indicate, was a culmination of his incessant attempts in the early 1920s to put his various designs for the standardized dwelling into production. The name ‘Citrohan’ was a play on the patent name of the famous automobile company, indicating that a house should be as standardized as a car. Pessac showed the first conscious integration of Purist colour displacements into architecture. The architect observed at the time:

*The site at Pessac is very dry. The grey concrete houses produce an insupportable compressed mass, lacking in air. Colour is able to bring us space. Here's how we have established certain invariable points. Some façades are painted in burnt sienna. We have made the lines of other*

*houses recede, through clear ultramarine blue. Again we have confused certain sections with the foliage of gardens and trees, through pale green façades.*<sup>4</sup>

Unlike his European contemporaries, Gropius [135] and Mies van der Rohe, Le Corbusier was anxious to develop the urban connotations of his architecture. The Ville Contemporaine for three million was the ultimate demonstration of this aspect in his work up to 1922. Influenced equally by the gridded skyscraper cities of the United States and the image of the 'city-crown' as put forward by Bruno Taut in his book *Die Stadtkrone* (1919), Le Corbusier projected the Ville Contemporaine as an élite capitalist city of administration and control, with garden cities for the workers being sited, along with industry, beyond the 'security zone' of the green belt encompassing the city.

**135** Gropius, Frau Gropius and Le Corbusier in a Paris café.

**136** Le Corbusier, Pessac housing estate, near Bordeaux, 1926, on opening day.

The city itself, textured like an oriental carpet and some four times the surface area of Manhattan, consisted of residential blocks some ten to twelve storeys in height plus twenty-four sixty-storey office towers in the centre, the whole surrounded by a Picturesque park which, like the traditional *glacis*, maintained the class separation of the urban élite from the suburban proletariat. The cruciform office towers themselves – the so-called Cartesian skyscrapers – were reminiscent in their serrated plan profile of stepped Khmer or Indian temple forms and as such they were evidently intended to replace as secular centres of power the religious structures of the traditional city. That

such an authority was attributed to these forms is suggested by their proportional relation to the grid of the city, where they take up a golden section of the surface area in plan, within the double square occupied by the city as a whole.

None of this was lost on the Communist newspaper *L'Humanité*, which regarded the entire project as reactionary. Their sense of Le Corbusier's commitment to Saint-Simonian methods of management and control was entirely confirmed by the publication of his book *Urbanisme (The City of Tomorrow)* in 1925, its last plate depicting Louis XIV supervising the building of the Invalides. Even Le Corbusier was sufficiently embarrassed by this image to place underneath its caption the rider that it was not to be understood as support for the French Fascist party Action Française.

The Ville Contemporaine was no less ideological in the detailed organization of its residential districts, which were made up of two different block prototypes – the perimeter block [137] and the ‘set-back’ or *redent* formation – each postulating a different conception of the city. The former was still committed to the idea of a ‘walled’ city made up of streets, while the latter pre-supposed a wall-less ‘open city’, that vision finally to be achieved in the Ville Radieuse, of a dense city elevated above the surface of a continuous park. The implicitly anti-street polemic of this vision was finally made explicit in an essay on the street that Le Corbusier wrote in 1929 for the Syndicalist newspaper *L'Intransigeant*.

**137** Le Corbusier and Jeanneret, Ville Contemporaine, 1922. Cellular perimeter block composed of Immeuble-Villa units.

Apart from providing the ‘essential joys’ of sunlight and green, the open city was supposed to facilitate locomotion, in accordance with Le Corbusier’s entrepreneurial aphorism

that ‘A city made for speed is a city made for success.’ This was part of the rhetoric that accompanied his ‘Plan Voisin’ proposal for Paris of 1925 [138] – the paradoxical notion that the automobile having effectively destroyed the great city could now be exploited as an instrument for its salvation. Notwithstanding their financial support, the car/aircraft cartel, Voisin was no doubt only too aware of the economic and political impossibility of raising vast cruciform towers next to the Ile de la Cité.

**138** Le Corbusier and Jeanneret, Plan Voisin proposal for Paris, 1925. The hand points towards the new business centre of the city.

The most important and enduring contribution of the Ville Contemporaine was its Immeuble-Villa unit, an adaptation of the Maison Citrohan as a general type for high-rise, high-density living. These units, stacked up on six double floors, included garden terraces, one for each duplex, an arrangement which today seems to be one of the few acceptable solutions for high-rise *family* living. In the so-called ‘cellular’ perimeter blocks of the Ville Contemporaine, these terraced duplexes opened at ground level to bounded rectangular green space, equipped with recreational facilities for communal use. The marginal provision of additional communal space within the block and around the periphery of this area and the intended provision of hotel service throughout situates this proposal somewhere between the bourgeois apartment block and the socialist collective dwelling (compare the phalanstery and Borie’s Aérodromes). The Immeuble-Villa living unit was finally worked out in detail and exhibited as a prototype in the form of the Pavillon de L’Esprit Nouveau, built for the Exposition des Arts Décoratifs held in Paris in 1925. Unfortunately, subsequent attempts to market this unit, both as a freehold maisonette in the city and as a free-standing villa in the

suburbs, did not meet with success. The Pavillon de L'Esprit Nouveau was a condensation of the Purist sensibility: while machinist in promise and urban by implication, since it was designed ostensibly for mass production and aggregation at high density, it was furnished in accordance with the Purist canon of *objets-types*, that is with English club armchairs, Thonet bentwood furniture and standard Parisian cast-iron park pieces, with *objets-tableaux* of Purist origin, with oriental rugs and South American pottery [139]. This finely balanced assembly of folk, craft and machine-made objects, borrowed in spirit from Adolf Loos, was posited here under the patronage of the Minister for the Arts as a polemical gesture against the Art Deco movement.

**139** Le Corbusier, Pavillon de l'Esprit Nouveau, Exposition des Arts Décoratifs, Paris, 1925, furnished with *objets-types* and Purist canvases by Léger and Le Corbusier.

In 1925 Le Corbusier also returned to the theme of the bourgeois villa, first in his Maison Cook, completed in the following year as a demonstration of *Les 5 points d'une architecture nouvelle*, which were published in 1926, and then in the project for the Villa Meyer, which anticipated the villa at Garches and the Villa Savoye at Poissy, completed in 1927 and 1929 respectively.

All these houses depended for their expression on the syntax of the 'five points': (1) the *pilotis* elevating the mass off the ground, (2) the free plan, achieved through the separation of the load-bearing columns from the walls subdividing the space, (3) the free façade, the corollary of the free plan in the vertical plane, (4) the long horizontal sliding window or *fenêtre en longueur*, and finally (5) the roof garden, restoring, supposedly, the area of ground covered by the house.

The latent potential of the Hennebique frame in the Maison Dom-Ino and the solid lateral walls of the Maison Citrohan determined to an equal degree the basic *parti* of all these houses, with the liberal use of free-standing columns, strip-windowed façades and cantilevered floor slabs. The structural subdivision of the Maison Dom-Ino (the rhythmic formula AAB comprising two wide bays plus a narrow one containing a stair) links the overt Palladianism of the Villa Schwob to the suppressed Palladianism of the villa at Garches, both houses seemingly organized about the classic Palladian ABABA rhythm remarked on by Colin Rowe. Palladio's Villa Malcontenta of 1560 and Le Corbusier's villa at Garches [140, 141] of some 350 years later are equally predicated in the longitudinal direction on alternating double and single bays producing a rhythm of 2:1:2:1:2. As Rowe has pointed out, a similar syncopation obtains in the other dimension:

**140** Le Corbusier and Jeanneret, Villa de Monzie, Garches, 1927.

**141** Palladio's Villa Malcontenta, 1560 (top), and Le Corbusier's Villa de Monzie, Garches, 1927, with analyses of their proportional rhythm.

*In both cases, six 'transverse' lines of support, rhythmically alternating single and double bays, are established; but the rhythm of the parallel lines of support, as a result of Le Corbusier's use of the cantilever, differs slightly. At the villa at Garches, it is  $\frac{1}{2}:1\frac{1}{2}:1\frac{1}{2}:1\frac{1}{2}:\frac{1}{2}$  and at the Malcontenta  $1\frac{1}{2}:2:2:1\frac{1}{2}$ . In plan, Corbusier thus obtains a sort of compression for his central bay and interest seems transferred to his outer bays, which are augmented by the extra half unit of the cantilever; while Palladio secures a dominance for his central division, and a progression towards his portico, which focuses interest there. In both*

*cases the projecting element, terrace or portico, occupies 1½ units in depth.*<sup>5</sup>

Rowe goes on to contrast the centralization of the Villa Malcontenta with the centrifugality of the villa at Garches:

*At Garches the central focus has been consistently broken up, concentration at one point is disintegrated, and replaced by a peripheral dispersion of incident. The dismembered fragments of the central focus become, in fact, a sort of serial installation of interest round the extremities of the plan.*<sup>6</sup>

Aside from its Purist layering of frontalized planes in space and its play with literal and phenomenal transparency, remarked on by Rowe and Robert Slutzky, Garches was significant for its resolution of a problem that had first been posed by Loos: how to combine the comfort and informality of the Arts and Crafts plan with the asperities of geometrical, if not Neo-Classical, form – how to reconcile the private realm of modern convenience with the public façade of architectural order. As Le Corbusier's Four Compositions of 1929 would indicate, Garches was able to achieve this, with an elegance denied to Loos, through the displacements afforded by the invention of the free plan. The disjunction, so to speak, of the complex interior was held away from the public front, by the elision of the free façade.

If Garches is to be associated with the Villa Malcontenta, the Villa Savoye [142], as Rowe again points out, may be compared to Palladio's Villa Rotonda. The almost square plan of the Villa Savoye, with its elliptical ground floor and centralized ramp, may be read as a complex metaphor for the centralized and biaxial plan of the Rotonda. There, however, all similarity ends, Palladio insisting on centrality and Le Corbusier asserting, within his self-imposed square,

the spiralling qualities of asymmetry, rotation and peripheral dispersal. Nevertheless, in his book *Précisions sur un état présent de l'architecture et de l'urbanisme* (1930) Le Corbusier made the imminent Classicism of the Villa Savoye abundantly clear:

**142** Le Corbusier and Jeanneret, Villa Savoye, Poissy, 1929–31. The first-floor ‘jardin suspendu’.

*The inhabitants come here because this rustic landscape goes well with country life. They survey their whole domain from the height of their jardin suspendu or from the four aspects of their fenêtres en longueur. Their domestic life is inserted into a Virgilian dream.<sup>7</sup>*

With the Villa Savoye, one arrives at the last of Le Corbusier's Four Compositions of 1929 [143]. The first was his Maison La Roche of 1923, which he presented in 1929 as a Purist version of the Gothic Revival L-plan – a ‘genre plutôt facile, pittoresque, mouvementé’; the second was shown as an ideal prism, and the third and fourth (the villa at Garches and the Villa Savoye) as alternative strategies for reconciling the first two, the former depending on a subtle integration of the first and second and the latter on the encompassing of the first by a prism.

**143** Le Corbusier, the Four Compositions of 1929: (1) Maison La Roche, (2) villa at Garches, (3) Weissenhofsiedlung in Stuttgart, (4) Villa Savoye.

With their 1927 entry to the international competition for the League of Nations (Société des Nations, or SdN) headquarters in Geneva [144], Le Corbusier and Pierre Jeanneret produced their first design for a large public structure. Their attention had hitherto been focused on the house and on the concomitant simplicity of a basic prism.

Now they addressed themselves to the necessary complexity of the ‘palace’ as a type. The competition’s conditions stipulated two buildings, one for the secretariat and one for the assembly, and this programmatic duality led the architects to take an Elementalist approach to the design: the constituent ‘elements’ being first established and then manipulated in order to generate a number of alternative arrangements. This extension of the Elementarism professed at the turn of the century by the Beaux-Arts master Julien Guadet would have come to Le Corbusier via Guadet’s pupils, Garnier and Perret. That he was to adopt this approach generally when dealing with large complexes is shown by his preliminary studies for the project for the Palace of the Soviets, Moscow, of 1931 [145]. There under eight alternative arrangements we read the caption: ‘the various stages of the project, wherein one sees the organs, already independently established, the one from the other, take up little by little their reciprocal places to culminate in a synthetic solution.’ We find a comparable remark appended to an alternative scheme for the SdN project published in Le Corbusier’s *Une Maison, Un Palais* (‘A House, A Palace’) (1928). Under a symmetrical layout (evidently more rational, from an operational point of view), we read: ‘alternative proposition employing the same elements of composition’. The asymmetrical organization finally adopted suggests a conflict between the circulatory logic of the symmetrical layout and a Classical preference for an axial approach to the representative façade of the principal building.

**144** Le Corbusier and Jeanneret, project for the League of Nations Building, Geneva, 1927. (Compare H. Meyer and Wittwer’s entry, p. 143.)

**145** Le Corbusier and Jeanneret, project for the Palace of the Soviets, Moscow, 1931. Four alternative layouts using the same elements.

The SdN project is both the climax and the crisis point of Le Corbusier's early career: a moment of acclaim, denied (if we are to believe him) by his disqualification on the grounds that he had not submitted his entry in the appropriate graphic medium. It represents the culmination of his Purist period, since it virtually coincides with the introduction into his painting of figurative elements and of what he later called *objets à réaction poétique*, loosely translatable as 'objects evocative of poetic emotion'. From now on, while his painting became organic and figurative, his architecture, at a public level at least, became increasingly symmetrical. In retrospect the League of Nations entry must be considered as a watershed; as a point of division, not only within his own work, but also between himself and his following within the international Modern Movement, particularly where this concerned the support of those whose political convictions lay to the left. In 1927 the Constructivist affinities of the League of Nations entry, its commitment to free-floating asymmetry and technical innovation, its secretariat à *pilotis* (reminiscent, in plan, of Lissitzky's *Wolkenbügel*), its mechanized cleaning system, its air-conditioned assembly hall (acoustically profiled, tuned and flooded with light), could do nothing but command the enthusiastic support of the young, irrespective of their political allegiance. But the undeniable monumentality - expressed in its stone facing and in the hierarchical, seven-door, entry system proposed to conduct the various classes of user to their appointed place within the auditorium - seems to have had the effect of eventually arousing a certain ideological mistrust.

Le Corbusier's drive to resolve the dichotomy between the Engineer's Aesthetic and Architecture, to inform utility

with the hierarchy of myth, was bound to bring him into conflict with the functionalist-socialist designers of the late 1920s. His 'Mundaneum' or 'Cité Mondiale', designed in 1929 for Geneva as a centre of world thought, provoked a sharp reaction from his Czech admirer, the left-wing artist and critic Karel Teige. It was not the content but the *form* of the Cité that provoked Teige's objections, particularly the helicoidal ziggurat of the 'Musée Mondial'. In 1927 Teige had publicly supported Le Corbusier in the international dispute over his League of Nations entry and had called on all other Czech artists to do the same. Now, barely two years later, he attacked him with such vehemence that Le Corbusier was prompted to reply, in the essay entitled 'The Defence of Architecture', written for Teige's journal, *Stavba*. In his attack Teige had quoted from Hannes Meyer's essay of 1928, *Bauen* ('Building').

*All things in the world are a product of the formula, function times economics, so none of these things are works of art; all art is composition and hence unsuited to a particular end. All life is function and therefore not artistic, the idea of the composition of a dock is enough to make a cat laugh. But how is a town plan designed or the plan of a dwelling? Competition or Function? Art or Life?*<sup>8</sup>

Le Corbusier placed this quotation at the head of his essay, making it clear that his riposte was directed as much to Meyer as to Teige. He then argued:

*Today amongst the avant garde of the Neue Sachlichkeit, one has killed two words: Baukunst (Architecture) and Kunst (Art). One has replaced them by Bauen (To Build) and Leben (To Live) ... Today, where mechanization brings us a gigantic production, architecture is above all in the battleship. Monsieur Hannes Meyer; as in the conduct of war or in the shape of a pen, or in a telephone. Architecture is a*

*phenomenon of creation, according to an arrangement. Whoever determines the arrangement, determines the composition.*<sup>9</sup>

In the same year as the Teige attack Le Corbusier acknowledged in his book *Précisions* that the Mundaneum had been badly received by the German architectural Left, but he saw no reason to modify his ultimate position and therefore he maintained that

*The buildings projected are strictly utilitarian – particularly this helicoidal Musée Mondial so violently incriminated ... The plans of the Cité Mondiale bring to buildings which are true machines a certain magnificence wherein some wish to discover at any cost an archaeological inspiration. But from my point of view, this harmonious quality arises from another thing, from a simple response to a problem well stated.*<sup>10</sup>

Nonetheless he could not, and indeed did not, deny that the site layout of the Cité Mondiale had been determined by a network of *tracés régulateurs*, comparable to those used to control the façade of the villa at Garches – a façade which, however much it subscribed to the canons of the Purist machine aesthetic, remained as Classical in its affinities as the Palladian plan type from which its structure had been derived.

# Chapter 19

## From Art Deco to the Popular Front: French Architecture between Two World Wars 1925-45

*Decorative art is a vague and inaccurate term by which we represent all human object-members. These respond with a certain accuracy to clearly objective needs. Extensions of our members, they are adapted to human functions which are standard functions. Standard needs, standard functions, therefore standard objects, standard furniture. The human member object is a docile servant. A good servant is discreet and steps aside to leave his master free.*

*Decorative art is tools, beautiful tools.*

Le Corbusier

*L'Art décoratif d'aujourd'hui*, 1925<sup>1</sup>

The sunflower motif applied to the street façade of Auguste Perret's 25 bis Rue Franklin embodied the crystallization of Art Nouveau, which later morphed into the Art Deco movement on the occasion of the Exposition Internationale des Arts Décoratifs et Industriels Modernes of 1925 in Paris. This exhibition, originally scheduled for 1915, had to be postponed for a decade owing to the outbreak of the First World War. Although Perret was by no means opposed to ornament – particularly when it had a tectonic character, as

seen in his Notre-Dame du Raincy, completed in 1924 – he was unequivocally opposed to the idea of decorative art. He made this clear in a 1925 interview with Marie Dormoy, in which he argued that ‘Decorative art should be forbidden. I would like to know who struck these two words together: art and decorative. Where there is true art, there is no need for decoration.’

This antithesis between decorative art and architecture was equally evident in the pavilions designed for the 1925 exhibition. They ranged from giant jewel boxes commissioned by Parisian department stores, such as Henri Sauvage’s pavilion for Le Printemps, to Perret’s structurally classical Théâtre de l’Exposition des Arts Décoratifs, a temporary structure built expressly for the exhibition and partly fabricated out of wood. Three other distinctly modern pavilions could also be found within the confines of the exhibition: Le Corbusier’s Purist Pavillon de L’Esprit Nouveau, Konstantin Melnikov’s Constructivist pavilion representing the USSR and Rob Mallet-Stevens’s cubistic Pavillon du Tourisme. Among the three, Mallet-Stevens showed how cubistic form could yield a sculpturally dynamic architecture. Despite the fact that decorative artists were involved in the realization of this pavilion, including the metalworkers Jan and Joël Martel, the whole building could be read as if it had been designed by a single hand. A final decorative touch was provided by mannequins wearing Sonia Delaunay’s ‘Simultané’ collection; they were photographed in front of the pavilion against abstract concrete trees designed by Mallet-Stevens and the Martel brothers for the Esplanade des Invalides [146].

**146** Mallet-Stevens, concrete trees realized by the Martel brothers for the Exposition des Arts Décoratifs of 1925 in Paris. In the foreground, the model Paulette Pax wears an outfit designed for the occasion by Sonia Delaunay.

Mallet-Stevens had already established himself as an architect for the high bourgeoisie two years earlier with the design of a large villa for the Vicomte de Noailles at Hyères. He followed this with a series of equally large luxurious villas, culminating in a spectacular brick-faced house built at Croix in 1932. Alongside these set pieces, Mallet-Stevens was also able to apply his modernist manner to such typically 20th-century programmes as the Alfa-Romeo garage that he built in the Rue Marbeuf, Paris, in 1927. In the same year he saw the completion of his civic set piece in the Auteuil quarter of the city, a syncopated sequence of four- to five-storey cubistic town houses lining both sides of a street that would thereafter bear his name [147]. Unlike the interpenetrating spaces of the Maison Cook and the Rietveld Schröder House, Mallet-Stevens's houses were relatively static. As in the typical Loosian *Raumplan*, the rooms themselves were almost conventional and were it not for the occasional spiral stair, split level or double-height space, there would have been little spatial interplay within the rather staid volumetric character of his work. This may explain why Sigfried Giedion was reluctant to accept the candidacy of Mallet-Stevens as the official French delegate to CIAM when Le Corbusier proposed him as his replacement in 1928.

**147** Rue Mallet-Stevens, view from one end of the street.

Although he was twenty years younger than Mallet-Stevens, André Lurçat made his debut at virtually the same time, so that by the time he was thirty-two, in 1926, he had already built a number of artists' houses in the Villa Seurat neighbourhood of Paris, together with the arresting form of his Maison Guggenbühl overlooking the Parc Montsouris. Lurçat's precocious talent finally became fully manifest in the Hôtel Nord-Sud erected to his designs in Calvi, Corsica,

in 1929, where a castellated, two-storey linear building, housing eight studio apartments, each with its own balcony facing the sea, was sensitively integrated into a rocky coastline. There is a marked difference in this work between the seaward versus the landward side: the latter maintained the continuity of the form by remaining largely blank save for vertical slot windows, rhythmically articulating the long façade.

The triumph of Lurçat's early career was the design of the Karl Marx School [148], won in competition in 1930 and realized for the municipality of Villejuif, then under the mayoralty of Paul Vaillant-Couturier. Lurçat's mythical status as the architectural champion of Léon Blum's short-lived Front Populaire (Popular Front) government in France is surely in part due to his design for this radically modern school, conceived as a total antithesis of its typical 19th-century predecessor. Envisaged as a civic community centre as much as a school, it incorporated an unusual programme, including a solarium, an aquarium and a stadium, as well as a series of airy, well-lit classrooms, within its long, three-storey form. The Communist Vaillant-Couturier (in whose memory Le Corbusier later designed a monument) saw the school as a 'social-condenser', and thereby arranged for its inauguration in 1933 with a socialist fête for 20,000 people. During the 1930s it was publicized by the French Communist Party throughout a series of photographs and films.

**148** Lurçat, Karl Marx School, Villejuif, 1931–33, aerial view.

The year 1933 brought about a fundamental change in Lurçat's position as he reacted to attacks on modern architecture in the French press. These came from such figures as Camille Mauclair, art critic of the bourgeois newspaper *Le Figaro*, and Waldemar George, who, shifting to the political right, advocated a regionalist-nationalist,

proto-fascist architecture in his essay ‘Architecture, penser français’ ('Architecture, think French') of 1934. It is significant that this reactionary outburst coincided with the emergence of the Third Reich in Germany and the Stalinist eclipse of the avant garde in the Soviet Union. In June 1934 Lurçat reacted against this French critique by reorganizing his studio as a collective and by visiting the Soviet Union, assisted by the Association des Écrivains et Artistes Révolutionnaires (Association of Revolutionary Writers and Artists; AEAR). During this visit he was introduced by the writer and critic Léon Moussinac to the major figures of the Russian cinematic and theatrical avant garde, including the cineastes Dziga Vertov, Vsevolod Pudovkin and Sergei Eisenstein, and the creator of the biomechanical stage, Vsevolod Meyerhold. Despite these affinities, Lurçat adopted a critical line towards modern architecture, including that of Le Corbusier regardless of his evident debt to the Franco-Swiss architect, not only for his epoch-making *Vers une architecture* of 1923 – which influenced the line that Lurçat would adopt in his own book *L'Architecture* of 1929 – but also for the Purist ‘Five Points of a New Architecture’ of 1926, which clearly influenced Lurçat’s own style. In his address to the Soviet Union of Architects, Lurçat denounced Le Corbusier for his indifference towards the class struggle and for his emphasis on rationalized mass production, that is to say, the same technocratic emphasis of the German refugee Marxist architects who by this date were already at work in the USSR. And yet, despite his warm reception of the quasi-Classical syntax of Boris Iofan’s winning design for the last Palace of the Soviets competition of 1931, Lurçat continued to employ a variation of Neo-Purism in his own work. This is evident from his design for a *dom-kommuna* that he presented on his second visit to Moscow in 1934. Lurçat’s unpublished text of that year, ‘Neoclassicism ou Constructivism’, already outlined the cultural schism with which he would be involved for the rest of his life. To this

end, in his designs for the Moscow medical school, Lurçat returned to a Classical rational order similar to that of Tony Garnier, an architect whom he admired throughout his life.

In the Paris of the 1930s a considerable number of architects were of foreign origin and prominent among them was the Anglo-Irish architect Eileen Gray, who came to the fore with her vacation house E-1027 of 1929 at Roquebrune-Cap-Martin in the south of France [149]. She designed it with the Romanian émigré architect Jean Badovici, who first encouraged Gray to venture beyond her successful career as a furniture designer and into the field of architecture. In 1923 Badovici had been appointed editor of the magazine *L'Architecture Vivante*, which under his editorship became the ultimate international record of the Modern Movement in Europe, between 1923 and 1933. Something of their enigmatic relationship may be adduced from the name of the house, E-1027, which went beyond being a witty allusion to an aircraft register number since it also encoded their names: 'E' stood for Eileen and '10' and '2' respectively represented the tenth and second letters of the alphabet - 'J' and 'B' - and hence stood for Jean Badovici, followed by '7' representing 'G' for Gray.

**149** Eileen Gray, Maison E-1027 at Cap Martin, 1929, axonometric.

In E-1027, the lacquered screens and carpets that Gray had produced in the 1920s are subtly integrated with pivoting, chromium-plated, tubular-steel equipment. The overall interior alludes to romantic wanderlust of the modern world: the name of Gray's Transat chair refers to transatlantic liners and the form of her Bibendum chair was seemingly based on the mascot trademark of the Michelin tyre company. At the same time the house was designed to respond to the fluctuating vicissitudes of the Mediterranean climate.

E-1027 was followed in the early 1930s by the exceptional work of two émigré architects of Polish origin: Jean Ginsberg and Bruno Elcouken. After studying with Mallet-Stevens, Ginsberg made his debut on the Parisian scene with an eight-storey infill apartment building on the Avenue de Versailles [150], designed in association with a young émigré Russian architect, Berthold Lubetkin. Influenced by Le Corbusier's 'five points', the most original aspect of this work is a sash-window version of Le Corbusier's *fenêtre en longueur*, which was evidently intended to enable the occupant to open up the front of each apartment in high summer. Of the four elegant apartment buildings that Elcouken designed in Paris before migrating to the United States in 1937, the most striking was a twin-tier composition of double-height artists' studios that were stacked seven floors high on either side of a 500-seat cinema, the whole being known as the Studio Raspail, realized in the Boulevard Raspail in 1933.

**150** Ginsberg and Lubetkin, apartment building, 25 Avenue de Versailles, Paris, 1931-32. Avenue façade.

The denouement of the Société des Nations competition in 1927, and the subsequent formation of the Congrès Internationaux d'Architecture Moderne (CIAM) in La Sarraz, Switzerland, in 1928, was followed in the next year by the formation of the Union des Artistes Modernes (UAM) in Paris under the leadership of the furniture designer René Herbst. Unlike the relatively unified architectural front of CIAM, UAM was made up of an extremely varied range of applied artists sharing little in common, save for a mutual opposition to both the Art Deco movement and French academic classicism. This much is suggested by the diversity of its founding membership, which included, in addition to Herbst, Pierre Chareau, Joseph Csaky, Sonia Delaunay, Eileen Gray,

Francis Jourdain, Rob Mallet-Stevens, Charlotte Perriand, Jean Prouvé and Jean Puiforcat. Mallet-Stevens was the only figure who had been trained as an architect; the others were painters, decorators, ironworkers and furniture designers whose common aim was to undercut the all-powerful Société des Artistes Décorateurs in order to develop a totally new concept of interior space and a distinctly different culture of objects.

By the time of the UAM manifesto of 1934, the more creative members had already left the association, in particular Delaunay and Gray. Perhaps the ultimate aesthetic line of the UAM was to increase the use of metal and glass in the modern world and from this standpoint Chareau's Maison de Verre of 1932 [151] has to be seen as an exemplary work. Realized in collaboration with the Dutch architect Bernard Bijvoet and the ironworker Louis Dalbert, the Maison de Verre was the ne plus ultra of dematerialized Constructivism. Up to this point in his career, Chareau had worked almost exclusively as a designer of furniture and high-bourgeois interiors and this surely accounts to some degree for the extremely hybrid character of the work. Chareau's clients, Dr Jean Dalsace and his wife, Annie, had intended to demolish an 18th-century three-storey town house that stood on the site in order to erect their new residence in its place, but this proved to be impossible due to the fact that the top floor of the existing building was occupied by an elderly lady who refused to leave. This left Chareau and Bijvoet with no alternative but to insert a steel frame so that they could demolish the two storeys below and construct a new three-storey residence within the available volume. In order to allow sufficient light to penetrate within such a deep space the forecourt and garden elevations were faced throughout in translucent glass lenses, except for a fully glazed entrance hall facing the forecourt and the occasional window or door opening to the garden on the opposite side of the house. The resulting

exotic atmosphere of the interior, permeated by light that became subaqueous in nature, was reinforced by the liberal use of black lacquered storage cabinets on the second-floor bedroom level overlooking the double-height salon of the first floor. The translucent glass lenses making up the envelope on both sides of the house were held in place by thin metal subframes, which, like the exposed two-storey steel columns of the salon, were finished in a standard red oxide paint, giving the interior a discernibly Japanese character. In this regard, the excessive number of bidets distributed throughout the house surely suggests a kind of unconscious irony given the fact that this was the residence and the clinic of a leading gynaecologist. It is equally ironic that, although ostensibly conceived as a prototype for wholesale industrial prefabrication, the house should have been largely handforged and painstakingly assembled piece by piece.

**151** Chareau, Maison de Verre, Rue St-Guillaume, Paris, 1932. Axonometric.

Subject to the ubiquitous influence of Le Corbusier, who allegedly visited the site during its construction, Chareau and Bijvoet conceived of the house as a transformable *machine à habiter* ('machine for living'), exploiting the concept of the free plan not only to differentiate between the partition walls subdividing the space and the largely free-standing supports of the exposed steel frame, but also as a way of interconnecting the various spaces of the interior so that they could be either 'open' or 'closed' to the rest of the house through the manipulation of pivoting or hinged doors, like the adjustable components deployed in E-1027. Shortly after its completion in 1932, the German émigré critic Julius Posener, writing under the pseudonym of Julien Lepage, praised the house for its poetic functionalism

despite the extensive use of mobile ferrovitreous components throughout.

As much an exterior as an interior, this disconcertingly introverted masterpiece was never revisited by Chareau or by Bijvoet, despite the transformable interior of the latter's Gooiland Hotel built in Hilversum in 1936 after his return to the Netherlands. This unlikely amalgam of fashionable high-bourgeois taste and the French ferrovitreous tradition, dating back to Victor Contamin's Galerie des Machines of 1889, had no followers prior to the Second World War, except for the émigré architect Paul Nelson. He visited the house soon after its completion and was so inspired as to develop two significant projects in 1936: his somewhat surrealist Maison Suspendue and his canopied, extensively sunscreened proposal for a hospital in Ismailia, Egypt, for the Suez Canal Company, with its four operating theatres encapsulated behind glass block walls [152]. Nelson returned to certain aspects of this project in his Franco-American hospital built at Saint-Lô (1948–56).

**152** Nelson, hospital at Ismaïlia for the Suez Canal Company, 1936. Axonometric of the surgical pavilion.

Other than the atelier of Le Corbusier and Pierre Jeanneret, three distinctly different practices continued to be active in France throughout the 1930s. In the first instance was the atelier of Auguste Perret who, after realizing the Théâtre de l'Exposition des Arts Décoratifs, went on to produce the structurally Classical Musée National des Travaux Publics, Paris, under construction from 1936 to 1939, but not finally completed until after 1945. Then there was the more modernized Classical manner of Michel Roux-Spitz, who, having been a pupil of Garnier, was awarded the Grand Prix de Rome in 1920 and, following a mandatory period of study at the Villa Medici in Rome, opened his

practice with an ingenious infill apartment building erected in the Rue Guynemer, Paris, in 1925 [155]. Roux-Spitz was particularly skilled at incorporating modern services – including garages with car turntables and cleverly integrated minimal kitchens – into such tightly packed infill apartment buildings with Classical formats, and he repeated this exercise elsewhere in the city. In his residential work Roux-Spitz, like Ginsberg, displayed a preference for elongated sash windows over Le Corbusier's *fenêtre en longueur*. From 1932 onwards he received direct commissions from the French state, beginning with his annexe to the Bibliothèque Nationale in Versailles.

The third most productive practice of the 1930s was that of Eugène Beaudouin and Marcel Lods, in collaboration with the designer-fabricator Jean Prouvé and the Russian émigré Vladimir Bodiansky. Together this team produced a prefabricated, light-weight metal, mobile building, comparable to Chareau's Maison de Verre, but conceived for an entirely different class of society. This exceptional structure, the Maison du Peuple, was completed in the working-class Paris suburb of Clichy in 1939 [153, 154]. This building, wholly transformable not only in plan but also in section, was designed to function as a market hall during the day and as a 700-seat cinema or a 2,000-person reception hall at night. The primary transformation of the double-height market hall into a cinema depended on seven metal panels, normally stacked side by side, being lowered into position from an overhead gantry in order to form the elevated floor. This screening space was further enhanced by a light-weight metal, full-height, sliding-folding wall panel system. The literal conception of the building as a machine was taken one step further with its ferrovitreous roof, which could slide away in high summer, so as to create an open-air theatre.

**153, 154** Beaudouin and Lods, Prouvé, Bodiansky, Maison du Peuple, Clichy, 1939. View of the hall with the elevated floor in place above the market and the peripheral partition opened (top); axonometric with the canopy removed.

**155** Roux-Spitz, apartment building, Rue Guynemer, Paris, 1925. Plans of the ground floor, a typical upper floor and the street façade.

Nothing could be more removed from the work of Beaudouin and Lods's team than the architecture of Auguste Perret over the same period, for from the beginning Perret's Structural Classicism was predicated on the universality of a single material, namely reinforced concrete. As Leonardo Benevolo put it in 1960:

*The French tradition ... was based on the correspondence between classical rules and building practice ... Perret steeped in this tradition was naturally led to identify concrete framework ... with the framework as it was to appear on the outside of a building ... He probably believed that he had discovered the structural system best suited to the realization of traditional works since the unity of its elements was real not apparent as in the classical orders composed of several blocks of stone.<sup>2</sup>*

This was still the ethos of the Perret atelier when it was commissioned after 1945 to rebuild the totally bombed-out city of Le Havre, which was then still a major French transatlantic port. This work, amounting to the reconstruction of an entire city from scratch [156], was built around the major axis of the Avenue Foch, with the Hôtel de Ville at one end and the port at the other. The surrounding fabric depended on a somewhat awkward interplay between a bush-hammered *in situ* concrete frame and prefabricated concrete window surrounds and infill wall panels. Needless to say, the windows corresponded to Perret's concept of *la*

*porte fenêtre* ('window door'). Throughout his career, from the turn of the century onwards, he saw this as literally representing the presence of the human being framed by the opening before the traditional full-height double doors of a French window.

**156** Perret, reconstruction of Le Havre, general view in the 1950s with the Avenue Foch in the foreground and, behind, the church of St Joseph.

## Chapter 20

# Mies van der Rohe and the Significance of Fact 1921-33

*It then became clear to me that it was not the task of architecture to invent form. I tried to understand what that task was. I asked Peter Behrens, but he could not give me an answer. He did not ask that question. The others said, 'What we build is architecture', but we weren't satisfied with this answer ... since we knew that it was a question of truth, we tried to find out what truth really was. We were very delighted to find a definition of truth by St Thomas Aquinas: 'Adequatio intellectus et rei', or as a modern philosopher expresses it in the language of today: 'Truth is the significance of fact'.*

*Berlage was a man of great seriousness who would not accept anything that was fake and it was he who had said that nothing should be built that is not clearly constructed. And Berlage did exactly that. And he did it to such an extent that his famous building in Amsterdam, The Beurs, has a medieval character without being medieval. He used brick in the way the medieval people did. The idea of a clear construction came to me there, as one of the fundamentals we should accept. We can talk about that easily but to do it is not easy. It is very difficult to stick to this fundamental construction, and then to elevate it to a structure. I must make it clear that in the English language you call everything structure. In Europe we don't. We call a shack a*

*shack and not a structure. By structure we have a philosophical idea. The structure is the whole from top to bottom, to the last detail – with the same ideas. That is what we call structure.*

Ludwig Mies van der Rohe

(quoted by Peter Carter in *Architectural Design*, March 1961)<sup>1</sup>

As the above quotation makes clear, Ludwig Mies – he later added his mother's name, Van der Rohe – was as much inspired by the work of the Dutch architect Hendrik Petrus Berlage as by that Prussian school of Neo-Classicism to which he became the direct heir. Unlike his contemporary, Le Corbusier, he was not educated within the Arts and Crafts ethos of the Jugendstil. At the age of fourteen he entered his father's stone-mason's business and after two years at a trade school and a subsequent period as a stucco designer for a local builder, in 1905 he left his native town of Aachen for Berlin where he worked for a minor architect specializing in timber construction. There followed a further period of apprenticeship with the furniture designer Bruno Paul before he ventured briefly on his own in 1907, to build his first house in a restrained *englische* manner, reminiscent of the work of the Werkbund architect Hermann Muthesius. In the following year he joined Peter Behrens, whose newly established Berlin office was beginning to develop an overall house style for the electrical combine AEG.

During his three years in Behrens's office, Mies became aware of the *Schinkelschüler* tradition, which, apart from its Neo-Classical affiliation, was committed to the idea of *Baukunst*, not only as an ideal of technical elegance but also as a philosophical concept. Schinkel's brick-faced Bauakademie in Berlin, with its warehouse-like detailing, was later compared by Mies to the articulate construction of Berlage's Amsterdam Beurs or Exchange, which he had first

seen when he visited Holland in 1912. On leaving Behrens's employ in 1911, after a brief stint as site architect on Behrens's German Embassy in St Petersburg, Mies opened his own office with the Perls Haus, completed in Berlin-Zehlendorf in that year. This was the first of a series of five Schinkelesque houses to be designed by Mies before the outbreak of the First World War. In 1912 he succeeded Behrens as architect to Mrs H.E.L.J. Kröller, who wanted a gallery and residence in The Hague to house the famous Kröller-Müller collection: the project was mocked up in canvas and wood at full size before being inexplicably abandoned. This year also saw his Boullée-like monument to Bismarck, which was to be the last significant project of his pre-war career.

The defeat and collapse of the German military-industrial imperium at the end of the First World War reduced the country to a state of economic and political turmoil and Mies, like every other architect who had fought in the war, sought to create an architecture that was more organic than that permitted by the autocratic canons of the Schinkel tradition. In 1919 he began to direct the architectural section of the radical Novembergruppe, named after the month of the Republican revolution and dedicated to the revitalization of the arts throughout Germany. This association brought him into contact with the Arbeitsrat für Kunst and with the ideas of Taut's Glass Chain (see [Chapter 13](#)), and there can be little doubt that his first skyscraper project of 1920 was made in response to Paul Scheerbart's *Glasarchitektur* of 1914. The same faceted, crystal skyscraper theme occurred in his Friedrichstrasse competition entry of 1921 [[157](#)], and the publication of both of these projects in the last issue of Taut's magazine *Frühlicht* confirmed his post-war Expressionist affiliation. Mies's intent at this time was to render glass as a complex reflective surface which would be constantly subject to transformation under the impact of light. This much is clear

from the description that accompanied the first publication of his Friedrichstrasse proposal:

**157** Mies van der Rohe, project for an office building in Friedrichstrasse, Berlin, 1919-21. First scheme.

*In my project for a skyscraper at the Friedrich-strasse Station in Berlin I used a prismatic form which seemed to me to fit best the triangular site of the building. I placed the glass walls at slight angles to each other to avoid the monotony of over-large glass surfaces.*

*I discovered by working with actual glass models that the important thing is the play of reflections and not the effect of light and shadow as in ordinary buildings.*

*The results of these experiments can be seen in the second scheme published here. At first glance the curved outline of the plan seems arbitrary. These curves, however, were determined by three factors: sufficient illumination of the interior, the massing of the building viewed from the street, and lastly the play of reflections. I proved in the glass model that calculations of light and shadow do not help in designing an all-glass building.<sup>2</sup>*

It is instructive in this context to compare Mies's entry with that of Hugo Häring. Where one is triangular, undulating and convex, the other is triangular, faceted and concave. Otherwise the two solutions are similarly expressive, a coincidence that may be partly explained by the fact that Häring shared an atelier with Mies throughout the early 1920s.

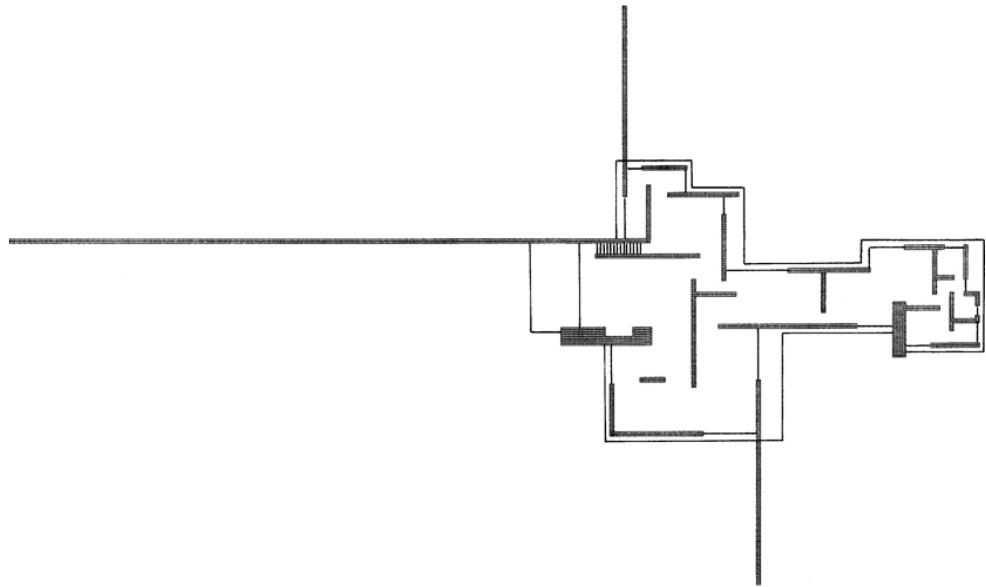
Mies van der Rohe's so-called 'G' period began in 1923 with his participation in the first issue of the magazine *G*, subtitled *Material zur elementaren Gestaltung* and edited by Hans Richter, Werner Graeff and El Lissitzky. His glass skyscrapers of the previous year, with their kinetic

reflections on the surfaces of translucent forms, had already anticipated something of the peculiar *G* sensibility which seems to have combined a Constructivist objectivity with a Dadaist feeling for chance. Yet the seven-storey office building that Mies presented in the first issue of *G* broke different ground, for now the primary expressive material was not glass but concrete, projected in the form of concrete ‘trays’ cantilevered off a reinforced-concrete frame. As in Frank Lloyd Wright’s Larkin Building of 1904, the upstands of these ‘trays’ were high enough to accommodate standard built-in filing cabinets, set below a band of recessed clerestory glazing. With this project Mies declared himself against formalism and aesthetic speculation and wrote with decidedly Hegelian overtones that ‘Architecture is the will of the age conceived in spatial terms. Living, changing, new.’ At the same time he went on to declare: ‘The office building is a house of work ... of organization, of clarity, of economy. Bright, wide, workrooms, easy to oversee, undivided except as the undertaking is divided. The maximum effect with the minimum expenditure of means. The materials are concrete, iron, glass.’

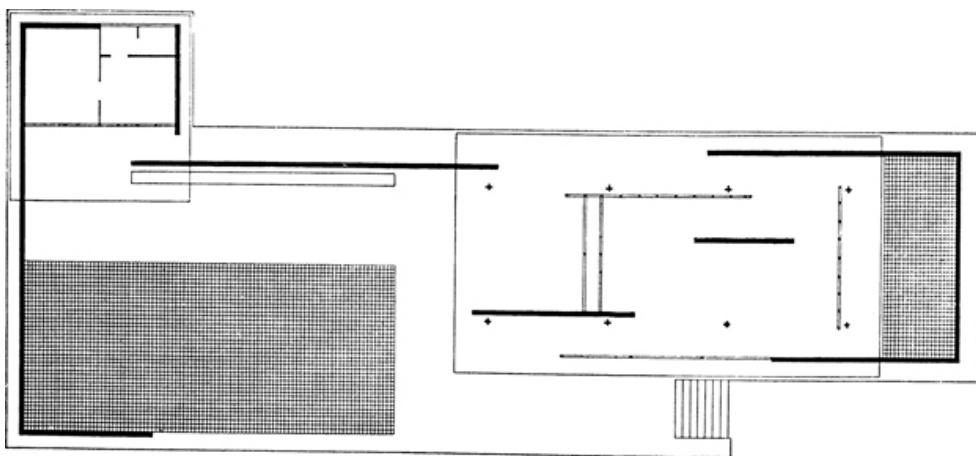
Despite this objective advocacy of a ‘skin-and-bones’ architecture reminiscent of Le Corbusier’s Dom-Ino proposal, a vestige of academic tradition was visible in the project in the widening of the end bays in order to ‘strengthen’ the corners of the building. This, however, was Mies’s last overt reference to the Neo-Classical principles of Schinkel until his first gesture at a ‘new monumentality’ a decade later, with his Reichsbank project of 1933.

Apart from the ever-present undertones of Neo-Classicism, Mies’s work after 1923 displays, to a varying degree, three main influences: (1) the Berlage brick tradition and the dictum that ‘nothing should be built that is not clearly constructed’; (2) the pre-1910 work of Frank Lloyd Wright, as filtered through the De Stijl group – an

influence acknowledged in the horizontal profiles extending into the landscape of Mies's brick country house of 1923 [158]; and (3) Kasimir Malevich's Suprematism, as interpreted through the work of Lissitzky. While the Wrightian aesthetic could be readily absorbed within the *Schinkelschüler* tradition of *Baukunst* – that is, according to the highest standards of European masonry practice – Suprematism had the effect of encouraging Mies to develop the free plan. Where Mies's *Baukunst* ideal was fulfilled in the Karl Liebknecht and Rosa Luxemburg Monument (1926) and in the Wolf House (1925–27), both built of brick, the free plan was to emerge fully armed, so to speak, in the Barcelona Pavilion of 1929 [159].



**158** Mies van der Rohe, project for a brick country house, 1923.



**159** Mies van der Rohe, German Pavilion, World Exhibition, Barcelona, 1929.

Despite these diverse and compelling influences, Mies still seems to have experienced difficulty in relinquishing the Expressionist aesthetic of his Novembergruppe period. A comparable sensibility, touched by a somewhat Russian sense of colour, is still evident in the 1927 Berlin Silk Industry Exhibition, designed in collaboration with Lilly Reich, who had initially trained as a fashion designer. The black, orange and red velvets and the gold, silver, black and lemon-yellow silks no doubt reflected her taste, as did the acid-green, cowhide upholstery used for the sitting-room furniture of the Tugendhat House. A latent feeling for Expressionism may still be detected, too, in the Deutsche Werkbund Weissenhofsiedlung Exhibition which opened in Stuttgart in the same year. Despite a tendency to regard every commission as a free-standing object, Mies initially planned this exhibition as a continuous urban form, like a medieval town. It even had a vestigial *Stadtkrone*, a pseudo-Tautian gesture towards unity that had to be abandoned. In the final version of the layout Mies divided the site into rectilinear plots, on which free-standing 'display' houses were erected to the designs of various Werkbund architects, among them Walter Gropius and Hans Scharoun. A number of foreign architects also participated, including Le Corbusier, Victor Bourgeois, J.J.P. Oud and Mart Stam.

Initially conceived in the spirit of the original Darmstadt exhibition of 1901, 'Ein Dokument Deutscher Kunst', the Weissenhofsiedlung became the first international manifestation of that white, prismatic, flat-roofed mode of building which was to be identified in 1932 as the International Style. Mies's contribution to both the style and the content of the exhibition was an apartment house that he designed as the *central armature of the scheme*. This five-storey structure was generally similar to the standard *Zeilenbau* block being developed at the time, but it differed from the typical row-house slab in the ease with which it could be brought to accommodate a variety of different apartment shapes and sizes. Of his solution Mies wrote in 1927:

*Today the factor of economy makes rationalization and standardization imperative in rental housing. On the other hand, the increased complexity of our requirements demands flexibility. The future will have to reckon with both. For this purpose skeleton construction is the most suitable system. It makes possible rationalized building methods and allows the interior to be freely divided. If we regard kitchens and bathrooms, because of their plumbing, as a fixed core, then all other space may be partitioned by means of movable walls. This should, I believe, satisfy all normal requirements.<sup>3</sup>*

The climax of Mies's early career came with the three masterworks that he designed in sequence after finishing the Weissenhofsiedlung: the German State Pavilion at the Barcelona World Exhibition of 1929, the Tugendhat House at Brno, Czechoslovakia, of 1930, and the model house erected for the Berlin Building Exhibition of 1931. In all these works a horizontal centrifugal spatial arrangement was subdivided and articulated by free-standing planes and columns. While this aesthetic (already anticipated in Mies's country house

projects of 1922 and 1923) was basically Wrightian, it was Wright as reinterpreted through the sensibility of the G group and the metaphysical space conceptions of De Stijl. As Alfred Barr observed, the load-bearing walls of Mies's brick country house were disposed in a pinwheel fashion like the clustering elements of Van Doesburg's painting of 1917, *Rhythms of a Russian Dance*.

Despite the Classical associations of its regular eight-column grid and its liberal use of traditional materials, the Barcelona Pavilion was undeniably a Suprematist-Elementalist composition (compare Malevich's *Future Planets for Earth Dwellers* of 1924 and the work of his indirect pupil Ivan Leonidov). Contemporary photographs reveal the ambivalent and ineffable quality of its spatial and material form [160]. From these records we may see that certain displacements in its volume were brought about by illusory surface readings such as that effected by the use of green tinted glass screens, to emerge as the mirror equivalents of the main bounding planes. These planes, faced in polished green Tinian marble, in their turn reflected the highlights of the chromium vertical glazing bars holding the glass in place. A comparable play in terms of texture and colour was effected by the contrast between the internal core plane of polished onyx (the equivalent of Wright's centrally placed chimney core) and the long travertine wall that flanked the main terrace with its large reflecting pool. Here, bounded by travertine and agitated by the wind, the broken surface of the water distorted the mirror image of the building. In contrast to this, the internal space of the pavilion, modulated by columns and mullions, terminated in an enclosed court, containing a reflecting pool lined with black glass. Above and in this implacable, perfect mirror, there stood the frozen form and image of Georg Kolbe's *Dancer*. Yet despite all these delicate aesthetic contrasts the building was simply structured about eight free-standing cruciform columns that supported its flat roof.

The regularity of the structure and the solidity of its matt travertine base evoked the *Schinkelschüler* tradition to which Mies was to return.

**160** Mies van der Rohe, German Pavilion, World Exhibition, Barcelona, 1929.

Like the De Stijl room of 1923, the Barcelona Pavilion was the occasion for a classic piece of furniture, namely the Barcelona chair, which was one of five Schinkelesque pieces that the architect designed in the years 1929–30 – the other four being the Barcelona stool and table, the Tugendhat armchair, and a buttoned-down leather couch. The Barcelona chair, framed in welded and chromium-plated bar steel and upholstered in buttoned-down calfskin, was as integrated into the design of the pavilion as Rietveld's Red/Blue chair in the room designed for the Berlin Exhibition.

The Tugendhat House, built in 1930 on a steeply sloping site overlooking the city of Brno in Czechoslovakia, adapted the spatial conception of the Barcelona Pavilion to a domestic programme [161]. One may also see it as an attempt to combine the layered, compartmentalized planning of Wright's Robie House – where the service block slides behind the main living volume – with the typical loggia form of the Schinkel Italianate Villa. In any event, the free plan was reserved here solely for the horizontal living volume, which, modulated once again by chromium cruciform columns, opened on its long side to a panorama of the city and on its short side to a conservatory faced in large sheets of plate glass. While the mechanical lowering of the long glass wall converted the whole of the living area into a belvedere, the conservatory acted as a natural foil in a symbolic scheme – as a mediation between natural vegetation and the fossilized onyx of the interior. In a comparable manner, the plywood dining alcove, faced in

ebony veneer, evoked the sustenance of life to which its space was dedicated. Similarly, the rectilinear onyx plane dividing the living volume of the house signified through its surface the ‘worldliness’ of the spaces to be found on either side of it – the sitting-room and the study. Such rhetoric obtained only on the lower ground floor, the bedrooms on the entrance level being treated simply as hermetic volumes.

**161** Mies van der Rohe, Tugendhat House, Brno, 1930.

With the Berlin Building Exhibition house of 1931, on the other hand, Mies demonstrated the possibility of extending the free plan to the bedrooms, and for the next four years he elaborated this approach in a series of extremely elegant courtyard-houses that regrettably were never built.

Mies van der Rohe’s idealism and his natural affinity for German Romantic Classicism clearly served to remove him from the mass-production approach of the Neue Sachlichkeit. The sense of objectivity in each case was patently different. As far as the Neue Sachlichkeit was concerned, Mies declared the apolitical, not to say reactionary, nature of his position when, in 1930, he accepted the directorship of the Bauhaus, as Hannes Meyer’s successor. In his essay *The New Era*, written on the occasion of his appointment, he attempted to formulate his own somewhat ambivalent position. In response to Hannes Meyer’s ‘materialist’ essay, *Bauen*, he wrote:

*The new era is a fact: it exists, irrespective of our ‘yes’ or ‘no’. Yet it is neither better nor worse than any other era. It is pure datum, in itself without value content. Therefore I will not try to define it or clarify its basic structure.*

*Let us not give undue importance to mechanization and standardization.*

*Let us accept changed economic and social conditions as a fact.*

*All these take their blind and fateful course.*

*One thing will be decisive: the way we assert ourselves in the face of circumstance.*

*Here the problems of the spirit begin. The important question to ask is not 'what' but 'how'. What goods we produce or what tools we use are not questions of spiritual value.*

*How the question of skyscrapers versus low buildings is settled, whether we build of glass or steel, are unimportant questions from the point of view of spirit.*

*Whether we tend to centralization or decentralization in city planning is a practical question, not a question of value.*

*Yet it is just the question of value that is decisive.*

*We must set up new values, fix our ultimate goals so that we may establish standards.*

*For what is right and significant for any era - including the new era - is this: to give the spirit the opportunity for existence.<sup>4</sup>*

This Neo-Classical concern for spiritual value seems to have led directly to the idealized monumentality of Mies's Reichsbank proposal of 1933, submitted as a competition entry in the year when the National Socialists came to power. The non-Classical impulse that had sustained him up to this time - the Suprematist-Elementarism that had inspired his version of the free plan - now gave way to an impassive monumentality which, aside from the neutrality of its skin, intended nothing save the idealization of bureaucratic authority. This Suprematist sensibility was to remain suppressed in Mies's work until 1939, when, on his migration to the United States, it momentarily re-emerged in the first sketches for the IIT campus in Chicago.

## Chapter 21

# The New Collectivity: Art and Architecture in the Soviet Union 1918-32

*The simple, classical concept of internationalism underwent a considerable change towards the end of the 1920s, when hopes of immediate world revolution receded and the more autarchic stage of 'the building of Socialism in one country' was initiated. Simultaneously, the exuberant romantic conception of technique gave way to a sober realization that technique, in Russia, meant a hard uphill struggle to transform a peasant economy into a modern industrial organism, starting with the most primitive means.*

*Their failure to understand the significance of these changes, and to adjust themselves, led the profession, as happened earlier in the case of the formalists, to the brink of complete impotence.*

*Disarming itself by rejecting the whole of past architectural tradition, the profession gradually lost all confidence in itself and in its social purpose. Those architects who were most honest with themselves drew their own conclusion from the worship of the engineer and the denial of all architectural tradition, and actually abandoned their profession to become building technicians, administrators and planners.*

*The disparity between the vision of a supercharged technique and the reality of a primitive and backward building industry, in which, more and more, idealized*

*technology had to give way to ordinary ingenuity on a low level, led others to a hollow and insincere aestheticism, indistinguishable from that of the formalists they had set out to replace, inasmuch as they were forced to reproduce the adulterated forms of an advanced technique in the absence of its real media.*

*All the aggressive self-assertion with which the Functionalists enunciated their creed could mask neither the barrenness of their doctrine nor the sterility of their practice. The few remaining buildings of the period bear witness to it.*

Berthold Lubetkin

'Soviet Architecture: Notes on Development from 1917 to 1932', AAJ, 1956<sup>1</sup>

The Russian pan-Slavic cultural movement that came into being after the liberation of the serfs in 1861 manifested itself in a widespread Slavophile arts and crafts revival. This movement first appeared in the early 1870s on the Abramtsevo Estate outside Moscow, where the railway tycoon Savva Mamontov had established a retreat for the Populist or Narodniki painters, who, calling themselves 'The Wanderers', had seceded from the Petersburg Academy in 1863 in order to become itinerant artists carrying their 'art' to the people.

This movement took on a more applied form in the cottage-industry colony founded at Smolensk in 1890 by the Princess Tenisheva, for the purpose of reviving traditional Slavic crafts. Where the achievements of the Mamontov intelligentsia ranged from the medieval revivalism (Old Russian style) exemplified in V.M. Vasnetsov's Abramtsevo Chapel (1882) to Leonid Pasternak's designs for the first production of Rimsky-Korsakov's opera *The Snow Maiden* (1883), the works of the Tenisheva colony were more modest in scale, consisting of simple, light, fretted houses,

furniture and domestic utensils which took much of their basic form from traditional timber construction and most of their decorative elements from peasant crafts, such as the traditional woodcut narrative art form known as *lubok*. The Populist-cum-Expressionist paintings of the Abramtsevo circle were among the first tentative steps towards the radical Russian art of the early 20th century, presaging both the Dadaistic *zaum* poetry of Alexei Kruchonykh and the atonal music of Matyushin, while Tenisheva craftwork anticipated the Constructivist woodblock and stencil typography of the Post- Revolutionary Proletkult movement.

In contrast to the exuberant vitality of the Pan-Slavic movement in the arts, Russian architecture, for all its prodigious output after 1870, remained stylistically divided (particularly in Moscow) between the Classical standards of the St Petersburg establishment and the slowly unfolding National Romantic movement. This last, initiated in 1838 by K.A. Thon's Neo-Byzantine Kremlin Palace, gave birth in the last decade of the century to the so-called Neo-Russian designers, such as Vasnetsov, A.V. Shchusev, V.F. Walcot and above all F.O. Shekhtel, whose Rayabushinsky Mansion of 1900 was quite comparable to August Endell at his best. Closely affiliated to Art Nouveau and referring to such figures as C.F.A. Voysey, C.H. Townsend and H.H. Richardson, the quality of expression varied from Shchusev's highly eclectic but ultimately retardataire Kazan Station (started in 1913) to Vasnetsov's brilliant Tretyakov Gallery (1900-05), which, despite its eclecticism, is still comparable to J.M. Olbrich's Ernst Ludwig House of 1901. All of this was largely independent of developments in the engineering field, particularly the work of the engineer V.A. Zhukov, designer of the glazed roof for A.N. Pomerantsev's New Trading Lines in Moscow (1889-93) and later designer of a light-weight radio tower in the form of a frustum built in Moscow in 1926.

Of greater consequence for Post-Revolutionary architecture was the transformation of the Slavophile movement into a grassroots cultural force largely inspired by the ‘scientific’ cultural theories of the economist Alexander Malinovsky, who, in 1895, styled himself ‘Bogdanov’ (the ‘God-gifted’). Having abandoned the Social Democrats for the Bolsheviks in the Revolutionary crisis of 1903, Bogdanov founded, in 1906, the Organization for Proletarian Culture, otherwise known as the Proletkult. This movement dedicated itself to the regeneration of culture through a new unity of science, industry and art. For Bogdanov, a superscience of ‘tectology’ would afford the new collectivity the natural means for raising both traditional culture and its own material product to a higher order of unity. As James Billington has written,

*In the manner of Saint-Simon, rather than Marx, Bogdanov argued that the destructive conflicts of the past would never be resolved without a positive new religion: that the unifying role once played in society by a central temple of worship and religious faith must now be played by the living temple of the proletariat and a pragmatic, socially oriented philosophy of ‘Empirio-monism’.*<sup>2</sup>

Bogdanov published the first instalment of his treatise on tectology, ‘The Universal Organizational Science’, in 1913, the very year in which Kruchonykh’s Futurist play, ‘Victory Over the Sun’, was first performed in St Petersburg with music by Matyushin and costumes and sets by Kasimir Malevich. Malevich’s curtain for this apocalyptic play exhibited for the first time the black square motif that was to become the quintessential icon of Suprematism.

By the eve of the First World War, avant-garde Russian culture had already developed into two distinct but related impulses. The first of these was represented by a non-utilitarian synthetic art form that promised to transform

everyday life into that millennial future evoked by the poetry of Kruchonykh and Malevich. The second, as proposed by Bogdanov, was a post-Narodnik hypothesis that sought to forge a new cultural unity from the material and cultural exigencies of communal life and production. After October 1917, the revolutionary reality of the newly formed Soviet state tended to bring these two positions – the ‘apocalyptic’ and the ‘synthetic’ – into conflict, leading to hybrid forms of socialist culture, such as Lissitzky’s adaptation of Malevich’s ‘apocalyptic’ and highly abstract art to the utilitarian ends of his self-styled Suprematist-Elementarism.

In 1920 Inkhuk (the Institute for Artistic Culture) and Vkhutemas (Higher Artistic and Technical Studios) were founded in Moscow as institutes for comprehensive education in art, architecture and design. Both these institutions were to serve as arenas for public debate, wherein mystical idealists such as Malevich and Wassily Kandinsky and objective artists such as the brothers Pevsner found themselves equally opposed by the so-called Productivists, Vladimir Tatlin, Alexander Rodchenko and Alexei Gan. In 1920 the challenge of the pure art position was most eloquently formulated by Naum Gabo (Pevsner), who later wrote of his critical reaction to the Tatlin Tower:

*I showed them a photograph of the Eiffel Tower and said: ‘That which you think is new has been done already. Either build functional houses and bridges or create pure art or both. Don’t confuse one with the other. Such art is not pure constructive art, but merely an imitation of the machine’.*

Despite the persuasive logic of such rhetoric, idealists such as Gabo and Kandinsky felt themselves constrained to leave the Soviet Union even though Malevich had succeeded in entrenching himself in Vitebsk, where shortly after 1919 he had founded his Suprematist school, Unovis

(the School of the New Art). This institution was to exercise a definitive influence on Lissitzky's development, putting an end to his expressionistic graphics and starting him on his career as a Suprematist designer.

In the meantime, a specifically proletarian culture had spontaneously emerged from the communicational needs of the Revolution, imparting vitality to cultural forms which might otherwise have remained remote from the actual conditions of the period and from the real needs of a population which was still basically ill-housed, ill-fed and above all illiterate. Graphic art came to play a salient role in spreading the message of the Revolution. It took the form of large-scale street art, displayed in the Agit-Prop propaganda trains [162] and boats designed by Proletkult artists and in the 'monumental propaganda plan' launched by the authorities shortly after the Revolution with the express purpose of covering every available surface with inflammatory slogans and evocative iconography. The central task of Proletkult at this time was the propagation of official information through theatrical production, film and exhortatory graphics, and its form was invariably nomadic and demountable. Everything had to be easily transportable and made at the simplest level of production. Apart from the dissemination of propaganda, Productivist artists such as Tatlin and Rodchenko addressed themselves to the design of light collapsible furniture and to the fabrication of durable clothing for workers. Tatlin designed a stove that was supposed to give off maximum heat while consuming the minimum of fuel. The universality of this 'nomadic' impulse is reflected in the light-weight furniture designed by European architects in the late 1920s – the conceptually 'knock-down', if not actually demountable, chairs produced by Mies van der Rohe, Le Corbusier, Mart Stam, Hannes Meyer and Marcel Breuer. Breuer was particularly susceptible to this influence: his famous Wassily chair of 1926 coincided with an almost identical canvas and tube

chair of about the same date designed in Vkhutemas. It is now clear, from recently discovered correspondence between Moholy-Nagy and Rodchenko, that after 1923 the Bauhaus was subject to direct influence from Vkhutemas.

**162** Agit-Prop train, 1919.

In the early 1920s, Proletkult attained its most synthetic expression through the theatre, most notably in Nikolai Evreinov's 'theatricalization of everyday life', which used the format of the tattoo to stage the annual re-enactment of the storming of the Winter Palace. On less momentous occasions, street parades were organized in which Constructivist lay figures, invariably representing either the Revolution or its capitalist enemies, served as the focusing icons for mass demonstrations. An equally polemical intention prompted V. Meyerhold's proclamation of 'The October Theatre', which attempted to translate such Agit-Prop street activity into the principles of the agitational stage. Meyerhold's 'Octobrist' proclamation of 1920 prescribed a theatre comprised of the following elements and principles: (1) the use of a permanently illuminated arena stage so as to unite the audience with the actors; (2) an anti-naturalistic mode of mechanized production, featuring the actor-acrobat as the ideal type for Meyerhold's 'biomechanical' stage - a stage form that had obvious affinities with the circus; and finally, (3) the exclusion of illusion and the elimination of any of the Symbolism that was then still endemic to the bourgeois theatre, exemplified by Stanislavsky's Moscow Arts Theatre. Similar prescriptions were to inform Erwin Piscator's foundation of the Berlin Proletarian Theatre in 1924.

Lenin came to distrust, if not to fear, Bogdanov's radical assertion that there were three independent roads to socialism - the economic, the political and the cultural. Yet

despite the official repudiation of Bogdanov in 1920 and the subsequent subjugation of the Proletkult movement to the authority of Narkompros (People's Commissariat for Education), the ethos of Agit-Prop culture persisted, particularly in Meyerhold's theatre. It also continued to find expression in the numerous projects for kiosks, tribunes and other didactic information-structures designed by Productivist artists such as G. Klutsis and Rodchenko. These projects constituted the first attempts to formulate a non-professional socialist style of architecture. Although intentionally 'unrealizable', Lissitzky's 1920 design for a Lenin Tribune (see p. 142), projected as a Proun, was an alternative for such an architecture. Lissitzky had coined the term *Proun* – from *Pro-Unovis*, 'For the School of the New Art' – to indicate an unprecedented creative realm, situated somewhere between painting and architecture.

Paramount among such pioneer works was Tatlin's 1919–20 design for a 400-metre (1,310-foot) high monument to the Third International [163], projected as two intertwining lattice spirals within which were to be suspended four large transparent volumes each rotating at progressively faster speeds, once a year, once a month, once a day and, presumably, once an hour. They were respectively dedicated to the purposes of legislation, administration, information and cinematic projection. On one level Tatlin's Tower was a monument to the constitution and function of the Soviet state; on another it was intended to exemplify the Productivist/Constructivist programme of considering 'intellectual materials', such as colour, line, point and plane, and 'physical materials', such as iron, glass and wood, as thematically equal elements. In this respect, one can hardly regard the tower as a purely utilitarian object. In spite of the anti-art and anti-religious slogans of the 1920 'Programme of the Productivist Group', the tower remained as a monumental metaphor for the harmony of a new social order. It was first exhibited under a banner which bore the

slogan 'Engineers Create New Forms'. The millennialistic symbolism of both its form and its material are clearly manifest in a contemporary description which presumably paraphrased Tatlin's own words:

**163** Tatlin, model of monument to the Third International, 1919–20. Tatlin stands in the foreground, pipe in hand.

*Just as the product of the number of oscillations and the wavelength is the spatial measure of sound, so the proportion between glass and iron is the measure of the material rhythm. By the union of these fundamentally important materials, a compact and imposing simplicity and, at the same time, relation, is expressed, since these materials, for both of which fire is the creator of life, form the elements of modern art.<sup>3</sup>*

In its use of the spiral theme, in its enclosure of a series of progressively diminishing Platonic solids and in its rhetorical exhibition of iron and glass and mechanized movement, as the very stuff of the millennium, Tatlin's Tower anticipated the work of two distinct tendencies in Russian avant-garde architecture. One of these was the school which established itself within Vkhutemas, as part of the first- and second-year course given by Nikolai A. Ladovsky. This structuralist, or rather formalist, school attempted to evolve a totally new syntax of plastic form, based ostensibly on the laws of human perception. The other was a much more materialist and programmatic approach which clearly emerged in 1925 under the leadership of the architect Moisei Ginzburg.

In 1921 Ladovsky urged that a research institute be established at Vkhutemas for the systematic study of the perception of form. Vkhutemas basic designs, carried out under his supervision, always featured some rhythmic

delineation of the surfaces of pure forms or, alternatively, studies into the growth and diminution of dynamic form according to the laws of mathematical progression. These Vkhutemas exercises often featured geometrically progressing volumes, rising or falling in both size and location. On occasions these studies were proposed as designs for actual buildings, as in the suspended restaurant designed by Simbirchev about 1923 [164], a project whose total transparency and extravagant access system echoed the expressive utilitarianism of the Productivists. Such a fantastic structure was patently beyond the capacity of Soviet engineering at the time, while its numerous changes in level would surely have limited its use as a restaurant.

**164** Simbirchev in the Vkhutemas atelier of Ladovsky, project for a suspended restaurant, c. 1922–23.

Ladovsky's so-called 'rationalism' was anything but programmatic, for he ultimately sought, as Lubetkin has observed, a universalism of the Larousse type. Like the Neo-Classical artists of the late 18th century, he preferred to use geometrical entities such as spheres and cubes, forms that could be hypothetically associated with specific psychological states. In 1923 Ladovsky tried to propagate his views through the foundation of Asnova (Association of New Architects), a professional group centred on Vkhutemas. This organization attained its greatest influence about 1925, when both Lissitzky and the architect Konstantin Melnikov were associated with it. Like the wooden demountable market stalls that he designed in 1924 [165], Melnikov's USSR Pavilion for the Paris Exposition des Arts Décoratifs of 1925 [166] was a synthesis of the more progressive aspects of Soviet architecture to date. In its imaginative use of lap-jointed timber struts and planks, it recalled not only the traditional

vernacular of the Steppes, but also those exhibition pavilions which had been designed for the All-Russian Agricultural and Craft Exhibition of 1923, including the Izvestia kiosk by the artists A.A. Exter, Gladkov and Stenberg, and Melnikov's own Makhorka Pavilion. In its basic conception, Melnikov's Pavilion reflected the rhythmic formalism of the Ladovsky school. Its rectangular plot was animated by a staircase traversing the diagonal which divided the ground floor into two identical triangles. This staircase, rising and falling through an open timber construction forming criss-crossing planes, gave access only to the upper levels of the structure. Such an intersecting roof form was soon to become as prevalent a 'geometrically progressive' device among the Russian avant garde as the logarithmic spiral of the Tatlin Tower. Melnikov's dynamic timber structure was complemented by Rodchenko's interior for an ideal workers' club featuring typical light-weight Productivist furniture, including a dialectically red and black chess-playing suite consisting of a table and two chairs.

**165** Melnikov, Sucharev Market, Moscow, 1924-25.

**166** Melnikov, USSR Pavilion, Exposition des Arts Décoratifs, Paris, 1925. Ground plan, first-floor plan and elevation.

The Asnova group sought not only to achieve a more scientific aesthetic, but also to devise new building forms which would satisfy and express the conditions of the new socialist state. Hence the preoccupation with workers' clubs and recreational facilities designed to function as new 'social condensers'. This drive to invent new forms also accounts for Lissitzky's attempt to reconstitute the American skyscraper in a socialist form, in his *Wolkenbügel* ('cloud-hanger') project of 1924, conceived as an elevated

propylaeum opening onto the peripheral boulevard surrounding the centre of Moscow. This work, however bizarre, was intended as a critical antithesis to both the capitalist skyscraper and the Classical gate.

Melnikov's early Productivist works were all built in the period of relative economic stability that resulted from Lenin's New Economic Policy (NEP), introduced after the Civil War in March 1921 as a way of attracting foreign capital into partnership with the Soviet Union. Lenin's death in January 1924 not only brought the period of NEP culture to an end, but also presented the Party with the ironic problem of finding an appropriate style for his tomb. While the Productivist manner could be considered adequate for the representation of the Soviet Union at an international exhibition of decorative art, it was much too insubstantial to enshrine the founder of the first socialist state. Neo-Classicism, with its idealistic connotations, was equally inappropriate. Something of this uncertainty is reflected in the designs that the Academician Shchusev produced for Lenin's mausoleum. The first was a temporary wooden structure, which despite its symmetry displayed affinities with the Productivist aesthetic. The second, permanent version in stone was an attempt at recreating the form of a Central Asian Tartar tomb.

With Lenin's death the heroic period of the Revolution came to a close. By now the Revolution had acquired a definitive history, from the hard-won victory over the Whites in the Civil War to the tragic suppression of the Kronstadt revolt against the Party and the NEP establishment of state capitalism within the proletarian state. Deprived of Lenin's charisma, the immediate prospect was one of conflict rather than resolution – the fight for succession within the Party, the modernization of industry and agriculture, the campaign against illiteracy, the daily struggle to provide shelter and food, the drive to electrify the country and the ever-present need to forge a real link between the industrial, urban

proletariat and a dispersed and vestigially feudal peasant society. Above all, there arose the annual battle to extract sufficient food for the urban populace from a recalcitrant and alienated countryside, which had stubbornly resisted the inducements it had received under the provisions of the NEP.

The most chronic problem from an architectural standpoint was clearly housing. Nothing had been built since the beginning of the First World War, and the degree to which the pre-war stock had deteriorated was reflected in the proceedings of the 13th Party Congress of 1924, where housing was recognized as ‘the most important question in the material life of the workers’. Faced with the task of meeting this deficiency, certain members of the younger generation of architects felt that they could no longer indulge in the formalist preoccupations of the Vkhutemas, still under the influence of Ladovsky.

This reaction precipitated the formation of a new group, the Association of Contemporary Architects (OSA), whose initial membership, under the leadership of Ginzburg, comprised M. Barshch, A. Burov, L. Komarova, Y. Kornfeld, M. Okhitovich, A. Pasternak, G. Vegman, V. Vladimirov and the brothers A. and V. Vesnin [167]. Soon after its foundation OSA began to admit members from related fields, such as sociology and engineering. OSA’s essentially programmatic orientation was as antipathetic to the Productivist culture of the Proletkult as it was to the perceptual aestheticism of Ladovsky. From the outset it attempted to change the modus operandi of the architect, from one who traditionally had a craftsmanlike relation to his client to a new type of professional who was first a sociologist, second a politician and third a technician.

**167** Typical Constructivist works of the 1920s: Korschew, Spartakiada Stadium, Moscow, 1926 (left: section of stand), and Vesnin, Pravda Building, Moscow, 1923 (right: plans, section and view).

In 1926 OSA began to propagate these views in its magazine, *Sovremennaya Arkhitektura* (or *SA*: ‘Contemporary Architecture’), dedicated to the incorporation of scientific methods into architectural practice. In the fourth issue OSA conducted an international inquiry into flat-roofed construction, wherein Taut, Behrens, Oud and Le Corbusier were asked to comment on the technical viability and advantages of flat roofs. OSA also set itself the task of formulating the necessary programmes and type forms for an emerging Socialist society, concerning itself as well with the broader issues of energy distribution and population dispersal. Thus its prime concerns were: first the issue of communal housing and the creation of appropriate social units, and second, the process of distribution, namely transit in all its forms.

In pursuit of the former, it launched a second inquiry in *SA* in 1927, as to the appropriate form of the new communal dwelling or *domkommuna*. The replies received were used as the basis for a fraternal competition that attempted to develop and refine a new residential prototype, something along the lines of Fourier’s phalanstery [168]. Most of the entries gave symbolic and operational importance to an internal double-loaded corridor, a volume formed by the interlocking of up- and down-going duplex apartments. A version of this section came to be adopted by Le Corbusier after 1932 as the ‘cross-over’ section of the typical block of his *Ville Radieuse*.

**168** OI, Ivanov and Lavinsky, interlocking duplex flats with central corridor, OSA competition, 1927.

All this activity prompted the government to set up a research group for the standardization of housing, under the leadership of Ginzburg [169]. The work of this group led to the development of a series of *Stroikem* units, one of which was adopted by Ginzburg for his Narkomfin apartment block built in Moscow in 1929. While its internal street or deck system gave direct access to an adjunct block containing a canteen, a gymnasium, a library, a day nursery and a roof garden, Ginzburg remained acutely aware that this implied collectivity could not be imposed on the residents through the built form alone. He wrote at the time:

**169** Design for a compact kitchen module with concealing screens, by the Building Committee of the Economic Council of the USSR, 1928.

*We can no longer compel the occupants of a particular building to live collectively, as we have attempted to do in the past, generally with negative results. We must provide for the possibility of a gradual, natural transition to communal utilization in a number of different areas. That is why we have tried to keep each unit isolated from the next, that is why we found it necessary to design the kitchen alcove as a standard element of minimum size that could be removed bodily from the apartment to permit the introduction of canteen catering at any given moment. We considered it absolutely necessary to incorporate certain features that would stimulate the transition to a socially superior mode of life, stimulate but not dictate.<sup>4</sup>*

In the previous year, OSA had turned its attention to the design of another type of 'social condenser', the workers' club. Anatole Kopp has observed:

*The year 1928 witnessed a mutation in club architecture. In spite of all their innovations, the existing clubs, even the*

*most modern such as those designed by Melnikov and Golosov, were sharply criticized for being centred on the stage and tied to the professional theatre.*<sup>5</sup>

The reaction of Ginzburg's protégé, Ivan Leonidov, was to project a totally different type of club, one which focused more on educational institutions and athletic facilities. In 1928 he began to produce a series of designs that were all, in effect, versions of his remarkable Lenin Institute projected a year earlier for a site in the Lenin Hills outside Moscow. His design for this institute of advanced studies consisted of two primary glazed forms: a rectilinear library tower and a spherical auditorium resting on a single point. The whole suspended, floating complex, stabilized by guying cables, was to have been linked to the city by an elevated monorail. Leonidov's science-fiction concept of the club as a Suprematist megastructure - a vision clearly influenced by the work of Malevich - reached its climax in 1930 in his Palace of Culture project [170], whose glazed auditoriums, planetariums, laboratories and winter gardens were laid out on a gridded rectilinear matrix that made few concessions to traditional landscaping. Its inscribed, almost metaphysical surface was relieved by clumps of luxuriant vegetation and by prisms whose transparent forms, while revelatory of their interiors, were not functionally determined. The dirigible and mooring mast included in the composition were clearly intended to exemplify the same light-weight technology as would be used for the earthbound structures - buildings whose integrated space-frame construction anticipated the mid-century work of designers such as Konrad Wachsmann and Buckminster Fuller.

**170** Leonidov, project for a Palace of Culture, from the cover of *SA*, 1930, showing the ‘physical culture sector’, ‘field for demonstrations’ and ‘popular activities sector’.

In such complexes, Leonidov envisaged the enactment of a continual process of education and recreation: athletics, scientific demonstrations, political meetings, films, botanical displays, manifestations, flying, gliding, car racing and military exercises. The very utopianism of this vision brought him under attack from the pro-Stalin group known as Vopra ('All-Russian Association of Proletarian Architects'), who condemned such schemes for their vain idealism.

Before the consolidation of the Party line in architecture, instituted by the Ukase of April 1932, finally suppressed the extraordinary diversity of the Soviet architectural avant garde, OSA became involved in the question of ‘social condensation’ on a much larger scale, at the level of regional planning, which was then still in its infancy as an applied science. For the main OSA planning theorist, Okhitovich, the projected electrification of the Soviet Union offered itself as an infrastructural model for all forms of regional planning. His strategy for the disurbanization of the country, to be carried out literally along the lines of the power grid and the road system, implied a critical attitude towards the *dom-kommuna* and the supercommunes or *kombinats* then being proposed by the main theorist of urbanization, L. Sabsovich. Okhitovich wrote in 1930:

*We have now arrived at a moment of disenchantment with the so-called ‘commune’ that deprives the worker of living space in favor of corridors and heated passages. The pseudo-commune that allows the worker to do no more than sleep at home, the pseudo-commune that deprives him of both living space and personal convenience (the lines that*

*(form outside bath-rooms and cloakrooms and in the canteen) is beginning to provoke mass unrest.<sup>6</sup>*

In the event, the supercollective communes came to be discredited, not only for their social unacceptability but also because their massive scale would have entailed the use of sophisticated technology and scarce material resources. For a while the disurbanization proposals of Okhitovich and N.A. Milyutin found a favourable hearing in official circles. It proved easier, however, to gain acceptance for a theoretical policy than to devise an economical land settlement pattern that could be generally applied throughout the country, and for the remainder of its existence the OSA group was somewhat divided as to how this could be best achieved. After the linear city schemes of Arturo Soria y Mata, they finally proposed ribbonlike settlements which, however imaginative, were often quite arbitrary in their specific configuration. Typical of such proposals was Barshch and Ginzburg's Green City scheme for the extension of Moscow, published in 1930. This rather eccentric project comprised a cranked continuous spine of 'bachelor' units raised on stilts, which, aside from providing residential accommodation, was apparently conceived as signifying the presence of the city. On both sides of this spine communal facilities were provided at 500-metre (1,640-foot) intervals. These buildings were flanked with the usual complement of sports fields and swimming pools and sited within continuous park strips lying on either side of the central spine, green 'bands' of varying width which were delimited on their outer edges by the flow and return of one-way roads giving access to the entire system. Ginzburg's overall strategy was to use such arteries for the progressive decantation of the existing population of Moscow, thereby allowing the old capital to deteriorate and to revert gradually to semirustic parkland within which significant monuments would remain as reminders of past culture.

By far the most abstract and theoretically consistent proposition was the linear-city principle advanced by Milyutin, who argued in 1930 for a continuous city comprising six parallel strips or zones. These zones were to be arranged in the following sequence: (1) a railway zone; (2) an industrial zone containing within itself, in addition to production, centres for education and research; (3) a green zone accommodating the highway; (4) a residential zone subdivided into communal institutions, dwellings, and a juvenile area containing schools and kindergartens; (5) a park zone with sports facilities; and finally (6) an agricultural zone.

A specific political and economic intent informed this arrangement. Both industrial and agricultural workers were to be unified in the same residential zone, while any surplus production from either industry or agriculture would flow directly into the warehouses situated in the railway or green zones, to be temporarily stored there and later redistributed throughout the country. In accordance with the same ‘biological’ model, solid waste from the residential zone would be channelled directly to the agricultural zone for recycling into food. After the principles laid down in the *Communist Manifesto* of 1848, all secondary and technical education was to be carried out in the place of work, thus assuring the unity of theory and practice. Of this biological schema Milyutin wrote:

*There must be no departure from the sequence of these six zones as this would not only upset the whole plan but would make the development and extension of each individual unit impossible, create unhealthy living conditions, and completely nullify the important advantages in respect of production that the linear system embodies.<sup>7</sup>*

In January 1929 the Soviet Government declared its intention to found the city of Magnitogorsk in the eastern

Urals for the exploitation of iron deposits, and Milyutin and other OSA architects such as Ginzburg and Leonidov submitted schematic proposals for the new city [171]. These variously abstract schemes were rejected by the authorities, who chose instead to commission the German architect Ernst May and his Frankfurt team to design the official plan for the town. The endless theoretical disputes of the Russian architectural avant garde – the complex arguments and counterarguments of the ‘urbanists’ and the ‘disurbanists’ finally brought the Soviet authorities to circumvent such factional issues and to invite the more pragmatic and experienced left-wing architects of the Weimar Republic to apply their normative methods of planning and production (their *Zeilenbau* layout and their rationalized building methods) to the task of realizing the building of the first Five-Year Plan.

**171** Leonidov, project for Magnitogorsk, 1930. A 20-mile (32-kilometre) road links the industrial plant to an agricultural commune in the interior.

The failure of OSA to develop sufficiently concrete proposals for planning on a large scale or to evolve residential building types which were appropriate to the needs and resources of a beleaguered socialist state, in conjunction with the paranoid tendency that emerged under Stalin for state censorship and control, had the effect of bringing about the eclipse of ‘modern’ architecture in the Soviet Union. For all his justifications of the need for proletarian culture to be based on the ‘organic development of those stores of knowledge which humanity has accumulated under the yoke of capitalism’, there is little doubt that Lenin’s repression of the Proletkult in October 1920 was something of an initial step in the other direction. It was certainly the first attempt to control the remarkable creative forces that had been released by the Revolution.

Lenin's NEP programme was clearly a second step, inasmuch as it set limits on the scope of participatory Communism. Above all, the economic compromise of NEP seems to have entailed the recall and employment of 'politically unreliable' experts from the bourgeois era, men such as Shchusev, ironically commissioned to design Lenin's mausoleum. For all its effectiveness, this co-option of bourgeois professionals under state supervision involved a deep compromise that not only prejudiced the principles of the Revolution but also inhibited the development of a collective culture. On the other hand, the historical circumstances were such that the people were largely incapable of adopting the way of life posited by the socialist intelligentsia. Furthermore, the failure of the architectural avant garde to match their visionary proposals for such a life with adequate levels of technical performance led to their loss of credibility with the authorities. Finally, their appeal to an international socialist culture was clearly antithetical to Soviet policy after 1925, when Stalin announced the decision to 'build socialism in one country'. That Stalin had no use whatsoever for élitist internationalism was officially confirmed by Anatole Lunacharsky's nationalist and populist cultural slogan of 1932, his famous 'pillars for the people', which effectively committed Soviet architecture to a regressive form of historicism from which it has yet to emerge.

# Chapter 22

## Le Corbusier and the Ville Radieuse 1928-46

*The machinery of Society, profoundly out of gear, oscillates between an amelioration, of historical importance, and a catastrophe.*

*The primordial instinct of every human being is to assure himself of a shelter. The various classes of workers in society today no longer have dwellings adapted to their needs; neither the artisan nor the intellectual. It is a question of building which is at the root of the social unrest of today; architecture or revolution.*

Le Corbusier  
*Vers une architecture*, 1923<sup>1</sup>

After the League of Nations competition of 1927 the Engineer's Aesthetic and Architecture seemed to refer increasingly to a schism within Le Corbusier's own ideology, rather than to an opposition that was capable of synthesis. By 1928, this split was most evident in the contrast between the undeniable monumentality of the Cité Mondiale and those delicate pieces of light-weight tubular steel furniture that he designed at the same time with Charlotte Perriand - *le fauteuil à dossier basculant, le grand confort, la chaise longue, la table 'tube d'avion'* and *le siège tournant* - all of which were exhibited at the Salon d'Automne of 1929. A certain rationalization of this difference in approach had been anticipated already in Purist aesthetic theory, which

had argued that the more intimate the relation between the man and the object, the more the latter must reflect the contours of his form, that is, the more it must approximate to being the ergonomic equivalent of the Engineer's Aesthetic – and that conversely the more distant the relation, the more the object will tend towards abstraction – that is, towards Architecture.

As far as building was concerned this determination of form through proximity and use was complicated by the demands of large-scale production and by the consequent necessity to distinguish between the creation of the one-off monument and the potential advantage of using rationalized production methods for the general provision of shelter. Such a distinction seems to have been the motive for Le Corbusier abandoning his perimeter block, otherwise known as the Immeuble-Villa, in favour of a building form more suited to mass production, namely his *à redent* Ville Radieuse block projected as a continuous band of 'on-line' housing. Based on Eugène Hénard's Boulevard à Redans of 1903 (the term *redan* being borrowed like the term *boulevard* from the vocabulary of fortification), Le Corbusier's *redent* form consisted of a continuous terrace whose frontage was alternately and regularly set back from or aligned with the outer limits of the street.

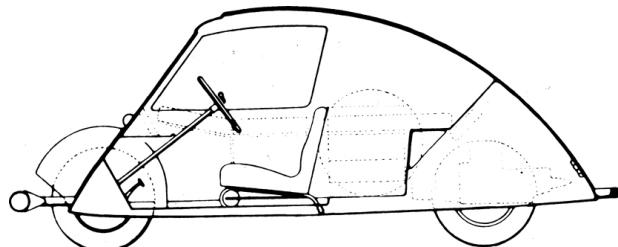
The difference in the organization of the dwelling units in these two types was as significant as the difference between their exterior form. Where the Immeuble-Villa was predicated (as its name suggests) on the *qualitative* provision of the house with its 'hanging garden' as an autonomous unit, the Ville Radieuse type seems to have been orientated towards more economic criteria, that is, towards the *quantitative* standards of serial production. Where the Immeuble-Villa incorporated an ample garden terrace and a double-height living space, of fixed dimensions irrespective of family size, the Ville Radieuse (VR) unit was a flexible, single-storey apartment of varying

extent, more economical in terms of space than the double-height duplex section [172]. The VR unit optimized every available square centimetre of space, its partitions being reduced in thickness to the point of becoming inadequate as acoustical barriers. To similar ends, the service cores, namely the kitchens and bathrooms, were reduced to a minimum. Moreover, each apartment was made capable of a certain transformation from night to day use, through the withdrawal of sliding partitions. When closed these elements subdivided the sleeping spaces and when open they yielded a children's play area that could be made continuous with the living room. Through such devices the typical VR apartment was designed to be as ergonomically efficient as the sleeping cabins of a *wagon-lit*, and indeed Le Corbusier used many of the same space standards. With air conditioning and sealed façades, this was clearly an attempt to provide the normative equipment of a machine-age civilization. Close to product design and remote from architecture in the traditional sense, the VR block could hardly have been further from the ethos of the Cité Mondiale.

**172** Le Corbusier and Jeanneret, Ville Radieuse, 1931. Plan of a five-bedroom unit.

This shift from the self-contained perimeter block to the continuous housing terrace and from the bourgeois standard of the 'villa' to an industrialized norm, may well have been a response to the technocratic challenge of the left-wing of CIAM – those German and Czech Neue Sachlichkeit architects whom Le Corbusier would have first encountered at the founding CIAM congress of 1928 (see p. 146). These 'materialist' designers challenged Le Corbusier again, at Frankfurt in 1929, on the occasion of the first working session of CIAM, dedicated under the title

'Existenzminimum' to determining optimum criteria for the minimum standard dwelling. In repudiating the reductivist approach of architects such as Ernst May and Hannes Meyer, Le Corbusier rhetorically proclaimed the space standards of his *maison maximum*, which happened to be an ironic play with the name of the economy car, *voiture maximum*, that he had designed with Pierre Jeanneret in the previous year [173]. In this last respect they were to be proven right, since their *voiture maximum* became the prototype for the austerity vehicles that were to be produced on a large scale in Europe after the Second World War.



**173** Le Corbusier and Jeanneret, *voiture maximum*, 1928.

This Neue Sachlichkeit encounter and the three visits that Le Corbusier made to Russia between 1928 and 1930 brought him into close contact with the international Left, so much so that a Western reactionary critic, Alexandre de Senger, could denounce him soon after as being the Trojan Horse of Bolshevism. Of greater consequence for his later development, however, was his exposure to the Russian OSA housing prototypes of 1927, with their interlocking duplex units, and his further encounter with the linear-city concepts of N.A. Milyutin. Both of these ideas soon emerged in his own work, the 'crossover' duplex section in 1932 and the 'linear-industrial' city in 1935. Once assimilated, they were reformulated by him in the mid-1940s: the former as the prototypical section of his Unité d'Habitation and the latter as the Cité Industrielle that was central to his regional

planning thesis entitled *Les Trois Etablissements humains*. By way of return, so to speak, he attempted to introduce the glass curtain wall into the Soviet Union, as part of his technically ‘progressive’ but ultimately troublesome Tsentrosoyuz building erected in Moscow in 1929. This double-layered glass wall (a standard technique of the Swiss Jura and used by him in the Villa Schwob) could not in the event withstand the rigours of a Russian winter. All the same, it was still included as a technical element in his 1930 reply to a Moscow questionnaire, entitled *Réponse à Moscou*, a document for which it seems the plates of the Ville Radieuse were specially prepared.

Transformations in his urban prototypes in the 1920s, in which the ‘hierarchic’ Ville Contemporaine of 1922 became the ‘classless’ Ville Radieuse of 1930, involved significant changes in Le Corbusier’s way of conceiving the machine-age city: amongst which the most important was the move away from a centralized city model to a theoretically limitless concept, whose principle of order stemmed from it being zoned, like the Milyutin linear city, into parallel bands. In the Ville Radieuse these bands were assigned to the following uses [174]: (1) satellite cities dedicated to education, (2) business zone, (3) transportation zone, including passenger rail and air transport, (4) hotel and embassy zone, (5) residential zone, (6) green zone, (7) light industrial zone, (8) warehouses plus freight rail and (9) heavy industry. It was paradoxical, to say the least, that something of a Humanist, anthropomorphic metaphor was still inserted into this model. This much is evident from his explicatory sketches of the period which show the isolated ‘head’ of the sixteen cruciform skyscrapers above the ‘heart’ of the cultural centre, located between the two halves or ‘lungs’ of the residential zone. Aside from the distortions induced by such biological metaphors the linear model was strictly adhered to, thereby allowing less hierarchic zones to expand independently of one another.

**174** Le Corbusier and Jeanneret, Ville Radieuse, 1931. Plan showing zoning in parallel bands: from offices (top) via housing (middle) to industry.

The Ville Radieuse took the open-city concept of the Ville Contemporaine to its logical conclusion, and a typical section through the entire city showed all the structures raised clear of the ground, including the garages and the access roads. By virtue of elevating everything on *pilotis* the ground surface would have become a continuous park in which the pedestrian would have been free to wander at will. The typical transverse section of the VR block and the glass curtain wall or *pan-verre* in which it was enveloped were equally crucial to the provision of the ‘essential joys’ of ‘sun’, ‘space’ and ‘green’, this last being guaranteed not only by the park, but also by the roof garden, running along the top of the continuous *redent* block.

In 1929, before finalizing his plans for the ‘radiant city’, Le Corbusier visited South America where, piloted by the pioneer aviators Jean Mermoz and Antoine de Saint-Exupéry, he had the stimulating experience of surveying a tropical landscape from the air. From such a vantage point, Rio de Janeiro impressed him as a natural linear city, laid out like a narrow ribbon along its *corniche*, with the sea on one side and steep, volcanic rocks on the other. The form of this urban terrain seems to have spontaneously suggested the idea of the viaduct city, and Le Corbusier immediately sketched [176] an extension of Rio in the form of a coastal highway, some 6 kilometres (3½ miles) in length, elevated 100 metres (305 feet) above the ground and comprising fifteen floors of ‘artificial sites’ for residential use stacked beneath its road surface. The resultant megastructure was shown in section as elevated above the average roof height of the city.

This inspired proposal led directly to the plans for Algiers developed during the years 1930 to 1933. The first of these

projected a motorway megastructure for the entire length of an equally spectacular *corniche*, given the code name ‘Obus’ because its concave enclosure of the bay resembled the trajectory of a shell [175]. (Note once again the appropriation of a military term.) With six floors beneath its road surface and twelve above the idea of the ‘viaduct city’ came into its own. Set some 5 metres (6 feet) apart, each of these floors constituted an artificial site, on which individual owners were envisaged as erecting two-storey units ‘in any style they saw fit’. This provision of a public but pluralistic infrastructure, designed for individual appropriation, was destined to find considerable currency among the anarchistic architectural avant garde of the post-Second World War period (for instance, in urban infrastructures proposed by Yona Friedman and Nicolaas Habraken).

**175** Le Corbusier and Jeanneret, ‘Plan Obus’ for Algiers, 1930.

**176** Le Corbusier, *corniche* extensions for Rio de Janeiro, 1930.

The ‘erotic’ plan configurations created for the cities of Rio de Janeiro and Algiers seem to have been related to certain transformations in the expressive structure of Le Corbusier’s painting, which after 1926 began to move from Purist abstraction towards sensuously figurative compositions, featuring his so-called *objets à réaction poétique*. Female figures first appeared in his painting at this time and the sensuous, heavy manner in which these were rendered lent a certain substance to his claim that, like Delacroix, he had rediscovered the essence of female beauty in the casbah of Algiers.

Le Corbusier’s 1930 Algiers plan was his last urban proposal of overwhelming grandeur. Reminiscent of the sensuous spirit of Gaudí’s Park Güell, his ecstatic

enthusiasm seems to have spent itself here in a passionate poem to the natural beauty of the Mediterranean. From now on his approach to city planning was to be more pragmatic, while his urban building types gradually assumed less idealized forms. The cruciform Cartesian skyscraper was abandoned in favour of the Y-shaped office block, with which it was possible to achieve a more favourable distribution of sun over the entire surface of the building. Similarly, his typical VR *redent* block was distorted into an Arabesque form in the Obus plan and then phased out entirely. This last modification, which led to his adoption of the free-standing slab as his basic residential type (compare the *Unité* slab of 1952), came with his 1935 proposals for the towns of Nemours in North Africa and Zlín in Czechoslovakia [177]. While both of these plans were projected for steeply sloping sites – for which the free-standing slab was eminently suitable – their chequerboard layout, set appropriately against the fall of the land, became a formula which was soon to be applied everywhere irrespective of the topography. As the typical Corbusian solution to high-density housing it was to be copied with disastrous consequences in a great deal of subsequent urban development, and the alienating environment created in many of the post-war *grands ensembles* clearly owes much to the influence of this model.

**177** Le Corbusier and Jeanneret, plan for Zlín, Czechoslovakia, 1935, showing it organized as a linear city in parallel bands.

Aside from the context it afforded for the evolution of the *Unité* slab form, the significance of Zlín, designed for the shoe manufacturer Bata, lies in its ingenious adaptation of the Milyutin linear-city proposal to a specific site. In linking the old town and manufacturing centre of Zlín at the bottom of the valley to the executive airport situated on the

plateau, the road and railway paralleled the length of the valley, with the new industry on one side and the company housing on the other. Zlín thus became Le Corbusier's first formulation of the linear city after the Soviet model, a type to be designated by him later as one of the three productive units (i.e. *Etablissements humains*), the other two being the traditional radially planned city and the 'agricultural co-operative'.

The argument put forward in *Les Trois Etablissements humains* of 1944 was largely a reinterpretation of the regional planning theses that had already been advanced by the German geographer Walter Kristaller and the Spanish linear-city theorist Arturo Soria y Mata. Le Corbusier derived his own regional model from Kristaller's law of urban development which held that, other factors being equal, urban settlements in Germany had always occurred at the intersections of triangular or hexagonal grids. Using Soria y Mata's idea of the linear suburb Le Corbusier merely complemented the Kristaller analysis by proposing that all links between existing radio-concentric cities should be developed as linear-industrial settlements. He went on to show that the interstices within the grid could then be developed as agricultural cooperatives. For this comprehensive-regional approach it was necessary to develop a new typology on an increased scale. Zlín was to serve as the generic 'linear-industrial city', and the 'radiant farm' and the 'radiant village' designed in 1933 for the Syndicalist agricultural worker Norbert Bezard were to be posited as the constituent elements of the new agricultural cooperative.

*Les Trois Etablissements humains*, with which, according to Le Corbusier, one could both urbanize the town and urbanize the country, was an attempt to resolve the conflict that had bitterly divided the Russian urban planners of the late 1920s, between the de-urbanists who had wanted to redistribute the existing population throughout the Soviet

Union and the urbanists who had advocated the maintenance of existing towns and the creation of additional urban centres.

While the radiant city was never realized, its influence as an evolving model on post-war urban development in Europe and elsewhere was extensive. In addition to innumerable housing schemes, the specific organization of two new capital cities was clearly indebted to ideas embodied in the Ville Radieuse: namely Le Corbusier's master plan for Chandigarh of 1950 and Lúcio Costa's plan for Brasília of 1957. Le Corbusier's basic acceptance of the existing garden-city layout for Chandigarh, as produced by the American planner Albert Mayer in the very same year, made it sufficiently clear that he had effectively abandoned any notion of creating a finite city of significant form and that he had shifted his general approach to promoting models of dynamic growth on a regional scale. For all his modification of the Mayer plan, his 'ideal city' came to be reduced at this juncture to the government centre alone, the Chandigarh Capitol of 1950. This realist strategy had already been anticipated in his plan for St-Dié of 1946. From now on, like the masters of the Renaissance, he seems to have been prepared to make up for the unrealizable whole through the projection of a representational element on a monumental scale.

Throughout the first half of the 1930s this latent monumentalizing tendency in no way diminished Le Corbusier's interest in equipping the 'machine-age' civilization. He continued to address himself to industrialists and called attention wherever possible to his capacity for designing the large-scale *objets-types*, regarded by him as being essential to the equipment of a new age. Such indeed were the four major buildings that he realized between 1932 and 1933: the Maison Clarté apartments in Geneva, the Pavillon Suisse in the Cité Universitaire, the Salvation Army Building and his own Porte Molitor apartments [178], the

last three all being built in Paris. The modular, glass and steel, *pan-verre* façade employed in each case was intended to demonstrate the ‘machine-age’ aesthetic. As such it represented a break with the concrete frame and rendered blockwork used in the villas of the 1920s. This apotheosis of the Engineer’s Aesthetic paradoxically occurred at just that moment when Le Corbusier was beginning to lose his faith in the inevitable triumph of the machine age. Soon after 1933 he began to react against the rationalized production of the *machine à habiter*, although whether from disillusion with modern technique as such or from despair in the face of a world torn apart by economic depression and political reaction it is hard to know. As Robert Fishman has pointed out, he had always maintained a certain ambivalence with regard to the promise of Taylorized mass production:

**178** Le Corbusier, Porte Molitor apartments. Paris, 1933.

*Le Corbusier’s quest for Authority in the Thirties reflects finally his deeply ambivalent attitude towards industrialization. His social thought and his architecture rested on the faith that industrial society had the inherent capacity for a genuine and joyous order. But behind that faith, there was the fear that a perverted, uncontrolled industrialization could destroy civilization. As a young man at La Chaux-de-Fonds he had seen ugly, mass-produced time-pieces from Germany virtually wipe out the watch-maker’s crafts. The lesson was not forgotten.<sup>2</sup>*

Whatever the ultimate cause, primitive technical elements began to appear in his work with increasing frequency and freedom of expression from 1930 onwards. First in the pitched-roofed, timber and stone Errazuriz House projected in 1930 for Chile [179], then in the rubble-walled villa built for Madame Mandrot near Toulon in 1931, and

finally in two remarkable works of 1935 and 1937 respectively: a concrete, vaulted weekend house built in the suburbs of Paris and his light-weight, canvas Pavillon des Temps Nouveaux, erected for the Paris International Exhibition of 1937. While the roof of the former recalled not only his Maison Monol of 1919, but more profoundly the traditional barrel-vaulted construction of the Mediterranean, the latter evoked not only the nomadic tent but also that reconstruction of the Hebraic temple in the wilderness which he had chosen to illustrate in *Vers une architecture* as an example of regulating lines. With this series of works the burden of expression now shifted from abstract form to the means of construction itself. As Le Corbusier was to remark of his weekend house: 'The planning of such a house demanded extreme care, the elements of construction were the sole architectural means.' Despite the archaic and vernacular references, both works still exploited aspects of advanced technology, the weekend house making telling use of reinforced concrete, plywood and glass lenses and the pavilion making a spectacular demonstration of steel cable suspension in such a way as to recall the jointing techniques which were then the province of aeronautical construction. Finally both works seemed to be sophisticated metaphors for a less doctrinaire future when men would freely mix primitive and advanced techniques according to their needs and resources (see [Chapter 27](#)).

**179** Le Corbusier and Jeanneret, Errazuriz House, Chile, 1930.

How resources in general might best be allocated in socio-political terms was first explicitly formulated by Le Corbusier in the contributions that he made from January 1931 to the monthly Syndicalist journal, *Plan*, edited by Philippe Lamour, Hubert Lagardelle, François Pierrefeu and Pierre Winter. In December 1931, in an essay entitled

'Décisions', he established the political preconditions under which his urban ideas might be fulfilled. His recommendation that urban land should be requisitioned by the state gave adequate ammunition to the forces of reaction, who had already chosen to see him as a Bolshevik in disguise; while his demand that the state should forbid by edict the production of useless consumer goods must have disturbed those on the technocratic right, who might otherwise have taken him as an unequivocal representative of their interests.

In 1932 Le Corbusier broke with Lamour and became a member of the Committee for Regionalist and Syndicalist Action and a contributory editor of its journal *Prélude*, edited by Hubert Lagardelle. As a protégé of Georges Sorel, Lagardelle had close ties with the left wing of the Italian Fascist movement and as such was cautiously pro-Fascist. The text of *La Ville Radieuse*, issued as a book in 1933, had previously appeared in instalments under the sign of an authoritarian brand of Syndicalism, first in *Plan* and then, after 1932, in *Prélude*. Le Corbusier, influenced no doubt by the strong Syndicalist traditions of the Jura region, vacillated, like his fellow Syndicalists, between the authoritarian utopian socialism of Saint-Simon and the anarcho-socialist tendencies latent in the writings of Fourier. In *La Ville Radieuse*, Le Corbusier advocated, along Syndicalist lines, a direct system of government through the *métiers* (trade guilds or unions), yet like his editorial colleagues he seems to have had only the vaguest idea as to how this reign of the *métiers* could be established.

Tacitly accepting yet forever postponing the eventuality of a general strike as the only access to power, the French Syndicalists of the 1930s were for reform rather than revolution and for the rationalization of the state rather than its abolition. While pro-industrialist and progressive, they remained nostalgic for a pre-industrial harmony; while anti-capitalist, they were nonetheless promoters of a

technocratic élite; for while opposed to the oligarchy of the Bolshevik state, they simultaneously advocated technocratic authority. With greater consistency they were fervently internationalist and pacifist and against the waste of armament production and laissez-faire consumption. In support of the Syndicalist polemic, in 1938 Le Corbusier was to write his most polemical book, bearing the prophetic, if ironic, title *Des canons, des munitions? Merci! Des logis ... S.V.P.* [180]. Despite their radical discourse, the Syndicalists were unable to establish a popular base. The gap between the provisions of a welfare state and the possibility of a mass culture of high quality did not escape Le Corbusier, who with characteristic aloofness deprecated the ostensible populism of the housing envisaged as being provided under the auspices of the Loi Loucheur promulgated in 1929.

**180** Le Corbusier, ver of *Des canons, des munitions? Merci! Des logis ... S.V.P.*, 1938.

# Chapter 23

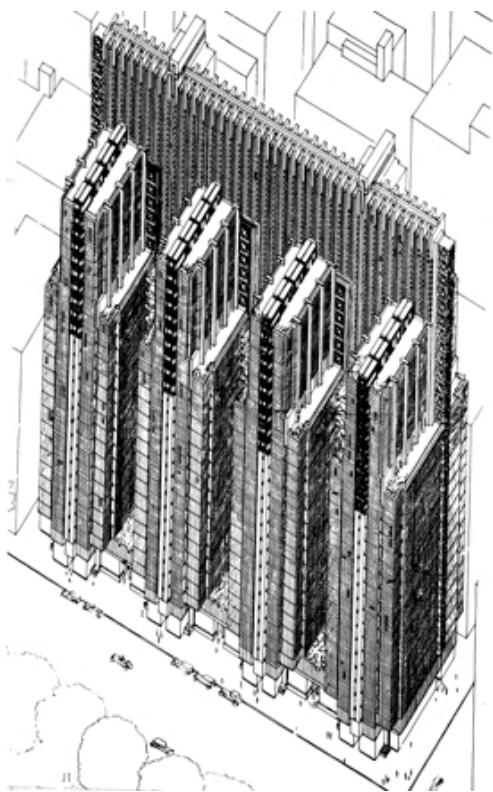
## Frank Lloyd Wright and the Disappearing City

### 1929–63

*According to reports in the press Henry Ford has issued an order whereby all married workers and employees in their spare time are to cultivate vegetables in their own gardens to detailed instructions given by experts employed by him for this purpose, the idea being that by this means they will be able to supply the greater part of their own requirements. The necessary garden land is to be placed at their disposal. Henry Ford has said, 'Self help is the only means of combatting the economic depression. Anyone refusing to cultivate his garden will be dismissed.'*

*Die Heimstätte*, no. 10, 1931<sup>1</sup>

The second significant phase of Wright's career was initiated by the completion of the last of his concrete-block houses, in Tulsa, Oklahoma, in 1929, and by the first of his projects to exploit to the limit the cantilevering capacity of reinforced concrete, his Elizabeth Noble Apartments projected for Los Angeles. The crystalline aesthetic of these apartments had already been anticipated in his National Life Insurance Building project for Chicago of 1924 [181], whose scintillating copper and glass façade was a direct translation of his 'textured concrete block' aesthetic into glass.



**181** Wright, project for the National Life Insurance Building, Chicago, 1924.

The economic mass production of the automobile by Henry Ford and the impact of the Depression seem to have had the effect of rousing Wright from his Eldorado dreams, from the 'instant' culture of his Mayan houses, built for rich, displaced aesthetes in the lush hills of southern California. Influenced by the role then being played by the Neue Sachlichkeit in Europe, Wright was induced to formulate a new role for architecture in restructuring the social order of the United States.

Ever since his address 'The Art and Craft of the Machine' (1901), Wright had recognized that it was the destiny of the machine to bring about a profound change in the nature of civilization. His initial reaction, lasting until 1916, had been to adapt the machine to the creation of a high-level craft culture, that is, to apply it to the direct formation of his Prairie Style. Despite the fact that, for Wright, 'machine' expression always seemed to involve a certain rhetorical

use of the cantilever (the Robie House of 1909 is a typical example), he still insisted on the ultimate authority of traditional materials and methods. Although anticipated in the Coonley House (1908) and in Midway Gardens (1914) it was the mid-1920s before Wright considered the assembly of entire structures from mass-produced synthetic elements, such as the concrete-block mosaic of his Californian houses or the modular curtain wall system that he devised for the enclosure of monolithic concrete structures.

In being forced by the economy to recognize the limits of traditional materials and construction, Wright was caused to abandon the earthbound syntax of his Prairie Style, and through a singular combination of reinforced concrete and glass he created a prismatic, faceted architecture whose glass exterior, borne on an armature of floating planes, conveyed an illusion of total weightlessness. It was as though, like Paul Scheerbart before him, he had suddenly been possessed by the expressive qualities of glass, whose crystalline translucence could be best complemented by the liberating attributes of the column-free plan. The first occasion on which Wright, the master of masonry, acclaimed glass as the modern material par excellence was in his famous Kahn Lectures, given at Princeton University in 1930. In 'Style in Industry' he stated:

*Glass has now a perfect visibility, thin sheets of air crystallized to keep air currents outside or inside. Glass surfaces, too, may be modified to let the vision sweep through to any extent up to perfection. Tradition left no orders concerning this material as a means of perfect visibility; hence the sense of glass as crystal has not, as poetry, entered yet into Architecture. All the dignity of colour and material available in any other material may be discounted by glass as light and discounted with permanence.*

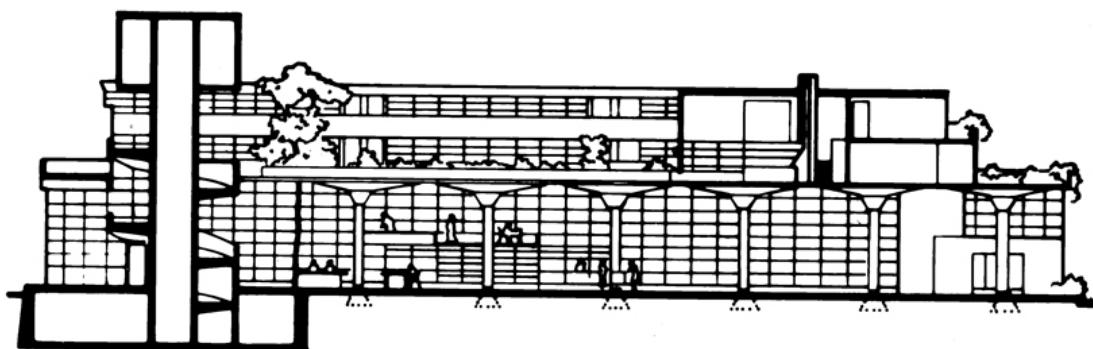
*Shadows were the ‘brush work’ of the ancient Architect. Let the Modern now work with light, light diffused, light reflected, light for its own sake, shadows gratuitous. It is the Machine that makes modern these rare new opportunities in Glass.*<sup>2</sup>

In 1928 Wright coined the term ‘Usonia’ to denote an egalitarian culture that would spontaneously emerge in the United States. By this he seems to have intended not only a grassroots individualism but also the realization of a new, dispersed form of civilization such as had recently been made possible by mass ownership of the automobile. The car as the ‘democratic’ mode of locomotion was to be the *deus ex machina* of Wright’s anti-urban model, his Broadacre City concept, in which the concentration of the 19th-century city was to be redistributed over the network of a regional agrarian grid (already anticipated in his entry for the City Club, Chicago, competition of 1913 for a subdivision on the outskirts of Chicago [182]). He had first spoken out against the traditional city in the last of his Kahn Lectures, which began: ‘Is the city a persistent form of social disease, eventuating in the fate all cities have met?’ It is one of the ironies of our century that Broadacre City corresponded more closely than any other form of radical urbanism to the central precepts of the *Communist Manifesto* of 1848, advocating ‘the gradual abolition of the distinction between town and country by a more equitable distribution of the population over the land’.

**182** Wright, plan for the subdivision of a typical section of land, Chicago, 1913.

Nevertheless, Wright’s first building projects for this new Usonian culture, the St Mark’s apartment tower and the *Capital Journal* newspaper building [183], both of 1931, were urban rather than agrarian in tone. Eventually realized as the Price Tower in Bartlesville, Oklahoma (1952–55), and

as the Johnson Wax Administration Building in Racine, Wisconsin (1936–39), both of these projects consisted of reinforced-concrete cantilevered systems covered in a crystalline membrane. At a symbolic level they embodied the essential polarity that had been evident in Wright's work ever since his Martin House and Larkin Building of 1904 – the fundamentalist assimilation of the building of the home to the processes of nature and of the workplace to the idea of sacrament. This polarization was to be brilliantly reformulated in Wright's Usonian period in two masterworks of unsurpassed richness and generosity, the Kaufmann weekend house at Bear Run, Pennsylvania, of 1936, better known as Falling Water, and the Johnson Wax Administration Building begun in the same year.



**183** Wright, project for the *Capital Journal* Building, Salem, Oregon, 1931. Section.

For Wright, the word 'organic' (which he first applied to architecture in 1908) came to mean the use of the concrete cantilever as though it were a natural, treelike form. He seems to have conceived of such a form as a direct extension of Louis Sullivan's vitalist metaphor of the 'seed germ', extended now to include the whole structure rather than the ornament alone. Just before his death, Wright wrote of the vulva-shaped pool in the foyer of the Guggenheim Museum: 'Typical of the details of this edifice, the symbolic figure is the oval seed pod containing globular units.'

In the Johnson Wax Administration Building this organic metaphor revealed itself in tall, slender mushroom columns tapering towards their bases, which form the prime support within a 9-metre (30-foot) high open-planned air-conditioned office space [184]. These columns resolve themselves at roof level into broad circular lily pads of concrete, between which is ‘interwoven’ a membrane of Pyrex glass tubing. These horizontal roof lights delicately supported by columns, and the columns themselves (whose hollow cores serve as storm water drains and whose hinged bases are pin-jointed into bronze shoes), jointly represent the apotheosis of Wright’s technical imagination. This was the expressive destiny of Usonia, a poetry of miraculous technique arising out of a daring inversion of the traditional elements. Thus where one would have expected solid (the roof) one found light; and where one would have expected light (the walls) one found solid. Of this inversion Wright wrote:

**184** Wright, S.C. Johnson & Son Administration Building, Racine, Wisconsin, 1936–39. Interior.

*Glass tubing laid up like bricks in a wall composes all the lighting surfaces. Light enters the building where the cornice used to be. In the interior the box-like structure vanishes completely. The walls carrying the glass ribbing are of hard red brick and red Kasota sandstone. The entire fabric is reinforced concrete, cold-drawn mesh being used for the reinforcement.<sup>3</sup>*

This concrete mushroom construction brought Wright to develop, for the first time, a curved corner profile and a predominantly circular vocabulary, which, executed in hard, precise materials and lit throughout by translucent glass tubing, imparted to the structure a Moderne streamlined

aura which time has done little to dispel. At the same time this science-fiction atmosphere rendered the Johnson Wax Building as a self-contained, monastic place of work. As Henry-Russell Hitchcock wrote: 'There is a certain illusion of sky seen from the bottom of an aquarium.' Here again, as in his Larkin Building, Wright had created an hermetic environment whose physical exclusion of the outside world was reinforced by the form and colour of the special office equipment designed for its furnishing.

While Johnson Wax reinterpreted the sacramental place of work, Falling Water embodied Wright's ideal of the place of living fused into nature. Once again, reinforced concrete afforded the point of departure; only this time the cantilevering gesture was extravagant to the point of folly, in contrast to the implacable calm of the mushroom structure of Johnson Wax. Falling Water projected itself out from the natural rock in which it was anchored, as a free-floating platform poised over a small waterfall [185]. Designed in a single day, this dramatic structural gesture was Wright's ultimate romantic statement. No longer restricted by the extended earth line of his Prairie Style, the terraces of this house appeared as an agglomeration of planes miraculously suspended in space, poised at varying heights above the trees of a densely wooded valley. Tied back into the escarpment by the reinforced-concrete upstand beams of its terraces, Falling Water defies photographic record. Its fusion with the landscape is total, for, despite the extensive use of horizontal glazing, nature permeates the structure at every turn. Its interior evokes the atmosphere of a furnished cave rather than that of a house in the traditional sense. That the rough stone walls and flagged floors intend some primitive homage to the site is borne out by the living-room stairs which, descending through the floor to the waterfall below, have no function other than to bring man into more intimate communion with the surface of the stream. Wright's perennial ambivalence

towards technique was never more singularly expressed than in this house, for although concrete had made the design feasible he still regarded it as an illegitimate material – as a ‘conglomerate’ that had ‘little quality in itself’. His initial intent had been to cover the concrete of Falling Water in gold leaf, a kitsch gesture from which he was dissuaded by the discretion of the client. He finally settled for finishing its surface in apricot paint!

**185** Wright, Falling Water, Bear Run, Pa., 1936.

From now on, aside from his remarkably practical Usonian houses, Wright continued to develop a curious kind of science-fiction architecture which, judging from the exotic style of his late renderings, seemed intended for occupation by some extraterrestrial species. This self-conscious exoticism fell to the level of ultra-kitsch in his Marin County Courthouse, California, commissioned in 1957 and finished in 1963, four years after his death. Wright had already acknowledged this compulsion towards the fantastic when he wrote in 1928: ‘The fact remains Usonia wanted romance and sentiment. The failure to get it is less significant than the fact that it was sought.’

Wright’s Usonian vision, first crystallized in his masterworks of the mid-1930s, attained its fulfilment in his Guggenheim Museum, New York, of 1943 [186]. The structural idea and *parti* for the museum date back to his sketch for the Gordon Strong Planetarium of 1925 – a science-fiction proposal par excellence, a ‘ziggurat’ destined for the semireligious gratification of ‘nature-worshipping’ pilgrims. At the Guggenheim, he simply turned the diminishing helix of the planetarium inside out, inverting and thereby converting what had previously been a car ramp into an internal, spiralling gallery, an extended spatial helix which Wright later referred to as an ‘unbroken wave’.

The Guggenheim Museum must be regarded as the climax of Wright's later career, since it combines the structural and spatial principles of Falling Water with the top-lit containment of Johnson Wax. His declaration that the museum was more like a temple in a park than a mundane business building or residential structure may be seen as an ironic reference to the building's origin in these projects.

**186** Wright, preliminary project for the Solomon R. Guggenheim Museum, New York, 1943.

In his first book on city planning, *The Disappearing City* (entitled in the first draft *The Industrial Revolution Runs Away*), published in 1932 on the completion of his Broadacre City study [187], Wright declared that the future city will be everywhere and nowhere, and that 'it will be a city so greatly different from the ancient city or from any city of today that we will probably fail to recognize its coming as the city at all'. Elsewhere he stated: 'America needs no help to build Broadacre City. It will build itself, haphazard.' Wright neither sought nor found any satisfactory resolution to the inherent contradiction of this polemic. On the one hand, he argued that men should consciously establish a new system of dispersed land settlement, anti-urban by definition; on the other, he stated that there was little need to do so since this would happen spontaneously!

**187** Wright, Broadacre City project, 1934–58.

In his historical determinism, Wright looked to the machine as the one agent with which the architect has no choice but to come to terms. But the old dilemma remained: how to do this without being brutalized? For Wright, this was the constant cultural quest of his long career. Thus, in *The*

*Living City* (1958), we find him writing: 'Miracles of technical invention with which our "hit and run" culture has nothing to do are - despite misuse - new forces with which any indigenous culture must reckon.' While he consigned steam power and the railway to instant oblivion, he welcomed (like the Soviet de-urbanists of his day) electricity as a source of silent power and the automobile as the provider of limitless movement. He identified the new forces which would transform the entire basis of Western civilization as follows: (1) Electrification, the communicational annihilation of distance and the constant illumination of human occupation; (2) Mechanical Mobilization, the immeasurable widening of human contact due to the invention of the airplane and the automobile, and finally (3) Organic Architecture, which, although it always escaped any precise definition, seems to have eventually meant for Wright the economic creation of built form and space in accordance with the latent principles of nature as these may be revealed through the application of the reinforced-concrete construction. On another occasion, Wright characterized the resources that would implacably shape Broadacre City as the car, the radio, the telephone, the telegraph and, above all, standardized machine shop production.

For Wright, Usonian culture and Broadacre City were inseparable concepts, the former providing the prime intention behind a whole range of buildings which were the architectural substance of the latter. Falling Water and the Johnson Wax Building would no doubt have found their appointed places in Broadacre City. Yet, by Usonia, Wright generally intended something altogether more modest: warm, open-planned, small houses designed for convenience, economy and comfort. The heart of the Usonian house was the 'time-and-motion' kitchen, an alcove work space freely planned off the living volume, which, as Henry-Russell Hitchcock observed, was an important contribution to American domestic planning. Of almost

equal import to the modern interior was Wright's introduction at this time of continuous wall-seating to maximize space in small houses. While single-family Usonian homes were projected as the housing stock of Broadacre City, they were also actually realized in the numerous suburban houses that Wright designed and built between 1932 and 1960, including the famous four-family Suntop Homes, arranged in a pinwheel formation, that were erected on the outskirts of Philadelphia in 1939.

By far the most important building type designed for Wright's ideal city was not a house at all but the Walter Davidson Model Farm projected in 1932. This unit, designed to facilitate the economic management of both home and land, was critical to the overall economy of Broadacre City, where every man was to grow his own food on an acre of land which, reserved at his birth, would be placed at his disposal as soon as he was of age.

Apart from a number of contingent social ideas such as the single tax system or social credit – both popular remedial notions in the Depression – Broadacre City was above all an updating of that smallholding cottage-industry economy first advocated by Peter Kropotkin in his *Factories, Fields and Workshops* of 1898. In reviving such a proposition there was at least one awkward contradiction which Wright, like Henry Ford, stubbornly refused to recognize: namely, that an individualistic quasi-agrarian economy would not necessarily be able to guarantee to an industrialized society either its subsistence or the benefits of mass production, since the latter, despite automation, still demanded some concentration in both labour and resources. Even Kropotkin acknowledged the need to concentrate labour and resources for the processes of heavy industry. Wright's vision of a city in which part-time smallholders would drive to work, to rural factories, in secondhand Model T Fords, suggests that a migrant, 'sweat equity' labour force would have been essential for the success of the Broadacre economy.

As Meyer Schapiro pointed out at the time, Wright, despite his unremitting attack on rent and profit and his prescience in foreseeing the dissolution of the city, failed to confront the urgent issue of power that was fundamental to the Broadacre concept. Like Buckminster Fuller, who was already active by this date, he could not bring himself to acknowledge that architecture and planning must, of necessity, address themselves to the class struggle. Schapiro summed up Wright's utopianism correctly in 1938, when he wrote:

*The economic conditions that determine freedom and a decent living are largely ignored by Wright. He foresees, in fact, the poverty of these new feudal settlements when he provides that the worker set up his own factory-made house, part by part, according to his means, beginning with a toilet and kitchen, and adding other rooms as he earns the means by his labor in the factory. His indifference to property relations and the state, his admission of private industry and second-hand Fords in this idyllic world of amphibian labor, betray its reactionary character. Already under the dictatorship of Napoleon III, the state farms, partly inspired by the old Utopias, were the official solution of unemployment. The democratic Wright may attack rent and profit interest, but apart from some passing reference to the single tax, he avoids the question of class and power.<sup>4</sup>*

## Chapter 24

# **Alvar Aalto and the Nordic Tradition: National Romanticism and the Doricist Sensibility 1895-1957**

*The first essential feature of interest is Karelian architecture's uniformity. There are few comparable examples in Europe. It is a pure forest-settlement architecture in which wood dominates almost one hundred percent both as material and as jointing method. From the roof, with its massive system of joists, to the movable building parts, wood dominated, in most cases naked, without the dematerializing effect that a layer of paint gives. In addition, wood is often used in as natural proportions as possible, on the scale typical of the material. A dilapidated Karelian village is somehow similar in appearance to a Greek ruin, where, also, the material's uniformity is a dominant feature, though marble replaces wood. ... Another significant special feature is the manner in which the Karelian house has come about, both its historical development and its building methods. Without going further into ethnographic details, we can conclude that the inner system of construction results from a methodical accommodation to circumstance. The Karelian house is in a way a building that begins with a single modest cell or with*

*an imperfect embryo building, shelter for a man and animals, and which then figuratively speaking grows year by year. 'The expanded Karelian house' can in a way be compared with a biological cell formation. The possibility of a larger and more complete building is always open.*

*This remarkable ability to grow and adapt is best reflected in the Karelian building's main architectural principle, the fact that the roof angle isn't constant.*

Alvar Aalto

*Architecture in Karelia, 1941*<sup>1</sup>

In this perceptive essay on the farmhouse vernacular of eastern Finland, Aalto evoked, almost by chance, the two prominent architectural modes of the second half of the 19th century, Romantic Classicism and the Gothic Revival. Where Aalto's account of native agrarian form with its stress on the variation in roof pitches comes close to Pugin's original prescription for a revived medieval domestic style, his characterization of a decayed Karelian village as a Greek ruin rendered in wood rather than stone is a sort of mirror-image of Auguste Choisy's thesis that the metopes of the Parthenon are nothing but vestigial forms of timber construction. Aside from making us aware of his own Classical consciousness and of his interest in an all but primeval vernacular, this passage also serves to introduce the two stylistic themes of the Nordic tradition: the National Romantic manner dating from 1895 and the Doricist sensibility which emerged in Scandinavia about 1910. Aalto's long and brilliant career can scarcely be appreciated without making explicit reference to these themes, for, while he was never a committed participant in either, his life's work reflected a constant debt to either National Romantic tactility or the astringencies of Doricist form.

The origin of these modes is significant, the one patently stemming from the Gothic Revival, via the American Shingle

Style of H.H. Richardson, and the other arising out of the Romantic Classicism of Schinkel. Helsinki, founded as the Finnish capital in 1817 on the basis of J.A. Ehrenström's orthogonal grid, was to be particularly prone to the influence of the Romantic Classical style, since it was laid out around an armature of representative Classical buildings - the Senate House, the University and the Cathedral, all built after 1818 to the designs of Schinkel's fellow pupil, Carl Ludwig Engel. As for National Romanticism, such is Aalto's debt to this movement that it is hardly possible to appreciate his later career without first examining its origins and aims.

Initially, National Romanticism was as prevalent in Sweden as in Finland, particularly in the work of the architect Gustaf Ferdinand Boberg, who was responsible in his Gävle Fire Station of 1890 for introducing the work of Richardson into Scandinavia. However, in general, Swedish architects were incapable of transforming this Neo-Romanesque manner into a convincing national style. What was true of Sweden was even more true of Denmark, where Martin Nyrop's popularly acclaimed neo-medieval Copenhagen Town Hall of 1892 remained complacently rooted in a highly eclectic, if successful form of historicism, totally unmoved by the conviction and integrity of Richardson's heroic example. Indeed the Swedes and the Danes were only able to achieve an authentic national revivalist manner after the main impulse of the nationalist cultural movement was already over, most notably in Ragnar Östberg's castle-like Stockholm City Hall (1909–23), and in P.V. Jensen-Klint's proto-Expressionist Grundtvig Church, Copenhagen, designed in 1913 but not realized until 1921–26.

National Romanticism in Finland had already become a significant force by 1895, when a group of artists came to their ideological and artistic maturity at the same time - the composer Jean Sibelius, the painter Akseli Gallen-Kallela,

and the architects Eliel Saarinen, Herman Gesellius, Armas Lindgren and, at some distance, Lars Sonck. The basic inspiration behind all their work was the Finnish folk epic, the *Kalevala*, which had been collected and transcribed by Elias Lönnrot at the beginning of the 19th century.

The compelling force behind National Romanticism in Finland derived, in part at least, from the need to find a national style other than Romantic Classicism, which was the imperialist manner of Helsinki, built under Russian auspices. A further cause for the particular form taken by Finland's rather ready acceptance of the Richardsonian syntax, derived from the need to exploit the abundance of local granite, reflected in the dispatch of a mission to Aberdeen in the early 1890s to study the Scottish technique of building in this material. The first National Romantic architect to use granite was Sonck, whose Neo-Gothic church of St Michael, built in Turku in 1895, was enriched by columns and furnishings in finely carved granite, in contrast to its otherwise stark and sparsely decorated interior. That this interior with its etched precision shows something of the same surface articulation as is found, say, in Otto Wagner's Steinhof Church in Vienna built a decade later is perhaps partly explained by the fact that Sonck's generation had been trained in the Finnish Polytechnic under the tutorship of the technocratic but Classically educated Carl Gustav Nyström. Nyström, aside from pioneering granite construction, had established himself as a Wagnerian 'technocrat' in his National Archives Building of 1890. He was later to distinguish himself as a Structural Rationalist, when in 1906 he added an exemplary steel and concrete bookstack to the rear of C.L. Engel's University Library.

Sonck's major buildings, Tampere Cathedral (1902) [188] and the Telephone Building in Helsinki (1905), were patently influenced by the work of Richardson, whose masonry syntax, as Asko Salokorpi has remarked, resembled the Finnish medieval tradition. This Richardsonian manner was

soon to be adapted by Eliel Saarinen and Armas Lindgren, in their orientalizing Neo-Romanesque Finnish Pavilion for the Paris Exposition of 1900, and a domestic version of this manner was used in their highly romantic Villa Hvitträsk, designed in 1902 in collaboration with Gesellius [190]. Inside, however, Hvitträsk was less Richardsonian, and in many respects a reworking of Gallén-Kallela's log cabin studio built at Ruovesi, in 1893 [189]. Aside from its spirited interpretation of Finnish timber vernacular, the interior décor of Hvitträsk reiterated Gallén-Kallela's attempt to evoke the lost forms and images of Finno-Ugric culture. Two years later, in 1904, the 'guild' idyll of Saarinen, Gesellius and Lindgren – who, in anticipation of Wright, not only worked but also lived together at Hvitträsk – came to an abrupt end. This happened when Saarinen, acting independently, entered and won the competition for the Helsinki Railway Terminus with a design whose architectonic invention reflected the 'crystallized' Jugendstil of such buildings as Hoffmann's Palais Stoclet, Brussels, of 1905 and Olbrich's Hochzeitsturm, Darmstadt, of 1908. Saarinen was not the only Finn to entertain the late Jugendstil manner: Onni Tarjanne's *Wagnerschule* style matched and in many ways surpassed that of Saarinen, particularly in his Takaharju Sanatorium of 1903. (It is a measure of Tarjanne's brilliance that he had designed the Finnish National Theatre at Helsinki in a National Romantic, Richardsonian manner only five years earlier.) The swansong of the Finnish Jugendstil came with the extremely delicate Hoffmannesque work of Selim A. Lindquist, as exemplified in Helsinki in the Suvilhati Power Station of 1908 and the Villa Ensi of 1910.

**188** Sonck, Tampere Cathedral, 1902. Ground plan showing 'log-cabin' corners.

**189** Gallén-Kallela, the artist's studio at Ruovesi, 1893. Ground plan and elevation.

**190** Saarinen, Lindgren and Gesellius, Villa Hvitträsk, near Helsinki, 1902.

Naturally enough, given Finland's long history as an imperial colony, first of Sweden and then of Russia, the revival of Romantic Classicism in Scandinavia – the so-called Doricist sensibility – began in Denmark. It came into being there under the influence of writers such as Vilhelm Wanscher, whose first articles on Neo-Classicism appeared in 1907, and the German Paul Mebes, whose book *Um 1800* was published in 1908. The interest of these men (and others including H. Kampmann and E. Thomsen) in a non-historicist, primordial Doric simplicity, based on primal architectonic elements which were neither Classic nor vernacular, drew attention to the Danish school of Romantic Classicism, to the work of Gottlieb Bindesbøll and Christian Frederick Hansen. This whole sensibility crystallized in 1910, after the Carlsberg Brewery had publicly demanded that a spire be added to Hansen's Fruekirche. The architect Carl Petersen responded to their arrogant gesture by organizing an exhibition of Hansen's drawings. In the following year a group of painters responded by commissioning Petersen to design the Faaborg Museum, generally regarded as the first building of the Romantic Classical Revival.

It was to take some time for this movement to enter Sweden. The impulse is just discernible in Carl Westman's Stockholm Law Courts of 1915, a part-National Romantic, part-Classical work, which was followed by Ivar Tengbom's Neo-Classical Stockholm Concert Hall (1920–26) and Gunnar Asplund's Stockholm Public Library (1920–28), the movement culminating in Finland at the point of its exhaustion, with J.S. Sirén's Finnish Parliament Building

(1926–31). In Sweden the Romantic Classical Revival, far from being *sachlich* and normative, was distorted by a tendency towards the inflection of the plan and by an obsession with local allusion, such as had been established in the skewed planning and iconography of Östberg's National Romantic manner. This was a restrained and synthetic form of expression that invariably alluded to the topography and the *genius loci*. This drive towards distortion was deeply engrained in Asplund who, having been influenced by both Östberg and Tengbom at the Klara School, sought sporadically throughout his career to transcend the 'battle of styles' by fusing the vernacular and the Classical into a primitive and more authentic form of expression. The first opportunity to do this came with his Woodland Chapel (1918–20) in the Stockholm South Cemetery, which he had planned as a competition design with Sigurd Lewerentz in 1915. Basically Classical in design, this small single-cell structure, with its crisply profiled shingle roof set on a Tuscan peristyle, was in fact derived from a 'primitive hut' that Asplund had happened to see in a garden at Liselund. Up to the time of his brief 'Functionalist' period, lasting from 1928 to 1933, his work seems to have been subject to influences as diverse and as separate in time as the French Neo-Classicalists, Josef Hoffmann and above all Bindesbøll, whose Thorvaldsen Museum, Copenhagen, of 1848 furnished Asplund with the Egyptoid and Neo-Classical motifs that recur in his work throughout the 1920s, first in the Carl Johan School at Göteborg of 1915, then in the Skandia Cinema at Stockholm of 1921, and finally in the Stockholm Public Library, completed in 1928 [191].

**191** Asplund, Stockholm Public Library, 1920–28.

In Alvar Aalto's early career it was Asplund who was the catalyst, despite the *Wagnerschule* influence of Aalto's teacher, Usko Nyström. By 1922, when he started on his own, Aalto, like Asplund before him, appeared to be moving in several directions. The four buildings that he designed for the Industrial Exhibition held at Tampere in that year obviously allude to quite different levels of cultural development. In all the rhetorical diversity of his later career, no contrast is so expressive as that to be found in his work there, between, say, his 'Classical' industrial pavilion, built of modular panels, along the lines of Otto Wagner's Karlsplatz Station of 1899, and his 'vernacular' thatched-roofed kiosk designed for the display of Finnish handicrafts.

Aalto's early practice in Jyväskylä between 1923 and 1927 was remarkably varied, including workers' apartments and a workers' club (both built in 1924), a surprising number of churches and church renovations, and two civilian guardhouses, built at Seinäjoki and Jyväskylä in 1927. All these works were carried out under Asplund's influence in a vaguely Doricist style, which, while compounded in part of the local timber vernacular, was at the same time indebted to Hoffmann's austerity of line and to Schinkel's Italianate mode. In 1927 Aalto moved decisively towards Romantic Classicism in his Viinika Church and his Viipuri Library competition entry [192]. The latter (realized in a modified form in 1935) was unequivocally influenced by Asplund, its form including features taken directly from the Stockholm Public Library. Of these, the Neo-Classical plan with its axial *scala regia*, the atectonic façade and its frieze, and the giant Egyptoid door were patently items which Asplund in his turn had drawn from Bindesbøll. It was Aalto's prize-winning entry for the Paimio Sanatorium of 1928 that firmly established the fundamental Functionalist style of his first mature period (1927–34).

**192** Aalto, project for Viipuri Library, 1927.

Aside from Asplund, the other catalytic figure in Aalto's early development was clearly the slightly older Finnish architect Erik Bryggman, with whom Alvar and his wife, Aino, briefly collaborated after their move to the booming city of Turku in southern Finland at the end of 1927. Alvar Aalto was soon to outdo the stripped Classicism of Bryggman's Atrium Apartments of 1925 in his own Asplundian South-Western Agricultural Co-operative Building, realized in Turku in 1928. The colour scheme of the theatre in this building – a dark blue auditorium offset by grey and pink plush upholstery – is obviously taken from Asplund's Skandia Cinema, as is the frieze running below the exterior cornice. The fruit of Aalto's collaboration with Bryggman was first an office building project for the town of Vaasa and then, in 1929, an exhibition celebrating the 700th anniversary of Turku. As in Asplund's 1928 sketch proposals for the Stockholm Exhibition, with their exposed, light-weight, cantilevered trusses, suspended sky signs and 'agitational' graphics, this commission led Bryggman and Aalto to follow the Soviet Agit-Prop lead in architectural rhetoric.

After the realization of his Constructivist-influenced *Turun-Sanomat* newspaper building at Turku in 1928 (reminiscent of the Vesnins' *Pravda* project of 1923), Aalto was able to take advantage of his growing reputation by participating in international conferences on modern architecture and construction. At a conference on reinforced concrete in Paris in 1928 he became acquainted with the work of Duiker (see p. 145), whose reinforced-concrete Zonnestraal Sanatorium was the point of departure for Aalto's own competition design for the Paimio Sanatorium, submitted in January 1929. From this date on Aalto was decidedly under the influence of both Dutch and Russian

Constructivism, particularly as it was manifest in the work of Duiker and in the urban projects of N.A. Ladovsky's Asnova and ARU groups. The serial, geometrical schemes proposed at different times by the ARU (Association of Urban Architects), such as Ladovsky's Kostino Quarter for Moscow of 1926, are obviously the source for the entry trajectory and the serial landscape formations that appear in Paimio. As well as reflecting the urban approach of ARU, Paimio also marked a turning point in the matter of detail, for it abounded in Constructivist quotation.

Although he kept his distance from international polemics, in this period Aalto drew surprisingly close to the exclusively economic position adopted by the German Neue Sachlichkeit architects at the 1929 Frankfurt CIAM Congress on 'Existenzminimum', such concerns being reflected in his 1930 apartment designs for the Finnish Arts and Crafts Society, and in his prototypical minimum house for the Nordic Building Conference of 1932.

At around the same time, Aalto met Harry and Mairea Gullichsen, an event which opened up his practice to industrial production. Mrs Gullichsen, heiress of the large Ahlström timber, paper and cellulose concern, had seen Aalto's earliest furniture in a Helsinki store, and invited him to design a range of furniture for serial production. The eventual consequences were the foundation in 1935 of the Artek Furniture Company (to distribute Aalto's furniture) and the Sunila Pulp Mill and workers' housing designed and realized at Kotka between 1935 and 1939. Fortunately Aalto's pieces readily lent themselves to mass production. He had already started to design plywood furniture as early as 1926 when he produced a stacking chair for the Jyväskylä guardhouse, and he followed this success with a laminated armchair for Paimio, a prototype which was finally put into production in 1933. It is interesting to note that Aalto took the technique of this design from the standard bent-plywood seating that Otto Korhonen produced in the late 1920s.

Aalto's patronage by the Finnish timber industry - the large industrial concerns of Ahlström and Enso-Gutzeit were to be his patrons for the rest of his life - led him to re-appraise the value of timber over concrete as a primary expressive material. With this he seems to have gradually returned to the highly textured architectural manner of the Finnish National Romantic movement, to the work of Saarinen, Gallén-Kallela and Sonck. The first indication of this move away from international Constructivism came with his own house built in Munkkiniemi, Helsinki, in 1936. This somewhat irregular L-shaped building, executed as a collage in rendered masonry, grooved planking and exposed brickwork, was followed by his prizewinning entry design for the Finnish Pavilion for the Paris World Exhibition of 1937 [193], a timber structure significantly entitled 'Le Bois est en marche'. It was a rhetorical display of wooden construction, its various bearing elements expressing the specific characteristics of wood. The battened timber siding of the main hall and the skeleton timber structure of the perimeter exhibition space made up a virtuoso display of different techniques for jointing in wood. Yet for all its constructional ingenuity, the Finnish Pavilion was chiefly important for its formulation of the site-planning principle of Aalto's later career, wherein a given building is invariably separated into two distinct elements and the space between is articulated as a space of human appearance (see the Villa Mairea, Säynätsalo Town Hall, etc.: pp. 228-29). He wrote of the pavilion in his collected works:

**193** Aalto, Finnish Pavilion, World Exhibition, Paris, 1937. Details show boarded siding, a reinforced wooden column of the loggia and part of a column with projecting reinforcement fins.

*One of the most difficult architectural problems is the shaping of the building's surroundings to the human scale.*

*In modern architecture where the rationality of the structural frame and the building masses threaten to dominate, there is often an architectural vacuum in the left-over portions of the site. It would be good if, instead of filling up this vacuum with decorative gardens, the organic movement of people could be incorporated in the shaping of the site in order to create an intimate relationship between Man and Architecture. In the case of the Paris Pavilion this problem fortunately could be solved.<sup>2</sup>*

In his later career, Aalto was to regard the shift from reinforced-concrete expression to wood and natural materials as being of the utmost importance for the development of his architecture. He saw his laminated furniture as exemplifying an intuitive, indirect and more critical approach to design, which was capable of achieving a more responsive and inflected environment than that usually achieved by linear logic. Thus in 1946, on the occasion of an exhibition of his furniture in Zürich, he wrote:

*In order to achieve practical goals and valid aesthetic forms in connection with architecture, one cannot always start from a rational and technical standpoint - perhaps even never. Human imagination must have free room in which to unfold. This was usually the case with my experiments in wood. Pure playful forms, with no practical function whatsoever, have, in some cases, led to a practical form after ten years have elapsed. ...*

*The first attempt to construct organic form from volumes of wood without the use of cutting techniques led later, after nearly ten years, to triangular solutions, considering the orientation of wood fibres. The vertical bearing portion of furniture forms is truly the smaller sister of the architectural column.<sup>3</sup>*

This organic approach to design already lies behind the detailing of the Viipuri Library and the Paimio Sanatorium, those masterworks of the late 1920s, which, although they were built of reinforced concrete, still afforded Aalto an occasion for extending the precepts of Functionalism to include the satisfaction of a full range of physical and psychological needs (compare with Richard Neutra's 'biological' approach). Aalto's lifelong concern for the overall ambience of a space and for the way it may be modified through the responsive filtration of heat, light and sound was first fully formulated in these works. In Paimio the two-person wards were carefully arranged to meet the patient's needs not only at the level of environmental control but also in terms of identity and privacy, direct light and heat being kept away from the patient's head, while ceilings were coloured to reduce glare, and handwash basins were designed to function noiselessly. Similarly, the main reading rooms of the Viipuri Library [194, 195] were indirectly lit at all times - by day through the funnel-shaped roof lights, and at night through retractable spotlights which bounced their light off the walls opposite. Aalto gave equally careful consideration to the library's acoustical properties, isolating reading rooms from traffic noise and equipping the rectangular lecture hall with an undulating ceiling reflector for the whole of its length. In general the 'free planning' principles adopted in the library and sanatorium established Aalto's organic approach to architecture, an approach which for all its inherent freedom rarely suffered, in formal terms, from a loss of control. His concern for the natural modification of the environment and for the intrinsic nature of the site gave his work a unique continuity from his Functionalist period in the late 1920s to the more expressive phase of his work that started in the early 1950s. Of his anti-mechanistic attitude he wrote in 1960:

**194** Aalto, Viipuri Library, 1927–35. Lending department, and reading room at higher level.

**195** Aalto, Viipuri Library, 1927–35. First-floor plan.

*To make architecture more human means better architecture, and it means a functionalism much larger than the merely technical one. This goal can be accomplished only by architectural methods – by the creation and combination of different technical things in such a way that they will provide for the human being the most harmonious life.<sup>4</sup>*

In 1938, Aalto achieved the masterwork of his pre-war career, the Villa Mairea [196, 197, 198], a summer home built for Mairea Gullichsen at Noormarkku. The initial sketch for this L-shaped building makes explicit reference to National Romanticism: the plan of the main living hall refers directly to the plan of Gallén-Kallela's Ruovesi studio of 1893. Both works also feature a prominent, rendered, sculptural fireplace and a stepped living level which eventually leads to a mezzanine stair. Like his Munkkiniemi House, the Villa Mairea is compounded out of a mixture of brickwork, rendered masonry and timber siding.

**196** Aalto, Villa Mairea, Noormarkku, 1938–39.

**197, 198** Aalto, Villa Mairea, Noormarkku, 1938–39. View towards the living hall, and exterior.

More than any other pre-war work of Aino and Alvar Aalto, the villa represents a conceptual link between the rational-constructivist tradition of the 20th century and the

evocative heritage of the National Romantic movement. Its primary spaces, the dining and living rooms, border a sheltered garden court, set within a roughly circular forest clearing. The ‘geologically striated’ mass of the house and the irregularly contoured perimeter of the sauna plunge pool suggest a metaphorical opposition between artificial and natural form, and this principle of duality obtains throughout the work. Thus the ‘head’ of Mrs Gullichsen’s prowlike studio opposes the ‘tail’ of the sauna, and the wooden siding of the public rooms stands in strong contrast to the white rendering of the private areas. Similarly complex formal operations abound throughout the house: an example is the ‘metonymy’ of the entrance canopy, the irregular rhythm of its timber screen echoing the irregular spacing of the pine trees in the forest – a device that is repeated in the railing of the interior stair. This is followed, in terms of sequence, by the repetition of the same plan form in the studio, the entrance canopy and the plunge pool, all recalling the sinuous perimeter of a typical Finnish lake. The finishes of the ground floor are also coded as an internal landscape in which changes from tiles to boarding or to rough paving stones denote subtle transformations in mood and status, as one moves from, say, the family hearth to the sitting room and conservatory. Finally, structure itself is used symbolically to refer to origins: as in the Villa Hvitträsk, the sauna represents the native culture – linked by an outriding rubble wall to the main house, it is a traditional timber-sided structure roofed with sod, and built according to the canons of Finnish timber vernacular, in opposition to the sophisticated tectonic of the house itself.

After the rhetorical exuberance of his pavilion for the New York World’s Fair in 1939 and the somewhat unresolved design of the Baker Dormitory, built for MIT at Cambridge, Massachusetts, in 1947, there was an expressive uncertainty in Aalto’s work, until 1949, when the second phase of his career took decisive shape with his Säynätsalo

Town Hall [199]. Where the Villa Mairea had depended for its articulation on wooden revetment, at Säynätsalo the syncopation of the form depended on the rhythmic spacing of the fenestration and on the subtle modelling of brickwork. For all their differences, however, the works had the same conceptual basis in their division into two parts, grouped around an atrium. These elements, which took the form of an L-shaped house and a plunge pool in the Villa Mairea, are at Säynätsalo a U-shaped administration building and a free-standing library block, the two forms enclosing a court raised above the street level. This *parti*, which Aalto used again in his National Pensions Institute at Helsinki, seems to have been derived from the traditional Karelian farm and village complexes that he had first written about in 1941. Another source for the duality of these compositions may be Aalto's idiosyncratic view of the process of architectural creation, of which he wrote in 'The Trout and the Mountain Stream' (1947):

**199** Aalto, Säynätsalo Town Hall, 1949–52.

*I would like to add that architecture and its details are connected in a way with biology. They are perhaps like large salmon or trout. They are not born mature, they are not even born in the sea or body of water where they will normally live. They are born many hundreds of miles from their proper living environment. Where the rivers are but streams, small shining bodies of water between mountains ... as far from their normal environment as man's spiritual life and instincts are from his daily work. And as the fish egg's development to a mature organism requires time, so it also requires time for all that develops and crystallizes in our world of thoughts. Architecture needs this time to an even greater degree than any other creative work.<sup>5</sup>*

All these buildings seem to symbolize this duality of architectural creation, wherein the enclosing L or U form of the main mass, the ‘fish’ element, is contrasted with the independent form of the adjacent ‘egg’. In the Villa Mairea and Säynätsalo Town Hall the head of the fish form appears to accommodate the most honorific public element – the studio in the house, and the council chamber in the town hall.

Such hierarchical differentiation is complemented by changes in material and structure. At Säynätsalo the brick paving of the ‘secular’ access corridor and stair gives way to the suspended wooden floor of the ‘sacred’ council chamber above. This change in status is confirmed by the elaborate detailing of the roof trusses over the council room, an obvious reference to medieval practice. Similar shifts in symbolic content occur in the ‘egg’ element: in the Villa Mairea the ‘egg’ is the swimming pool – the agent of physical regeneration – while in Säynätsalo Town Hall it is the library, the repository of intellectual nourishment. Furthermore the detailing of the atrium itself, particularly at Säynätsalo and in the Pensions Institute, reflects a comparable mythic intent. In both instances the path through the ‘acropolis’ is treated like a ‘rite of passage’, between overcivilized urbanity on one side of the complex and native rusticity on the other. In each instance, the space is enriched by the presence of water, hinting again at the process of birth and regeneration.

The Pensions Institute in Helsinki [200], designed for a competition of 1948 and built in 1952–56, established Aalto as one of the master architects of the post-war period. As much as any work from the last twenty-five years of his career, this large bureaucratic complex demonstrated an architecture that would, in his own words, add ‘a more sensitive structure to living’. This intent, evident in the warmth and convenience of the smallest details, from the foyer seats to the visitors’ coatracks and from the light

fittings to the built-in heating, was manifest above all in the delicately scaled interviewing booths ranged in rows under the skylit hall. This hall, paved in black and white marble, established the honorific ‘key’ for the rest of the building. Thereafter each space is colour-coded in order to suggest a change in status – the main entry in white and dark blue wall tiles, the staff refectory in brown, white and beige, and so on.

**200** Aalto, National Pensions Institute, Helsinki, 1952–56. Centre of south front.

Aalto’s resolve to serve the common man reappeared in his adaptation of the ‘atrium’ concept to the design of a multistorey apartment block, built for the Berlin ‘Hansaviertel Interbau’ exhibition in 1955. This ingenious design [201] comprised one of the most significant apartment types to have been invented since the end of the Second World War. Le Corbusier’s famous Unité maisonette (so extensively copied in low-cost housing throughout the world) compares with it rather unfavourably as a family dwelling. The primary virtue of Aalto’s apartment type is that it provides the attributes of the single-family home within the confines of a small flat. Within its U-organization a generous atrium terrace is flanked by the living and dining rooms, while the whole is surrounded on two sides by private spaces, such as bedrooms and bathrooms. The disposition of these apartment units within the block is equally good, their ‘clustering’ about naturally lit stair halls enabling Aalto to avoid that sense of an infinite number of ‘monotype’ apartments stacked in a single high-rise structure.

**201** Aalto, Hansaviertel apartment block, Berlin, 1955.

Aalto's lifelong attempt to satisfy social and psychological criteria effectively set him apart from the more dogmatic Functionalists of the 1920s, whose careers were already established when he designed his first significant works. Despite his initial response to the dynamic forms of Soviet Constructivism, Aalto always focused his attention on the creation of environments which would be conducive to human well-being. Even his most Functionalist works, such as his *Turun-Sanomat* Building of 1928, reflect his perennial sensitivity to light, constantly enriching a structure that would otherwise be extremely dogmatic and austere.

Such a consistently organic approach brought Aalto conceptually close to the ethos of Bruno Taut's Glass Chain, above all to the work of Hans Scharoun and to Hugo Häring. So he may be seen as belonging to that 'group' of Northern European Expressionist architects who were concerned that building should be life-giving rather than repressive. This meant that the latent tyranny of the normative orthogonal grid should always be fractured and inflected where the idiosyncrasies of the site or the programme demanded it. In 1960 Leonardo Benevolo effectively summed up Aalto's achievement from this standpoint in the following terms:

*In the first modern buildings the constancy of the right angle served mainly to generalize the compositional process of instituting a priori geometrical relationships between all the elements, which meant that all conflicts could be resolved geometrically with the balancing of lines, surfaces, and volumes. The use of the oblique (as at Paimio) pointed the way towards the contrary process, that of making the forms more individual and precise, allowing imbalance and tension to exist and to be balanced by the physical consistency of the elements and surroundings. Such architecture lost in didactic rigours but gained in warmth, richness, and feeling, and ultimately extended its field of*

*action because the process of individuation was based on the already recognized generalizing method and indeed presupposed it.<sup>6</sup>*

At its best this was a discreet yet highly responsive mode of building, one which continued the essential Nordic tradition of fusing the vernacular with the Classical – the idiosyncratic with the normative – through fifty years of unbroken development, from Östberg's Bonnier Villa of 1909 to Aalto's Finlandia Concert Hall, completed in Helsinki some four years before his death in 1976.

# Chapter 25

## Giuseppe Terragni and the Architecture of Italian Rationalism 1926-43

*We no longer feel ourselves to be the men of the cathedrals and the ancient moot halls, but men of the Grand Hotels, railway stations, giant roads, colossal harbours, covered markets, glittering arcades, reconstructed areas and salutary slum clearances.*

Antonio Sant'Elia

*Messaggio* (text for the *Città Nuova*, 1914)<sup>1</sup>

*Our past and present are not incompatible. We do not wish to ignore our traditional heritage. It is the tradition which transforms itself and assumes new aspects recognizable only to a few.*

gruppo 7

'Note', in *Rassegna Italiana*, December 1926<sup>2</sup>

The Classical and oneiric expression that emerged in Italy after the end of the First World War – first in painting, in the highly metaphysical Valori Plastici movement led by Giorgio de Chirico, and then in architecture, with the Classical Novecento movement started by the architect Giovanni Muzio – was as much the complex point of departure for the

development of Italian Rationalism as was the heritage of pre-war Futurist polemic.

The Rationalist 'gruppo 7', who first declared themselves, after graduating from the Milan Polytechnic, in the *Rassegna Italiana*, comprised the architects Sebastiano Larco, Guido Frette, Carlo Enrico Rava, Adalberto Libera, Luigi Figini, Gino Pollini and Giuseppe Terragni. All sought to achieve a new and more rational synthesis between the nationalistic values of Italian Classicism and the structural logic of the machine age. In their 'Note' of 1926 they committed themselves to exploring a middle ground between the arcane language of the Novecento - of which Muzio's Ca' Brutta apartment block built in Milan in 1923 was an influential example - and the dynamic vocabulary of industrial form bequeathed to them by the Futurists. The group also showed a certain sympathy for the Deutsche Werkbund and for the works of the Russian Constructivists. Yet for all their enthusiasm for the machine age, the gruppo 7 gave more weight to a reinterpretation of tradition than to modernity *per se*. Thus, in 1926, they wrote critically of the Futurists:

*The hallmark of the earlier avant garde was a contrived impetus and a vain, destructive fury, mingling good and bad elements: the hallmark of today's youth is a desire for lucidity and wisdom. ... This must be clear ... we do not intend to break with tradition. ... The new architecture, the true architecture should be the result of a close association between logic and rationality.<sup>3</sup>*

Despite this declaration of faith in tradition, the early works of the Rationalists, particularly those projected by Giuseppe Terragni, displayed a preference for compositions based on industrial themes. Terragni's projects for a gasworks and a steel tube factory exhibited at the IIIrd Monza Biennale of 1927 seem to have more to do with the Engineer's Aesthetic than with Architecture, to use the

polarities of Le Corbusier's *Vers une architecture*, a book which exercised considerable influence on the Rationalists after its publication in 1923. An early and naïve response to this influence was indubitably Pietro Lingeri's boathouse, built at Como in 1926, which, with its allusion to marine engineering, paid somewhat simplistic homage to the work of Le Corbusier.

More susceptible to the influence of Muzio, Terragni established himself in 1928 with the completion of his Novocomun apartments in Como. This symmetrical five-storey composition, popularly known as the Transatlantico, manifested that characteristic Rationalist concern for the rhetorical displacement of mass. Where the corners of the building should have been reinforced in accordance with Classical canon, they were dramatically cut away so as to expose glass cylinders, which were capped by the massive weight of the oversailing top floor and bound into the composition by the overruns of the third-floor balcony and the mass of the second floor. This solution obviously owed more to Russian Constructivism than to Purism, Golossov's initial project for his Zuyev Workers' Club, completed in Moscow in 1928, being the most obvious precedent.

The Italian Rationalist movement briefly constituted itself as an official body in the Movimento Italiano per l'Architettura Razionale (MIAR), founded in 1930 just one year before the third exhibition of the gruppo 7 staged in Bardi's Galleria d'Arte in Rome. Its influence was short-lived since it was soon to be undermined by the forces of cultural reaction. Where earlier manifestations of Rationalist work had left the more conservative professionals relatively undisturbed, this show was accompanied by a provocative pamphlet entitled 'Report to Mussolini on Architecture', written by the art critic Pietro Maria Bardi. He claimed that Rationalist architecture was the only true expression of Fascist revolutionary principles. A MIAR declaration of the period put forward an equally opportunistic assertion: 'Our

movement has no other moral aim than that of serving the [Fascist] Revolution in the prevailing harsh climate. We call upon Mussolini's good faith to enable us to achieve this.'

Mussolini opened the exhibition, but his faith was little proof against the hostile reaction of the National Union of Architects, subject to the influence of the classicist Marcello Piacentini. Three weeks after the opening of the exhibition, the National Union of Architects repudiated the very work that it had previously sponsored, publicly declaring that Rationalist architecture was incompatible with the rhetorical demands of Fascism. It was left for Piacentini to mediate between the metaphysical traditionalism of the Novecento and the avant gardism of the Rationalists and to propose his highly eclectic Stile Littorio (Lictorial Style) as the 'official' party manner. First formulated in the Revolutionary Tower, completed in Brescia to his designs in 1932, this manner was finally consolidated in Piacentini's Palace of Justice started in Milan in 1932.

Piacentini's position was reinforced by the founding of the Fascist Raggruppamento Architetti Moderni, which avoided any categorical condemnation of either the Novecentisti or the Rationalists and gave its support to the vestigial Classicism of the Stile Littorio. The guidelines that Piacentini imposed on the nine architects who collaborated with him in 1932 on the new University in Rome [202] established, through the repetition of simple elements, the rudiments of the official Fascist manner. This remarkably consistent style was expressed almost always in four-storey brick or stone masses, capped by rudimentary cornices and articulated solely through a modulation of rectangular openings. Since a certain irregularity and asymmetry was permitted in the detailed planning, representative expression was largely restricted to the entrances where, with colonnades, bas reliefs and lettered friezes, it took a Classical form. Although none of gruppo 7 worked on the University, three buildings by the Piacentini team betrayed a

certain Rationalist affinity: Gio Ponti's School of Mathematics, Giovanni Michelucci's Mineralogy Building and, above all, Giuseppe Pagano's elegantly brick-faced Institute of Physics.

**202** Piacentini and team, University of Rome, 1932. Senate building on inauguration day.

By 1932 Pagano had already made his contribution to the polemic surrounding the evolution of an appropriate national style, for in 1930 he had started to edit the magazine *Casabella* in collaboration with the Turinese art critic and designer Edoardo Persico. These men endeavoured through their editorials to persuade the undecided members of the Novecento to abandon the Stile Littorio of Piacentini in favour of the Rationalism of Terragni. In 1934 Persico wrote of the Rationalist predicament: 'Today, artists must tackle the thorniest problem of Italian life: the capacity to believe in specific ideologies and the will to pursue the struggle against the claims of an "anti-modernist" majority.'

In 1932 Terragni produced the canonical work of the Italian Rationalist movement, the Casa del Fascio (now the Casa del Popolo) in Como. Planned within a perfect square and half as high as its width of 33 metres (110 feet), the half cube of the Casa del Fascio established the basis of strictly rational geometry [203]. Within this volume, it not only revealed the logic of its trabeated frame but also the 'rational' code underlying the modelling of its layered façade. On every side (except the south-east elevation which stresses the main stair) the fenestration and the external layers of the building are manipulated in such a way as to express the presence of the internal atrium. Earlier studies for the building reveal that like other works by Terragni (such as his Sant'Elia School of 1936) it was

originally planned around an open courtyard, on the model of the traditional palazzo. In subsequent stages of the design this *cortile* became a central double-height meeting hall, top-lit through a glazed concrete roof and surrounded on four sides by galleries, offices and meeting rooms. As in Mies van der Rohe's Barcelona Pavilion of 1929, the monumental status of the entire structure is established by its slight elevation on a masonry base, described by Terragni as a *piano rialzato*. The original political purpose of the structure is expressed in almost literal terms through the battery of glass doors which separates the entrance foyer from the piazza. These, when simultaneously opened by an electrical device, would have united the inner agora of the *cortile* to the piazza, thereby permitting the uninterrupted flow of mass demonstrations from street to interior (fig. 24, p. 47). Comparable political connotations are evident in the treatment of the main meeting room with its photomontage relief by Mario Radice [204] and in the shrine commemorating the fallen of the Fascist movement. There is, needless to say, an aspect of this work which transcends these ideological considerations to concern itself with the creation of metaphysical spatial effects - the building is treated as though it were a continuous spatial matrix, without any particular orientation such as up or down, left or right, etc. Thus the mirror effects of glass are used in the lining of the foyer ceiling to create the illusion of an infinite trabeated construction existing in volumes which are in fact quite differently occupied. At the same time the subtle implantation of the work in an historic urban core, its facing throughout in Bolticino marble and its use of glass block to designate its honorific space, combine to create a work which is at once tectonic, meticulous and monumental.

**203** Terragni, Casa del Fascio, Como, 1932–36. Proportional system of façade, and ground plan.

**204** Terragni, Casa del Fascio, Como, 1932–36. Main meeting room. The panel on the end wall, by Radice, includes a portrait of Mussolini.

This ideal symbolization of Fascism was by no means unique. Other rhetorical overtures to the movement were made by the Rationalists before their final disillusionment in the mid-1940s. Amongst these, mention must be made of the building for the ‘Mostra della Rivoluzione Fascista’, staged in Rome in 1932, on the occasion of the tenth anniversary of the March on Rome. This temporary structure, strongly reminiscent of the work of Leonidov and built to the designs of Libera and De Renzi, contained along with other set pieces the commemorative 1922 Room designed by Terragni as a dynamic wall relief, combining plastic, graphic and photographic elements in a manner which recalled Lissitzky’s Soviet International Hygiene Exhibit, staged in Dresden in 1930.

By the mid-1930s actual Rationalist architecture varied widely from the highly intellectual work of Terragni to the bland International Style of the short-lived Comasco group, whose artist’s house was exhibited at the Vth Milan Triennale of 1933. The participation of Terragni as a member of this eight-man design team seems to have had little effect on the quality of the outcome, and a comparable loss of intensity can be detected when one compares the very first work of Figini and Pollini, namely their Casa Elettrica built for the Milan Triennale of 1930, to their artist’s house built for the next Triennale in 1933. And indeed the facts indicate that by the time of the Vth Triennale, Italian Rationalism was already becoming compromised, either by a banal modernism on the one hand or by a reactionary historicism on the other.

In 1934 Persico and Marcello Nizzoli designed their famous Medaglia d’Oro room for the Italian Aeronautical Show in Milan [205]. An elegant labyrinth of white wooden

lattices, raised well above the floor, supported a field of graphic and photographic images that appeared to float in space and to advance and recede throughout the depth of the hall. This suspended construction established a new standard for exhibition design that was to exercise a strong influence until well after the Second World War. By this date, with the exception of such occasional masterpieces as this extraordinary work by Persico and Nizzoli, Italian Rationalism had entered its decline. This much is evident from the subsequent work of Persico himself, who moved in the space of two years from designs of great vivacity and sophistication to the cold, atectonic monumentality of his Salone d’Onore for the 1936 Triennale, designed in collaboration with Nizzoli, Palanti and Fontana. Only Terragni, working with Pietro Lingeri and Cesare Cattaneo, was able to maintain the intellectual intensity of the Rationalist approach, with its concern for the total integration of conceptual, structural and symbolic form.

**205** Persico and Nizzoli, Medaglia d’Oro room, the first Italian Aeronautical Show, Milan, 1934.

After Persico’s untimely death in 1936, the political and cultural difficulties of the Rationalists increased. Pagano, always close to official circles, compromised himself further through collaborating with Piacentini on the plan for the ‘Esposizione Universale Roma ’42’, to be held outside Rome in 1942. Like the new Fascist towns of Littoria, Sabaudia, Carbonia and Pontinia (this last being built in the Pontine marshes), the permanent structures of the EUR ’42, the museums, memorials and palaces, were designated by Mussolini to form the core of the Third Rome. Not even Pagano’s intelligence could prevent this extravagant ideological gesture from degenerating into the most banal assembly of Neo-Classical forms. Its major set-piece, the

Palazzo della Civiltà Italiana by Guerrini, La Padula and Romano, was nothing if not the ultimate vulgarization of the Valori Plastici movement. One imagines that its empty, cubic, arcuated forms could have hardly delighted any sensibility more than that of De Chirico himself. Of the same spirit as Mussolini's 1931 plan for the Haussmannization of Rome (a proposal for the wholesale removal of the medieval urban tissue from the antique ruins) Piacentini's EUR '42 plan was caught, like the various architectural factions including the Rationalists, between a post-Futurist drive to create a modern civilization and the need to legitimize this same civilization through an appeal to the glories of the Roman imperium. Thus the EUR complex turned its principal axis towards the Tyrrhenian coast and inscribed one of its monuments with the prophecy: 'The Third Rome will spread over the other hills along the sacred river [Tiber] to the beaches of the sea.' As for the involvement of the Rationalists in this Faustian enterprise, Leonardo Benevolo has written:

*The compromise attempted by Pagano was thus untenable: by following 'ideal links back to Roman times, architects would arrive at one result only, neo-classical conformism; the differences of tone between Brasini's applied archaeology and Foschini's measured simplification, between the sophisticated elegance of the young Romans and the calculated rhythms of the young Milanese, which seemed important in the plans, disappeared entirely in the execution. What had happened in Germany, Russia, and France was repeated here too: this was the internationale des pompiers.*<sup>4</sup>

The reactionary architectural and political climate prevailing in Italy in the mid-1930s was partly offset by the Saint-Simonian aspirations of one man, Adriano Olivetti, who had succeeded his father as director of the famous business

machines concern in 1932. In 1934 Adriano began to reveal his concern for the contribution to be made by modern design to industrial welfare by successively commissioning Figini and Pollini to design a whole sequence of buildings for the Olivetti enterprise in Ivrea: first a new administrative centre in 1935 and then workers' housing and community facilities between 1939 and 1942. In 1937 he extended his patronage to regional planning, calling upon Figini and Pollini and BBPR (Banfi, Belgiojoso, Peressutti and Rogers) to prepare a plan for the Aosta valley.

In the meantime, a set of closely related designs continued to pour forth from Terragni's studio, including his competition entries for the Casa Littoria of 1937 and the EUR Congress Building of 1938, both projects designed in collaboration with Cattaneo and Lingeri. Around the same time Terragni produced the most metaphysical work of his entire career, his Danteum [206], projected in 1938 as a monumental embellishment to the Via Del Impero cut by Mussolini through the ancient city. This project, comprising progressively less dense blocks of rectangular space arranged as a labyrinth and symbolizing the stages of Inferno, Purgatory and Paradise, was in many respects an abstraction of the *parti* used for the EUR building.

**206** Terragni, Danteum project, Rome, 1938.

Terragni's obsession with a 'transparent' architecture – a sublimation of the Futurist programme of projecting the street into the house – was first advanced in his Casa del Fascio. Thereafter it reappeared as a constant drive throughout all his public work, from the Sarfatti Monument, built at Col d'Echele in 1934, to the final design for the EUR Congress Building. Aside from the ultimate state of 'lucidity' attained in the Paradise volume of the Danteum, with its thirty-three glass columns and its glass ceiling, Terragni

achieved a sense of conceptual transparency through two basic devices which were ingeniously fused together in his seven-storey apartment block, the Casa Rustici, Milan (1936–37). These devices were (1) the use of a duality which, following the form of his 1931 War Memorial in Como, generally comprised two parallel rectilinear masses with a slot of space in between, and (2) frontalized parallel rectilinear voids or masses, receding like successive picture planes from a given vantage point, as in the flying balconies and bridges, etc., of the Casa Rustici or the glazed office slabs of the Casa Littoria, whose receding spatial layers established the domain of the ancillary ground-level accommodation, the auditoria, etc.

This frontalized formula of alternately built and non-built parallel volumes came to be asymmetrically rotated in the EUR proposal and in a condensed form in Terragni's last building, his four-storey Giuliani Frigerio Apartments completed in Como in 1940. As in the Casa del Fascio the intention seems to have been to inflect the orientation of the prism by arranging for a primary and secondary façade to be placed at right angles to one another. A similar rotatory 'cubist' composition had already appeared in Terragni's early villas and the same 'format' was adopted by Cattaneo in his apartment house built in Cernobbio in 1938.

The final work of the series, in which Terragni did not participate, is the Fascist Trades Union Building at Como [207], under construction on a site next to the Casa del Fascio from 1938 to 1943 and built to the designs of Terragni's prime pupil Cattaneo, in collaboration with Lingeri, Augusto Magnagni, L. Origoni and Mario Terragni. This orthogonal, trabeated structure, organized about a Palladian ABABABABA grid in one direction and a regular but partially syncopated modular grid in the other, is in many respects the most sublime resolution of compositional and typological themes initiated by the Como Rationalists, so much so that one may even claim that this building is one of

the major inspirations behind the so-called ‘autonomous architecture’ of the Italian Tendenza produced over the past decade (compare Giorgio Grassi’s design for a Students’ Hostel at Chieti of 1974 with Monestiroli, Conti and Guazzoni). The Trades Union Building consists of two five-storey slabs separated by a courtyard in which a two-storey ancillary block is suspended, comprising an entry podium, a secretariat and a 500-seat auditorium.

**207** Cattaneo, Lingeri, Magnagni, Origoni and M. Terragni, Trades Union Building, Como, 1938–43. Cut-away axonometric view.

The completion of this building in 1943 coincided with the premature and still somewhat mysterious deaths of both Terragni and Cattaneo. Although their deaths brought the movement to an abrupt close, their works still testify to their efforts to realize an ideal setting for a society which would be at one and the same time both rationally organized and culturally classless. The fact that this ideal attained its fulfilment in the transparent logic of their architecture rather than in the society at large was touched on by Sylvia Danesi when she wrote of the two men in 1977:

*In both there is a complete trust in the guiding role of the middle class and of its organizing capacity in its administrative function as a pivot of the social contract. They did not sense the crisis that was about to involve their generation. They felt that the class to which they too belonged would be perfectly capable of carrying out the task delegated to them by the rest of the country. They did not realize that the local industrial middle class was gradually losing ground to the new State bourgeoisie that was being formed on the strength of the 1929 crisis (nationalization of banks, foundation of the IRI, etc.) and which still governs us to this day; a class who got on fine*

*with big capital interests and felt at their ease with the totalitarian regime.<sup>5</sup>*

# Chapter 26

## Architecture and the State: Ideology and Representation 1914-43

*The road describes a curve and embarks imperceptibly on a gradient. Suddenly, on the right a scape of towers and domes is lifted from the horizon, sunlit pink and cream dancing against the blue sky, fresh as a cup of milk, grand as Rome. Close at hand the foreground discloses a white arch.*

*The motor turns off the arterial avenue, and skirting the low red base of the gigantic monument, comes to a stop. The traveller heaves a breath. Before his eyes, sloping gently upward, runs a gravel way of such infinite perspective as to suggest the intervention of a diminishing glass; at whose end, reared above the green tree tops, glitters the seat of government, the eighth Delhi, four square upon an eminence - dome, tower, dome, tower, dome, tower, red, pink, cream and white-washed gold and flashing in the morning sun.*

Robert Byron  
'New Delhi', *The Architectural Review*, 1931<sup>1</sup>

The modernist tendency to reduce all form to abstraction made it an unsatisfactory manner in which to represent the power and ideology of the state. This iconographic inadequacy largely accounts for the survival of an historicist

approach to building in the second half of the 20th century. It is to Henry-Russell Hitchcock's credit as a historian that long ago he felt it necessary to acknowledge the persistence of this vestigial tradition. However, his term 'The New Tradition', coined in 1929 in an effort to distinguish a certain conservative trend from the works of the pioneers, has hardly stood the test of time. The attributes and the chronology that he attached to this tradition were too vague to gain general acceptance. Nevertheless, the need to treat the problems posed by representation or the lack of it has increased rather than diminished over the years, and the cultural predicament of Social Realism in its broadest sense can now no longer be excluded from our critical scrutiny. In a general sense, the term may be taken as evidence of the failure of abstract form to communicate. In the face of this, as Hitchcock wrote in 1958: 'The historian *must* attempt to give some sort of account of things like the Stockholm City Hall or the Woolworth Building.'

The origin of the New Tradition, outside the main line of the Modern Movement, can be seen to lie in the emergence between 1900 and 1914 of a consciously 'modernized' historicist style. In the first place, the generic style of the establishment, the late 19th-century public mode which oscillated constantly between Neo-Gothic and Neo-Baroque, began to lose its definition. In England and Germany, in particular, it degenerated into an eclectic elaboration which in the event demonstrated little capacity for achieving a convincing architectural expression. At the same time the main line of European Classicism, the Beaux-Arts, reached its *pompier* dead end in the Paris Exhibition of 1900. The scintillating yet over-blown rhetoric of the Grand Palais, for example, was patently ill-equipped to represent the progressive ideology of an advanced industrialized society. What could after all be more symbolic of repression than the ferrovitreous interior of the Grand Palais incarcerated in an elaborate scenography of stone? The subsequent attempt to

revivify this perennial preference for lithic form with sinuous floral motives drawn from Art Nouveau led to equally lugubrious examples of petrified Classicism with heavy Symbolist overtones, such as Boileau's Hôtel Lutetia, Paris (1911), much despised by Le Corbusier.

On the other hand, the essentially anti-establishment Anglo-Saxon Free Style or its even more liberated successor on the Continent, generally known as Art Nouveau, had by this time degenerated into a very rigid, crystallized form of expression. In addition, as Henry van de Velde realized in 1908, the very idea of a *Gesamtkunstwerk* had the unfortunate consequence of privatizing the sociocultural significance of the work in question. Neither the protracted Pre-Raphaelite myth of a return to an agrarian craft economy nor the urbane exoticism of Art Nouveau could be exploited to represent either parliamentary democracy or the ideological aspirations of a liberal and progressive society. Even Peter Behrens, who, about 1910, stood on the threshold of a new normative style expressly conceived for the representation of the cartel, if not of the modern industrial state (Max Weber's *Machtstaat*), was to lose his creative nerve by the time of the Werkbund Exhibition of 1914 and to retreat into the security of the all but Neo-Classical formula of his Werkbund Festhalle.

Ragnar Östberg's unique adaptation of the principles of the English Free Style to the purpose of representing a public institution came with his Stockholm City Hall of 1909-23, an iconographic triumph that seems to have owed its singular success to the fact that it represented a traditional Burgher port rather than an industrial state. In this respect it hinted at the architectural policies of the Third Reich, which reserved certain styles for particular ideological ends.

The eve of the First World War saw the creation of a number of works representative of the New Tradition, 'historicism' buildings which were far from being historically determined in their overall conception. Thus the Gothic

detailling of Cass Gilbert's Woolworth Building in New York (1913) was incidental compared to the way in which its uncompromising organization and exotic profile were to anticipate the post-war skyscraper developments of Frank Lloyd Wright and Raymond Hood.

In Europe the inauguration of the New Tradition was more self-conscious, marked by works which independently broke with the received public style of the Neo-Baroque to return, in spirit if not in form, to the gravity and clarity of ancient Rome – typical examples include Paul Bonatz's Stuttgart Railway Station, built in 1913–27, and Edwin Lutyens's New Delhi, commissioned in 1912 but not realized in its final form until 1931.

George V's proclamation, founding the capital of New Delhi at a durbar or mass pageant held there in his honour, was nothing if not an elaborate ideological gesture, designed to mask the sheer expediency that lay behind the British removal of their Indian capital from Calcutta to Delhi in 1911. Evidently the British hoped that by reviving the pageantry of the Moghul Court – in the name of the Raj and in the heart of the Empire – they might still pursue their contradictory policy of welcoming home rule while maintaining their colonial economy. The fact that much of the imperial kudos was lost because the King entered the city on a horse rather than an elephant is not without a certain significance. The diplomatic effort at a liberal compromise had altered the traditional code beyond recognition and the King passed through the gates of Delhi largely unobserved. That the building of New Delhi was a reification of this fragile ideological gesture is evident from the protracted efforts made between 1913 and 1918 to arrive at a convincing Anglo-Indian style which would satisfy all concerned. Above all, it had to convince Lutyens himself, who finally decided that the Moghul city of Fatehpur Sikri presented the only native architecture that could be effectively incorporated into the humanist tradition.

Humanism, that is to say Classicism, had been hastily revalidated in English architectural culture after the turn of the century, first in the architecture of Shaw and Lutyens and then with great sophistication, at a theoretical level, in Geoffrey Scott's *The Architecture of Humanism* published in 1914.

The need to assimilate a powerful exotic culture while asserting the standards of humanism brought Lutyens to a level of abstract precision and balance which he had never attained before and which he was only to equal again in his memorials to the fallen of the First World War – the Cenotaph in London, unveiled in 1920, and the Thiepval Memorial Arch to the dead and missing of the Somme, of 1924 (fig. 30, p. 56). In the Viceroy's House at New Delhi, under construction from 1923 to 1931 [208], Lutyens transcended the ultimately effete historicism of his country houses to postulate, like Wright, the possibility of a 'frontier' culture, a synthetic imperium on which the sun would never set. It is ironic that history would permit only another fifteen years of British rule, given that New Delhi was the most monumental complex they had ever built. The Viceroy's House alone, despite its almost domestic interiors, covers an area equal to that of Versailles.

**208** Lutyens, Viceroy's House, New Delhi, 1923-31.

As with Versailles, the commissioning of New Delhi in 1912 inaugurated a period of building in which architecture would once again be exploited in the cause of the state – first, to represent new nations which had emerged as independent democracies from the cataclysm of the First World War, and then to celebrate the revolutionary 'millennium' as it became manifest in its various guises between 1917 and 1933 – first in the Soviet Union, then in 1922 in Fascist Italy and finally in the Third Reich. In more

general terms, it was called upon to represent the revival and manifest destiny of monopoly capital both before and after the stock market disaster of 1929.

The ideological charge laid on official architecture during this period, and the Classical, not to say Beaux-Arts, background of most of the architects involved, served to isolate the whole development from the progressive aspirations of the Modern Movement, and in most instances this isolation seems to have been consciously desired.

Sirén's Finnish Parliament Building [209], erected in Helsinki for the newly independent state in 1926–31, established the neo-Neo-Classical norm of the New Tradition. His brilliantly planned Riksolagshus came directly out of the Scandinavian Neo-Classical revival, and as such was closely related to Asplund's Stockholm Public Library of 1920–28. Sirén's work, however, appears almost theatrical when compared to Asplund's, his shallow peristyle being nothing more than a scenographic relief on a tightly organized building whose strictly stereometric volume would have otherwise remained uninflected.

**209** Sirén, Finnish Parliament Building, Helsinki, 1926–31. Plan of main level.

The explicit confrontation between the Modern Movement and the New Tradition came with the League of Nations competition of 1927, when a jury consisting of Beaux-Arts academicians and Art Nouveau veterans – men like John Burnet, Charles Lemaresquier and Carlos Gato from the one camp and Hoffmann, Victor Horta and Hendrik Berlage from the other – chose twenty-seven designs representing the three basic approaches of the period. Nine of the premiated places were given to the Beaux-Arts; the Modern Movement was recognized by eight, including the famous projects by Le Corbusier and Hannes Meyer ([figs 144, 108](#)), and the New Tradition by ten, including entries by

Louis-Hippolyte Boileau, Paul Bonatz and Marcello Piacentini. Three of the premiated Beaux-Arts competitors and Giuseppe Vago, whose work represented the New Tradition, were commissioned to prepare a final design, which came surprisingly close to the stripped Classicism of Russian Social Realism.

### **The Soviet Union 1931-38**

The struggle between the Modern Movement and the New Tradition had to be fought all over again in the Palace of the Soviets competition, staged in 1931 as a deliberate Russian response to the building of the League of Nations. The impact of this competition on Soviet architecture was decisive, for it not only drew entries from all over the world, including projects by Le Corbusier, Perret, Gropius, Poelzig and Lubetkin, but it also stimulated an equal amount of activity inside the Soviet Union, involving a large number of individual designers as well as entries from the major architectural factions, including Asnova, OSA and Vopra.

That Le Corbusier's project (see p. 175) was the most Constructivist of his entire career is evident from the exposed roof structure of its auditoria and from the total transparency of its external skin. Yet, despite the reductive nature of these elements, the symbolism of the project was quite explicit in the speaker's tribune situated at the end of the library block, overlooking the *res publica* podium, to the rear of the larger auditorium. Few entries were so literal in according symbolic value to the functionality of their various components, and one recognizes here a work as didactic in its organization and form as Gropius's theatre for Piscator, designed some four years earlier. However, the jury found that Le Corbusier's entry 'indulged in a too pronounced cult of machinism and aestheticization'.

This could also have been said of many of the Russian projects, which were often little more than elaborate

exercises in technological rhetoric projected as metaphors for the newly industrialized socialist state. It is one of the ironies of this competition that the monumental Socialist Realist line, which was to be officially adopted by the Central Committee of the Party in April 1932, was not represented by the entry of the most left-wing faction, the Proletkult group or All Russian Association of Proletarian Architects. Instead the Socialist Realist style was first tentatively advanced in the winning entry of B.M. Iofan, whose Constructivist auditoria were shown as semicircular terminal buildings delimiting the confines of a rectangular, Classical court. From the centre of this enclosure rose an equally Classical pylon surmounted by the statue of a worker. This figure seems to have been a conscious reference to the Statue of Liberty, its raised arm projecting the light of revolt, if not of freedom. In the subsequent development of the design after 1933, by Iofan in collaboration with the Academicians Gelfreikh and V. Shchuko, it became increasingly rhetorical. By 1934, the two auditoria of the original version had been absorbed into a 'wedding cake' of colonnaded tiers and pinnacled statuary, culminating in a gargantuan figure of Lenin offering his hand to the universe, at a height of 450 metres (1,500 feet) [210]. Three years later, although the general form remained the same, the total mass was smaller and the colonnades had been regrouped as Art Deco pilasters.

**210** Iofan, project for the Palace of the Soviets, Moscow, 1934.

After 1932 those Academicians such as A.V. Shchusev (whose eclectic National Romantic Kazan Station in Moscow was under construction by 1913), who had established themselves before the Revolution and had laid low since, began to build one pseudo-Neo-Classical monument after another. Shchuko's Lenin State Library of 1938 typifies this

bastard style of asymmetrical volumes, stripped pilasters and inconsequential Classical episodes enriched by sculpture. The emergence of the New Tradition in the Soviet Union was due to several contributory factors. First there was the doctrinal and unanswerable challenge made by Vopra against the Constructivist intellectuals to the effect that only the proletariat could create a proletarian culture; then there were the rehabilitated pre-war Academicians who, while technically indispensable to the building programme, were to remain unsympathetic to Constructivism; finally there was the Party itself which sensed that the people were incapable of responding to the abstract aesthetics of modern architecture. The absolute ideological expediency of the Party Social Realist line instigated in 1932 accounts for Anatole Lunacharsky's sophistries of the following year, his over-elaborate apologia for Social Realism in which, while acknowledging the remoteness of Hellenic culture, he insisted that 'this cradle of civilization and art' could still serve as a model for architecture in the Soviet Union. The success of this state culture, which was maintained as a consistent policy for more than forty years, has perhaps never been more justly assessed than by Berthold Lubetkin, who wrote in 1956:

*Festooned as they are with haberdashery, draped in theatrical marginalia, and wrapped in irrelevant pages from a monumental mason's catalogue, some of the Soviet buildings (if by no means all) are yet able to form, by virtue of vigorously conceived layouts, of prodigious use of open spaces, of breathtaking scale, grand, orderly ensembles whose impact is not easily forgotten by a Western architect of the epoch of picturesque fragmentation and 'mixed development'.<sup>2</sup>*

## **Fascist Italy 1931-42**

A similar conflict between modernity and tradition coloured the architectural ideology of the Italian Fascist movement, between Mussolini's March on Rome in October 1922 and 1931, when the government-backed Union of Architects withdrew its support from the newly founded Movimento Italiano per l'Architettura Razionale (MIAR) and rallied under the leadership of Marcello Piacentini to support the cause of reconciling the rival factions into a single ideological formation, the Raggruppamento Architetti Moderni Italiani.

The development of Fascist ideology after the war had stemmed from two distinct aspects of the pre-war Futurist movement: from its revolutionary concern for the restructuring of society, and from its cult of war and its worship of the machine. Both aspects provided elements that could be effectively incorporated into Fascist rhetoric, but the war and its aftermath had been a disaster – destructive even of Futurism itself – and the idea of a 'machine-culture' was suddenly regarded with a good deal of scepticism, and not only at a popular level but also by the intelligentsia.

Indeed, the cultural reaction against Futurism had been formulated before Futurism had fully emerged, first with Benedetto Croce's *Filosofia come scienza dello spirito* (*The Philosophy of the Spirit*) of 1908–17, which insisted on the exclusively formal domain of art, and then with Giorgio de Chirico's painting *The Enigma of the Hour* (1912), which depicted an arcuated peristyle in failing light – a haunting metaphysical image which immediately seemed to prefigure the form and the mood of the Italian New Tradition.

Influenced by De Chirico and by the metaphysical painters of the Novecento movement, by men who were cognizant of modernity but not seduced by it, the Milanese architectural avant garde headed by Giovanni Muzio began to reinterpret the Classical forms of the Mediterranean as a conscious antithesis to the machine cult of Futurism. The inaugural work of this movement, Muzio's Ca' Brutta

apartments built in the Via Moscova, Milan, in 1923, was as much a point of departure for the work of the Italian Rationalists as it was an influence on Piacentini's Stile Littorio, which emerged with the University of Rome begun under his direction in 1932. Muzio's defence of the Classical tradition, written in 1931, displayed an awareness of the universality of the New Tradition that transcended the Piranesian conceits of his own style. He wrote of the Novecento movement as being of an anti-Futurist conviction. He argued that the Classical schemas of the past would always be applicable, and asked: 'Are we not perhaps anticipating a movement whose imminent birth is announced throughout Europe by hesitant but widespread symptoms?'

The conflict between modernity and tradition took a peculiarly subtle form in Italy, since the young Rationalists were just as committed as Muzio and Piacentini to a reinterpretation of the Classical tradition. But the MIAR approach was extremely intellectual and their austere works lacked an iconography which could be readily understood. Aware that Futurism could not represent a nationalistic ideology, Fascist power opted, in 1931, for a simplified and easily reproducible Classical style whose apotheosis came with the ill-fated EUR of 1942 [211]. This wishful implantation of a new capital, outside the limits of the Eternal City, was as utopian and reactionary in its aspirations as New Delhi. It posited a monumentality that was totally divorced from social reality, De Chirico's *The Enigma of the Hour* [212] being almost literally realized in the Palazzo della Civiltà Italiana [213], the six-storey prism, filled with arches, that terminated the main axis of the site.

**211** Poster for the Universal Exhibition, Rome (EUR), 1942, exhibiting Libera's project for an arch leading to the site and the future.

**212** De Chirico, *The Enigma of the Hour*, 1912.

**213** Guerrini, La Padula and Romano, Palazzo della Civiltà Italiana, EUR, 1942.

### **The Third Reich 1929-41**

The Italian struggle between two alternative interpretations of the Classical tradition – the rationalist versus the historicist – was absent in Germany, where the rational line of the Modern Movement suffered instant eclipse after the National Socialist seizure of power in January 1933. Modern architecture was dismissed as cosmopolitan and degenerate save for those occasions when efficient industrial production and factory welfare demanded a Functionalist approach; but the question as to the appropriate style for Hitler's 'social revolution' could not be resolved, as in Italy or Russia, by an open conflict ending in the adoption of a single style to be used on almost all occasions. The subtle ideological policies of the Third Reich were inimical to such a blanket solution.

While striving at a public level to represent National Socialism as the heroic fulfilment of German destiny, the Nazis also wished to gratify the popular desire for an architecture of psychological security and to compensate for a world where industrialized warfare, inflation and political upheaval had already undermined traditional society. This initial stylistic dichotomy reflected, in a perverse form, the ideological division that had permeated the history of the Modern Movement – the split first identified by Pugin in the 1830s as the opposition between the utilitarian, universal standards of industrial production (reified in Neo-Classical form) and a basic Christian desire to return to the *rooted* values of an agrarian craft economy. For the former the Nazis had only to look to the enlightened Prussian culture of the authoritarian state, expressed in the philosophy of Hegel

and the architecture of Schinkel; for the latter they could return to the Germanic myth of the *Volk*, to that anti-Western cult first advanced by the Prussian patriot F.L. Jahn in 1806.

The National Socialist updating of Jahn's philosophy came with the publication in 1929 of Richard Walter Darré's book *Das Bauerntum als Lebensquell der nordischen Rassen* ('The Peasantry as the Life Source of the Nordic Race'), which first advanced the idea of a 'blood and soil' culture, advocating a return to the land. Darré, who had started his career as an agronomist, was to play a salient role in developing the anti-urban racial ideology of National Socialism, and although his view was never fully embraced by the Nazi élite, it remained the rationale behind the *Heimatstil* or vernacular housing built under party auspices after 1933.

Given that the conflicting ideologies within the Third Reich could not be adequately expressed in two polarized styles, other modes had to be adduced. The remote party political schools, the *Ordensburgen*, were built in a pseudo-medieval castellated manner, and the various leisure facilities of Robert Ley's *Kraft durch Freude* (Strength Through Joy) [214] movement demanded an escapist environment of their own. A popular pseudo-Rococo décor was applied indiscriminately to the interiors of theatres, ships and other buildings dedicated to light recreation. This stylistic schizophrenia frequently led to different parts of the same development being treated in a totally different manner, as in Herbert Rimpl's Heinkel factory at Oranienburg [215] of 1936, which ranged in its expression from the Neo-Classical portico of the administration building to the *Heimatstil* of the workers' housing and the functionalism of the plant itself.

**214** Kraft durch Freude poster, 1936. The Volkswagen was an integral part of Ley's movement.

**215** Rimpl, Heinkel workers' housing (above) and factory, Oranienburg, 1936.

The sudden shift in the style of state-sponsored housing, from the cubic flat-roofed forms of the Weimar Republic to the pitched-roofed forms of the Third Reich, was enthusiastically supported by the architect Paul Schultze-Naumburg, who, despite his own austere manner, had long ago reacted against Functionalist architecture. An associate of Heinrich Tessenow in the creation of a whitewashed, pitched-roofed *Heimatstil* manner, Schultze-Naumburg sought as early as the mid-1920s to resist the internationalist and mechanistic tendencies of modern life. His anti-rationalist rhetoric grew out of a late Arts and Crafts concern for simple, earthbound organic forms subscribed to equally by Tessenow, Häring and Scharoun. For Schultze-Naumburg, however, the issue of form had political connotations, and in opposing the Neue Sachlichkeit architecture of the Weimar Republic he soon adopted right-wing, not to say racist, attitudes that were readily assimilable to the reactionary ideology of the Party. By 1930, when Schultze-Naumburg finally joined Alfred Rosenberg's cultural front, the Kampfbund für deutsche Kultur, Darré had already cleared the field for an attack on modern culture in general, with his diatribe against industrial urbanization and the destruction of the peasantry. For him the agrarian settlement was not only the stronghold of patriotism but also the hypothetical habitat of a pure Nordic race.

Schultze-Naumburg took up a parallel position in his 1932 Kampfbund book, *Kampf um die Kunst* ('The Struggle over Art'), where he castigated those nomads of the metropolis who had lost any concept of the homeland. Elsewhere, almost paraphrasing Darré, he praised the pitched-roofed German house with its roots sunk deep into the soil, contrasting it to the flat-roofed architecture of an

uprooted people. He had announced these views as early as 1926, when he wrote that the flat roof ‘is immediately recognizable as the child of other skies and other blood’ – a comment which seems to have inspired that sardonic photomontage of the Stuttgart Weissenhofsiedlung in the guise of an Arab village, complete with Bedouin and camels. Schultze-Naumburg’s racial prejudice was made explicit in his book *Kunst und Rasse* (‘Art and Race’) (1928), where he attempted to prove that Germany’s cultural ‘decadence’ had a biological origin. In his second theoretical work, *Das Gesicht des deutschen Hauses* (‘The Face of the German House’) of 1929, he wrote that the German dwelling

*gives one the feeling that it grows out of the soil, like one of its natural products, like a tree that sinks its roots deep in the interior of the soil and forms a union with it. It is this that gives us our understanding of home [Heimat], of a bond with blood and earth [Erden], for one kind of men this is the condition of their life and the meaning of their existence.<sup>3</sup>*

However appropriate for mass housing, a ‘blood and soil’ *Heimatstil* could hardly represent the myth of the thousand-year Reich, and for this purpose the party exploited the Classical heritage of Gilly, Langhans and Schinkel. Paul Ludwig Troost and Albert Speer (successively Hitler’s personal architects from 1933 to the mid-1940s) effectively established a reduced version of the *Schinkelschüler* tradition as the representative style of the state. From Troost’s embellishments of Munich as the ‘capital of the party’ to Speer’s colossal set-pieces for the Nazi state in its heyday, his Zeppelinfeld stadium for the Nuremberg rally of 1937 and his new Chancellery in Berlin, completed in the following year, the same spartan Classicism prevails.

The conscious elimination of Schinkel’s proportional delicacy in the name of the millennium evolved only slightly

as it passed from Troost's frigid version of the Tuscan order to Speer's preference for plain or fluted rectangular columns. This sterilization of Romantic Classicism – built with fanatical precision – only came to life when these vast set-pieces were used for mass assembly, for a style of pageantry which Speer himself had first formulated in his so-called 'cathedral of ice', a virtual column of flag standards and searchlights created for the Tempelhof rally at Berlin in 1935. Under Goebbels's direction, such arenas became the setting for the inculcation of Nazi ideology, not only on the spot but throughout the Reich: for the first time the 'state as a work of art' could be channelled into the mass media of radio and film. Leni Riefenstahl's documentary film of the Nuremberg rally of 1934, *Triumph des Willens* (*The Triumph of the Will*), was the first occasion on which architecture, in the form of Speer's temporary setting, was pressed into the service of cinematic propaganda. Henceforth Speer's designs for stadia at Nuremberg were determined as much by camera angles as by architectural criteria. This cinematic exploitation of architecture was totally at variance with Speer's insistence on the use of load-bearing masonry to insure the future of the Zeppelinfeld as a sublime ruin. This idiosyncratic 'law of the ruins', forbidding the use of metal reinforcement, was a nostalgic reference to the Enlightenment (he was thinking of Piranesi's Paestum engravings, for instance); so was Wilhelm Kreis's insistence that Neo-Classicism expressed the spirit of the German earth, the people's cult of the *Heimat*.

The National Socialist version of the New Tradition could not transcend this reduction of the 'space of public appearance' to mass hysteria, this subordination of all real relationships to the illusion of film or to the histrionic rituals of the *Thingplätze* - open-air arenas built after 1934 for nature worship and the celebration of Teutonic rites. The language of Romantic Classicism stripped of its

Enlightenment imagery and faith was now reduced to scenography. With the notable exceptions of Werner March's Olympic Stadium of 1936 and Bonatz's *Autobahn* bridges of the same date, the New Tradition degenerated into meaningless megalomania, terminating after 1941 in Kreis's 'Totenburgen', brilliantly conceived, Boullée-like 'castles of the dead' built throughout Eastern Europe, whenever there was time, to immortalize the remains of the fallen [216].

216 Kreis, project for a war memorial, Kutno, 1942.

### **The Modernistic Style In America 1923-32**

That aspect of the New Tradition which took the form of a stripped Classical style emerged as the ruling taste in the 1930s, wherever power wished to represent itself in a positive and progressive light. As Speer observed, the Soviet Pavilion for the Paris World Exhibition of 1937 employed a pseudo-Classical syntax almost identical to that of the German Pavilion which Speer had designed for the same occasion [217]. This taste for Neo-Classical monumentality was not restricted, as Speer noted, to totalitarian states, but could be seen in Paris, where it was displayed in such works as J.C. Dondel's Musée d'Art Moderne and Auguste Perret's Musée des Travaux Publics, both works completed in 1937. It also made itself manifest in the United States, where it gradually emerged out of Beaux-Arts Neo-Classicism - the 'official' style in the States from the World's Columbian Exposition of 1893 to the First World War. As one may judge from the Neo-Classical embellishments of Washington, such as Henry Bacon's Lincoln Memorial of 1917, the Federal Government was too conservative to become a patron of the New Tradition. With the universities more or less committed after the turn of the century to copybook Gothic, the one patron capable of sponsoring a more adventurous eclecticism seems to have been the railroads, from the

eclectic Romanism of the New York termini built in the decade prior to the First World War – Warren and Wetmore's Grand Central Station (1903–13) and McKim, Mead and White's Pennsylvania Station (1906–10) – to such Moderne pieces as the Cincinnati Union Station designed by Feilheimer & Wagner in 1929.

**217** World Exhibition, Paris, 1937. Speer's representation of the Third Reich (far left) confronts Iofan's USSR Pavilion (far right).

The other source of patronage for a Moderne expression was, of course, high-rise office development, and from the time of Cass Gilbert's Woolworth Building of 1913 the New Tradition, as far as the skyscraper was concerned, displayed a preference for the Gothic. This tendency was reinforced by the results of the *Chicago Tribune* competition of 1922. Once again the premiated designs of an international competition seem to have been decisive in the formation of a ruling style, Eliel Saarinen's second-prize entry being as important an influence on Raymond Hood's subsequent career as Hood and Howell's own winning design. This can be seen in the development of Hood's 'skyscraper style' from his black-and-gold American Radiator Building, New York, of 1924, to his earliest sketches, made in 1930, for the Rockefeller Center, New York. As Jacques Greber was to remark in 1920, a 'stripped Gothic' enabled the architect to overcome the problem of a large number of windows 'by means of strongly marked ribs which accentuated the verticalism and therefore the impressive appearance of towers'.

The synthesis of the Art Deco or the Modernistic Style in the States had just as many roots in the mainstream of the Modern Movement as it did in the historicism of the turn of the century. Above all its affinities lay with German Expressionism (Poelzig, Höger, etc.), as we may judge from the evolution of the New York work of McKenzie, Voorhees,

Gmelin and Walker, from their inaugural Barclay-Vesey Building of 1923 to their Western Union Building of 1928. However, no one source can ever be credited for this highly synthetic style, the need for which seems to have arisen out of a spontaneous desire to celebrate the triumph of democracy and capitalism in the New World. From the American point of view the First World War had been favourably concluded; America had emerged a creditor nation and the boom of the 1920s was about to start. In what style could such an enthusiasm for 'progress' be expressed? Certainly not in the historicist styles of waning European power – nor for that matter could it adopt the avant-garde mode of the new Europe. Its sources, as Forrest F. Lisle has remarked of Chicago's Century of Progress Exposition of 1933, had to be more open and eclectic:

*the Paris 1925 Fair, Frank Lloyd Wright, cubism, machine ethics, Mayan forms, Pueblo patterns, Dudok, the Viennese Secession, modern interiors, the zoning-law set back. This large number of weakly related sources, readily identified as underlying the Moderne in America, begins to suggest the loose, broad, inclusive, less intense, rather indiscriminate, thus democratic, perimeters of the modern movement here as opposed to the impersonal, reductive, exclusive, more idealistic, more moralistic thrust of avant-garde Europe at this time.<sup>4</sup>*

Something of the intent behind the Modernistic Style may be adduced from the way in which it was used. Aside from domestic interiors, etc., it was reserved for the worldly realm of offices, in-town apartment blocks, hotels, banks, department stores, and buildings dedicated to modern media, newspapers, publishing ventures, telecommunications, etc. [218]. It was an exclusively urban style: the suburban work of Moderne architects such as Ely-Jacques Kahn and Raymond Hood – their private houses and

country clubs – were usually carried out in variations of the English Free Style, tempered by the occasional Colonial portico. There was in fact a sense of stylistic propriety comparable to that which obtained according to the ‘party line’ in totalitarian countries: one style for the office, another for the suburban retreat, and still another for the idyll of the university – this last being more often than not from the medieval hand of Ralph Adams Cram.

**218** Van Alen, Chrysler Building, New York, 1928–30, between the RCA Victor (now G.E.) Building, by Cross & Cross, and Schultze and Weaver’s Waldorf Astoria, both of 1930–31.

However, the precise manner in which the Modernistic Style was woven into the ideological and historical fabric of its time is perhaps best revealed by the case history of the Rockefeller Center, New York, which started off as a large piece of real-estate development predicated on the Metropolitan Opera Company’s desire for a new auditorium in a new location. It was completed as a precarious speculation, in the midst of the Depression, significantly enough without the opera, but *with* the aid of the newly fledged and flourishing communications industry, the Radio Corporation of America and its subsidiaries NBC and RKO, as the primary client. Thus, instead of being focused about a ‘city beautiful’ plaza before an Art Deco opera house façade, as in the 1928 design by B.W. Morris, it was soon to be reinterpreted both ideologically and architecturally as a Radio City – ‘within a city’. The Rockefeller Center management were only too aware that the economic threat of such a huge development in the midst of a depression would have to be presented as an unequivocal contribution to the public weal. To this end they abetted their major client in commissioning the vaudeville and radio personality and impresario Roxy (Samuel Rothafel) to work in

collaboration with the architects on the creation of the 6,200-seat Radio City Music Hall for the presentation of a hybrid entertainment comprising vaudeville and film, and the 3,500-seat luxury cinema known as the Center Theater. The generally popular flavour of Radio City – the city of illusion and distraction in the midst of crisis (Roxy's slogan was ‘a visit to Radio City is as good as a month in the country’) – was reinforced in 1936 when the failure of the shops in the sunken plaza led to the substitution of an open-air skating rink with restaurants situated to either side.

It is to the lasting credit of Hood, as the prime designer of the architectural troika of Reinhard & Hofmeister, Corbett Harrison & Macmurray, and Hood & Fouilhoux, that he was able to control not only the overall composition and the detail but also a good deal of the programme; it was he, for instance, who first suggested the idea of roof gardens. Under his supervision, the Center, eventually amounting to eight blocks and fourteen buildings, had its representative core – the seventy-storey RCA slab and plaza and the Radio City Music Hall – all completed in eighteen months, in time for the gala opening at the end of 1932 [219].

**219** Reinhard & Hofmeister, Corbett Harrison & Macmurray, and Hood & Fouilhoux, Rockefeller Center, New York, chiefly 1932-39. The tallest structure, in the centre, is the RCA Building. Below it on the right is Radio City Music Hall. Between the RCA Building and 5th Avenue are the sunken garden with Prometheus statue and two low buildings with roof gardens flanking a fountain walk.

Roxy's formula of the Rockettes floor show plus a movie was as extemporary and transitional in its cultural nature as the artistic programme of the entire Center, where one artistic work after another, be it sculpture or mural, took as its subject matter such themes as light, sound, radio, television, aviation and progress in general, culminating in two major setpieces on the central axis of the entire

composition. These were Paul Manship's gilded *Prometheus*, surrounded by the Zodiac and overlooking the sunken plaza, and Diego Rivera's ill-fated mural to the entrance hall of the RCA Building, *Man at the Crossroads*, which, with its unequivocal revolutionary iconography including even an image of Lenin, had the effect of placing his patrons in an impossible public position, in which politically they had no choice but to insist on its removal. This contradictory New Deal gesture of monopoly capital consciously commissioning an emblematic work from a Communist artist seems now to be as remote and fictitious as Hugh Ferriss's vision of Manhattan transformed into an endless repetition of skyscraper ziggurats, in his book *The Metropolis of Tomorrow* of 1929 [220]. Recording Art Deco skyscrapers that were then either completed or already under way and anticipating the apotheosis of the Rockefeller Center, this was a science-fiction vision of a city of towers as scenographic and theatrical as the style itself - a New Babylon born of euphoria, land values and the set-back profiles imposed by the 1916 New York City zoning code.

**220** Ferriss, 'The Business Centre', 1927, from *The Metropolis of Tomorrow*, 1929.

### **The New Monumentality 1943**

With the exception of the Soviet Union, Roosevelt's New Deal and the Second World War had the effect of bringing the New Tradition to an abrupt end, but not before architects like J.J.P. Oud had been touched by its influence (see, for instance, his Shell Building, built at The Hague in 1938). After the war the general ideological climate of the West was hostile to any kind of monumentality. The League of Nations had been discredited, the British had granted India her independence and the regimes that had made the New Tradition into an instrument of national policy were

regarded as anathema. Moreover, the manipulatory advantages of less permanent but cheaper, more flexible and more penetrating modes of ideological representation were soon seen as far surpassing the effectiveness of architecture. As anticipated by the intense and brilliant use of radio and film in the propaganda of the Third Reich and in the popular mass productions of RCA and Hollywood during the Depression, governments after the Second World War came to give increasing attention to the content and impact of media rather than to built form. And where the former became increasingly rhetorical and intense, the latter became more and more abstract and devoid of iconographical content. The highly abstract quality of the post-1956 extension of the Rockefeller Center west of 6th Avenue for Time Inc., Exxon and McGraw-Hill already testifies to this reductive process.

The reasons for the eclipse of the Modernistic New Tradition in 1939 were not, however, entirely ideological; for one thing the high-quality craftsmanship readily available for the realization of such remarkable structures as William van Alen's Chrysler Building, New York (1930; see p. 251), was largely absorbed and dispersed by the war effort. In addition, the enthusiasm with which the American establishment embraced the Modern Movement increased each successive year, after the Hitchcock and Johnson exhibition 'Modern Architecture' of 1932, and, by 1945, when the New Deal was at its height, the Functionalist line in architecture was virtually the ruling style (see the work of Lescaze, Neutra, the Bowman brothers, etc.).

It is ironic that the demise of the New Tradition and the triumph of the Modern Movement should coincide with a reaction in favour of monumentality coming from the heart of the movement itself. Only five years separate Giedion's Charles Eliot Norton Lectures, given at Harvard University in 1938–39 (published as *Space, Time and Architecture* in 1941), from his polemical *Nine Points on Monumentality* of

1943, written in collaboration with Fernand Léger and José Luis Sert. The most important articles of this document read:

- (1) *Monuments are human landmarks which men have created as symbols for their ideals, for their aims, and for their actions. They are intended to outlive the period which originated them, and constitute a heritage for future generations. As such, they form a link between the past and the future.*
- (2) *Monuments are the expression of man's highest cultural needs. They have to satisfy the eternal demand of the people for translation of their collective force into symbols. The most vital monuments are those which express the feeling and thinking of this collective force - the people.*
- (4) *The last hundred years have witnessed the devaluation of monumentality. This does not mean that there is any lack of formal monuments or architectural examples pretending to serve this purpose; but the so-called monuments of recent date have, with rare exceptions, become empty shells. They in no way represent the spirit and the collective feeling of modern times.*
- (6) *A new step lies ahead. Postwar changes in the whole economic structure of nations may bring with them the organization of community life in the city which has been practically neglected up to date.*
- (7) *The people want the buildings that represent their social and community life to give more than functional fulfilment.<sup>5</sup>*

This position paper – destined to become the brief for CIAM VIII of 1952 – formulated a sharply discriminative approach to the problem of representation, which seems to be as valid today as when it was first written. In the first instance, there is its recognition of the fact that neither the monumentality of the New Tradition nor the functionalism of the Modern Movement was capable of representing the

collective aspirations of the people. In the second, there is the implication, never explicitly stated, that a genuine collectivity can only realize an appropriate expression of its values and historical continuity at a 'cantonal' or municipal level, and that large centralized or authoritarian states are incapable, by definition, of authentically representing the hopes and desires of the people. In the years since 1943 the issue of representation – the fundamental problem of meaning in architecture – has recurred again and again, only to be met by repression and denial, or by escapist withdrawal into the supposedly spontaneous and hence popular significance of advertising and media in the consumer economy. The practice of architecture now lapses into 'silence' – see Manfredo Tafuri's *Progetto e Utopia (Architecture and Utopia, Design and Capitalist Development)* of 1973 – and even into disrepute solely because one of the primary subjects of which it should speak, namely the destiny of the society, is constantly denied it. Unfortunately, the political institutions that would be capable of rearticulating this particular form of significance are today as fragile as the culture of architecture itself.

# Chapter 27

## Le Corbusier and the Monumentalization of the Vernacular 1930-60

*This construction, built by local contractors, consists of reinforced-concrete floors carried on exposed masonry walls made of the local stone. Despite the use of ordinary masonry, the usual conceptions employed in our houses reappear here. That is to say, a complete distinction is maintained between the bearing walls which are considered as supports for the floors and the glazed partitions which fill the empty spaces.*

*The composition is structured by the landscape. The house occupies a small promontory dominating the plain behind Toulon, backed by a magnificent silhouette of mountains. The site offers the striking spectacle of a vast unfolding landscape, and the unexpected nature of this has been kept by walling in the principal rooms on the side to the view and by having only a door that opens onto a veranda from which the sudden vista is like an explosion. On descending the small staircase that leads down to the ground one sees a large stele by Lipschitz rising up, its terminal palmette outlined against the sky above the mountains.*

Le Corbusier,  
*Oeuvre complète, 1929-34, 1935*<sup>1</sup>

Le Corbusier and Pierre Jeanneret had already thought of their domestic architecture of the late 1920s as having a strong link with the natural environment, but they had never previously conceived of this connection as taking place on such a monumental scale. Now, with this holiday house designed for Hélène de Mandrot and built outside Toulon in 1931, and their Errazuriz House projected for a remote site in Chile (1930), they began to envisage their works as reaching out across landscapes of titanic proportions. This subtle shift towards a topographic sensibility contrasted with their apparently spontaneous acceptance of 'vernacular' construction as a mode of expression. Although they had used load-bearing crosswalls before they had never exploited the expressive qualities of rough-hewn stonework.

This break with the dogmatic aesthetic of Purism (already anticipated in Le Corbusier's painting of 1926) coincides with the conceptual point in his career when he began to abandon his faith in the *inevitably* beneficent workings of a machine-age civilization. From now on, disillusioned by industrial reality and increasingly under the 'Brutalist' influence of the painter Fernand Léger, his style began to move in two opposite directions at once. On the one hand he returned, at least in his domestic work, to the language of the vernacular; on the other, as in his project for Paul Otlet's Cité Mondiale of 1929, he embraced a monumentality of Classical, not to say Beaux-Arts, grandeur.

However, to think of this schism as a simple differentiation in the expressive mode between 'building' and 'architecture' is to give an oversimplified account of the practice at this time. For, despite the 'inner doubt', not only had the machine aesthetic not been totally abandoned (as we may judge from 'curtain-walled' structures built by the practice between 1930 and 1933), but also works such as the de Beistegui Penthouse unexpectedly revealed a Surrealist side to Le Corbusier's imagination. This dreamlike

exercise – reminiscent of Adolf Loos's interiors for the Tristan Tzara house of 1926 – manifested its ‘aesthetic’ disjunctions on more than one level. While it emphasized the strangeness of objects at a domestic scale (the lawn of the solarium appeared like a living carpet!) it also evoked unlikely urban (topographic) associations such as the isomorphic similarity between the solarium’s false fireplace and the Arc de Triomphe, poised on the artificial horizon of the bounding wall. This Surrealist sensibility (compare Magritte and Piranesi) is latent throughout the whole of Le Corbusier’s return to the vernacular, from the de Mandrot House of 1931 to the Ronchamp pilgrimage chapel built in the mid-1950s.

In many of the ‘vernacular’ essays prior to Ronchamp the remoteness of the site itself became the rationale for the mode of building. The extreme example of this is the very cheap house at Mathes, near Bordeaux (1935), which was built from drawings without the architect visiting the site. Le Corbusier wrote:

*The impossibility of supervising the construction and the necessity of employing a small contractor from the village led even to the conception of the plan itself. The house had three successive and absolutely separate stages of work:  
(a) the masonry built at one time,  
(b) the carpentry built at one time,  
(c) the joinery, comprising windows, doors, shutters and cupboards, all to a standard and to a unitary principle of construction; assembled independently and variously panelled in glass, plywood and asbestos cement.<sup>2</sup>*

The same justification of limited resources could be put forward in the case of the Errazuriz and de Mandrot houses, but it could hardly apply to the weekend house built in the Parisian suburbs in 1935 [221]. Here the vernacular was being consciously embraced for its material articulation, for

its capacity to enrich the abstract and reductive nature of the Purist style. Le Corbusier wrote:

**221** Le Corbusier and Jeanneret, weekend house, Paris, 1935.

*The designing of such a house demanded extreme care since the elements of construction were the only architectonic means. The architectural theme was established about a typical bay whose influence extended as far as the little pavilion in the garden. Here one was confronted by exposed stonework, natural on the outside, white on the interior; wood on the walls and ceilings; and a chimney out of rough brickwork, with white ceramic tiles on the floor, Nevada glass block walls and a table of Cippolino marble.<sup>3</sup>*

In short, one experienced, as at Toulon and Mathes, an expressive *bricolage*. From now on the juxtaposition of contrasting materials became an essential aspect of Le Corbusier's style, not only as an expressive 'palette' but also as a means of building.

This shift to natural materials and primitive methods had consequences that went beyond a mere change in technique or surface style. Above all it meant abandoning the Classical envelope that had been used in the villas of the late 1920s in favour of an architecture predicated on the expressive force of a single architectonic element, be this a monopitched roof supported by cross-walls or a barrel-vaulted megaron. While the former mode (anticipated at Mathes) appeared in the rammed-earth walls and lean-to thatched roofs of the 'Maisons Murondins' proposed in 1940 for the accommodation of refugees, the latter was the basic structural module of both the weekend house and the farm complex projected for Cherchell, North Africa, in 1942. That Le Corbusier's preoccupation with the Mediterranean after

the Second World War took a vernacular rather than a Classical form is demonstrated by a sequence of works stemming from the Cherchell project, and leading via the Roq et Rob stepped-terrace housing designed for Cap Martin in 1949 [222] to the Sarabhai House in Ahmedabad and the Maisons Jaoul in Paris [223], these last two works being completed in 1955.

**222** Le Corbusier, Roq et Rob project, Cap Martin, 1949. A reinterpretation of the weekend house as a housing prototype.

**223** Le Corbusier, Maisons Jaoul, Paris, 1955. North-east elevation.

As James Stirling was to make clear, the Maisons Jaoul design was an affront to those sensibilities which had been nurtured on the myth that modern architecture should manifest itself as smooth, machine-wrought, planar surfaces set within an articulated structural frame. It was disturbing to find that this complex was ‘being built by Algerian labourers equipped with ladders, hammers and nails’, and that with the exception of glass no synthetic materials were being used. For Stirling, the almost medieval level of the technology was enough to relegate the work to the realm of art for art’s sake, and he saw it, justifiably, as being in direct opposition to the Rationalist tradition of the Modern Movement. However, Le Corbusier’s ‘arationality’ went beyond the anachronistic, if expedient, application of Catalan vaulting or exposed brickwork and concrete struck directly from timber shuttering. The concrete waterheads, the narrow openings in the cross-walls, and the transverse bays (these last being largely filled with plywood panelling) combined to create the impression of a consciously hostile attitude to the outside world. The archetypal window was now no longer the *fenêtre en longueur* to be looked through,

but rather a framed and panelled insert to be looked at. ‘The eye finding interest in every part of a surface impasto’, wrote Stirling, ‘does not, as at Garches, seek relief from the hard textureless finish by examining the contours and the form of the plane.’ Instead of Purist form, the Maisons Jaoul offered a tactile reality far removed from the utopian visions of the late 1920s: a pragmatism which was ready to embrace, as Reyner Banham has observed, the contradictions and confusions of suburbia.

The Maisons Jaoul design was a monumental reinterpretation of a Mediterranean vernacular, whose effect stemmed as much from its introspective solemnity as from its scale. This Surrealistic syntax could hardly be used for the eighteen-storey Unité d’Habitation, built at Marseilles in 1947–52 [224]. And yet in abandoning the lightweight machine technology of the pre-war era the Unité showed itself equally committed to ‘brutalist’ methods of construction. This is especially evident in the casting of its basic concrete superstructure from rough timber formwork, a deliberate revelation of built process which Le Corbusier was to justify on grounds which were almost existential.

**224** Le Corbusier, Unité d’Habitation, Marseilles, 1947–52.

Aside from this *béton brut* appearance, the Unité was far more complex in its organization than the typical pre-war Ville Radieuse block. Where the Ville Radieuse slab was a continuous horizontal volume, hermetically contained behind glass, the Unité revealed its cellular structure through the use of concrete sun-baffle balconies and canopies projecting from the main body of the building. These *brisés-soleil* with their side walls stressed the volume of the two-storey units extending through the width of the block – megaron forms constructed as independent elements and suspended within the concrete frame in much

the same manner as bottles are set into a rack. Interior ‘streets’ on every other floor provided the horizontal access to these interlocking crossover units.

This cellular morphology automatically expressed an agglomeration of private dwellings (compare Roq et Rob), while the shopping arcade and the rooftop communal facilities served to establish and represent the public realm. The honorific status of this larger whole was expressed at ground level in the carefully profiled columns supporting the underbelly of the building. These *pilotis*, precisely proportioned in accordance with Le Corbusier’s *Modulor*, suggested the invention of a new ‘Classical’ order. Uniting its 337 dwellings with a shopping arcade, a hotel and a roofdeck, a running track, a paddling pool [225], a kindergarten and a gymnasium, the Unité was just as much of a ‘social condenser’ as the Soviet commune blocks of the 1920s. This total integration of community services recalled the 19th-century model of Fourier’s phalanstery, not only through its size but also in its isolation from the immediate environment. And just as the phalanstery was intended to house the ordinary man in a princely domain (Fourier detesting the meanness of the individual house), so the Unité was seen by its author as restoring the dignity of architecture to the simplest private dwelling.

**225** Le Corbusier, Unité d’Habitation, Marseilles, 1947–52. Children’s pool on the roof.

The pilgrimage chapel at Ronchamp, first projected in 1950, and the Dominican monastery of La Tourette [226], built at Eveux outside Lyons in 1960, represent the two principal building types – the sacred building and the retreat – that preoccupied Le Corbusier throughout the 1950s. The monastery, effectively combining both types, served to remind him of that paradigm of ‘solitude and communion’

which had so deeply moved him when he first visited the Charterhouse of Ema in 1907. La Tourette simply reinterpreted this ideal model as a bipartite scheme comprising ‘public’ church and ‘private’ cloister. Elevated off the ground rather than terraced into its site, this opposition between the vertical volume of the chapel and the horizontal layer of the ambulatory was dramatically exposed by the fall of the land. Colin Rowe has written:

**226** Le Corbusier, monastery of La Tourette, near Lyons, 1957–60. Section and second-floor plan.

*At La Tourette the site is everything and nothing. It is equipped with an abrupt slope and a lavishly accidental cross-fall. It is by no means a local condition which would really justify the quintessential Dominican establishment which seems to have been preconceived. Rather it is the reverse; architecture and landscape, lucid and separate experiences, are like rival protagonists of a debate who progressively contradict and clarify each other’s meaning.<sup>4</sup>*

Nothing could have been further from this than the rapport established between building and site at Ronchamp, where the crustacean forms which make up the whole – the shell roof with its giant gargoyle, the side chapels and the altar – were all precisely tuned to respond to the ‘visual acoustics’ of an undulating landscape. Ronchamp brought Le Corbusier back to the 1930s, not only to the de Mandrot House for its integration into the site but also to the basic form of the Pavilion des Temps Nouveaux built for the Paris Exhibition of 1937 [227, 228]. Unlikely as it may seem, this wire-cable suspension structure was the fundamental prototype for Ronchamp, inasmuch as it was inspired by the reconstruction of the Hebrew temple in the wilderness, previously reproduced in *Vers une architecture*. As a further

transposition of the same metaphor, the dominant concrete shell roof of Ronchamp echoed the profile of the canvas-and-cable catenary roof to the 1937 pavilion. The recurrence of this profile in the Chandigarh Capitol and elsewhere in his later work makes it seem that Le Corbusier was trying to establish this form as the 20th-century equivalent of the Renaissance dome, i.e. as a sign for the sacred.

**227** Le Corbusier and Jeanneret, Pavillon des Temps Nouveaux, World Exhibition, Paris, 1937.

**228** Le Corbusier, Ronchamp Chapel, near Belfort, 1950–55.

Beyond this, Ronchamp resists analysis – in part Maltese tomb, in part Ischian vernacular, its half-cylindrical side chapels, toplit through spherical cowls and orientated towards the trajectory of the sun, serve to remind one that this Christian site was once the location of a sun temple. Built as it is around a hidden reinforced-concrete frame, the vernacular in this instance is simulated rather than reinterpreted in monumental terms [230]. As in the villa at Garches, the rough masonry infill is rendered over with ‘gunite’, but the desired finish is no longer the machine precision of Purism but the stippled, whitewashed texture of Mediterranean folk building.

Le Corbusier’s concern for the sculptural resonance of a building in relation to its site was first formulated in 1923, when he characterized the Acropolis and its Propylea as that point ‘when nothing more might be taken away, when nothing would be left but these closely knit and violent elements, sounding clear and tragic like brazen trumpets’. This passionate image of the Acropolis, conveying a feeling for unity just prior to breaking up, reappears as a constant theme throughout his life and with heightened pathos

towards the end of his career. This was as much the principle underlying Ronchamp's 'visual acoustics' as it was the reason for the diminutive volcanic, mountainous forms that erupt on the roofdeck of the Unité.

A more Cartesian approach informed the design of Chandigarh [229], the new administrative capital of the Punjab, founded in 1951. Since the terrain here was flat, the siting of the monuments was determined by the imposition of a proportional grid. Le Corbusier had already used such 'regulating lines' on an urban scale in his Cité Mondiale of 1929 and in his centre for St-Dié of 1945. His description of the Capitol makes it clear he was convinced that such delicate refinements were perceptible, irrespective of the distances involved. 'The composition of the Park of the Capitol, vast as it is, is today regulated to the centimetre in nearly all of its dimensions both overall and in detail. Such are the means, the powers, and the objectives of "proportioning".' That similar modular devices had been used by Sir Edwin Lutyens when designing New Delhi was not lost on Le Corbusier, who wrote appreciatively of that new capital that it was 'built by Lutyens over thirty years ago with extreme care, great talent, and with true success. The critics may rant as they will, but the accomplishment of such an undertaking earns respect.'

**229** Le Corbusier, with Jeanneret, Drew and Fry, Chandigarh, 1951–65. The Capitol (top of plan) is represented as a wooden model in the foreground, showing the Secretariat, Assembly, Governor's Palace and High Court.

**230** Le Corbusier, Ronchamp Chapel, near Belfort, 1950–55.

Unlike New Delhi or the Cité Mondiale, Chandigarh achieved monumentality without referring directly to the traditional vocabulary of Western Classicism. The striking

profiles of its three monuments were derived, in the first instance, from a direct response to the severity of the climate. Unlike Lutyens, who had exploited only the secondary elements of Moghul architecture, Le Corbusier appropriated the traditional ‘parasol’ concept of Fatehpur Sikri as a monumental coding device to be varied from one structure to the next. By using this shell form either as a prelude (the Assembly entrance canopy), or as a constant (the vaulted roof of the High Court), or as a dominant (the crowning parasol of the Governor’s Palace), he was able to suggest the character and status of each institution. The subtle profiles of these shell forms were derived in part from the livestock and landscape of the region [231]. The evident intent was to represent a modern Indian identity that would be free from any association with its colonial past.

**231** Le Corbusier, Chandigarh, c. 1951. Sketches of cattle and vernacular building forms, and section through the Secretariat.

At the same time, the enormous scale of the Capitol deprived it of those public attributes of the ‘heart of the city’ which, at CIAM VIII, held at Hoddesdon, England, in 1952, Sert had seen as being dependent on ‘walking distances and man’s angle of vision’. Within the temenos of the Capitol, where it takes over twenty minutes to walk from the Secretariat to the High Court, the presence of man is more metaphysical than real (once again recalling De Chirico). Le Corbusier’s Neo-Classical heritage had emerged to evoke the landscape of the *genre terrible*: the representative buildings of the ‘three powers’ – the High Court, the Assembly and the Secretariat [232] – were related not, as on the Acropolis, by the configuration of the site, but rather by abstract sight lines, receding across vast distances, a progressive foreshortening whose only limits seemed to lie with the mountains on the horizon.

**232** Le Corbusier with Jeanneret, Drew and Fry, Chandigarh Capitol, 1957–65.  
Secretariat and Assembly Buildings.

The realization of Chandigarh proper, as an abstract and ill-advised plan, can (as Stanislaus von Moos has argued) hardly be separated from the political aspirations of India at the time of its independence. For Chandigarh was more than the capital of the Punjab: it was the symbol of the New India. It epitomized the idea of a modern industrial state, the utopian destiny which Nehru had envisaged for India in total opposition to Gandhi's will. Thus Chandigarh had already been laid out as a picturesque 'motopian' suburbia by the American planner Albert Mayer before its hasty rationalization into a more or less orthogonal road network at the hands of Le Corbusier, in association with Pierre Jeanneret, Jane Drew and Maxwell Fry. The emerging crisis of Western Enlightenment, its inability to nurture an existing culture or even to sustain the significance of its own Classical forms, its lack of any goal beyond constant technical innovation and optimum economic growth, all seem to be summed up in the tragedy of Chandigarh – a city designed for automobiles in a country where many, as yet, still lack a bicycle.

# Chapter 28

## Mies van der Rohe and the Monumentalization of Technique 1933-67

*In architecture there is only one man whom even the young men can defend and that is Mies van der Rohe. Mies has always kept out of politics and has always taken his stand against functionalism. No one can accuse Mies's houses of looking like factories. Two factors especially make Mies's acceptance as the new architect possible. First, Mies is respected by the conservatives. Even the Kampfbund für Deutsche Kultur has nothing against him. Secondly. Mies has just won ... a competition for the new building of the Reichsbank. The jury were older architects and representatives of the bank.*

*If (and it may be a long if) Mies should build this building it would clinch his position. A good modern Reichsbank would satisfy the new craving for monumentality, but above it all it would prove to the German intellectuals and to foreign countries that the new Germany is not bent on destroying all the splendid modern arts which have been built up in recent years.*

Philip Johnson  
'Architecture in the Third Reich', *Horn and Hound*, 1933<sup>1</sup>

Mies van der Rohe's entry for the Reichsbank competition of 1933 [233] was the beginning of a transformation in his

work, from informal asymmetry to symmetrical monumentality. This move towards the monumental eventually culminated in the development of a highly rationalized building method that was widely adopted in the 1950s by the American building industry and its corporate clientele. The Reichsbank design hinted at this future development in more ways than one, for it established a preference not only for symmetry but also for a certain tectonic which tended to move away from the dynamic spatial effects of his earlier career. At the same time the client was the institutional establishment, a patron that Mies was to serve throughout his practice in the United States.

**233** Mies van der Rohe, project for the Reichsbank, Berlin, 1933.

The Reichsbank design was not simply a return to Schinkel, who, except in Mies's work of the early 1920s, had always been a latent influence. It was more a return to the tectonics of Mies's concrete office building, first published in the magazine *G* in 1923, the emphasis in both projects being on the expressive qualities of an objective building technique, logically conceived and rigorously executed. In 1926 Mies had spoken of architecture as being 'the will of the epoch translated into space'. In Hegelian terms, he saw this will as historically determined technique, as a self-evident fact, only to be refined by the spirit. The intrinsic monumentality of his later work was predicated on such a refinement. For Mies, technology was the cultural manifestation of modern man, and in this respect the Reichsbank must be regarded as his first essay in the monumentalization of technique. This accounts for its warehouse-like appearance, for the neutral, scarcely modulated treatment of its curtain wall.

Between 1933 and the early 1950s, Mies's work was to oscillate between asymmetry and symmetry, between

technique as found and the monumentalization of technique as form. This variation in expression occurred not only from one building to the next but also within a single structure. He summed up the over-riding cultural import that he attached to technique in his address to the Illinois Institute of Technology in 1950:

*Technology is rooted in the past. It dominates the present and tends into the future. It is a real historical movement – one of the great movements which shape and represent their epoch.*

*It can be compared only with the classic discovery of man as a person, the Roman will to power, and the religious movement of the Middle Ages.*

*Technology is far more than a method, it is a world in itself. As a method it is superior in almost every respect. But only where it is left to itself, as in gigantic structures of engineering, there technology reveals its true nature. ... Whenever technology reaches its real fulfilment, it transcends into architecture. It is true that architecture depends on facts, but its real field of activity is in the realm of significance.<sup>2</sup>*

Mies van der Rohe's development after the mid-1930s concerned itself with the conciliation of two opposed systems. One was the heritage of Romantic Classicism which, when translated into the skeleton steel frame, pointed towards the dematerialization of architecture, to the mutation of built form into shifting planes suspended in diaphanous space – the image of Suprematism. The other was the authority of trabeated architecture as it had been inherited from the ancient world, the implacable elements of roof, beam, column and wall. Caught, as it were, between 'space' and 'structure', Mies constantly sought to express simultaneously both transparency and corporeality. The dichotomy revealed itself most sublimely in his attitude to

glass, which he used in such a way as to allow it to change under light from the appearance of a reflective surface to the disappearance of the surface into pure transparency: on the one hand, the apparition of nothing, on the other, an evident need for support.

In this respect, the preliminary scheme for the Illinois Institute of Technology (IIT) campus in Chicago [234], prepared in 1939, two years after his arrival in the United States, is clearly as Suprematist in feeling as parts of the Barcelona Pavilion. As in the Reichsbank project, the plan is disposed about a single axis of symmetry. All the structures are four storeys high and rendered as pure prisms, faced in graph paper curtain walls, their surfaces animated by skyscape reflections. These walls are shown sliding behind occasional clumps of trees, eliding into projecting ivy-clad brick planes, poised on the edge of their stereometric masses. Apart from a Neo-Classical insistence on the visual reinforcement of corners with panels of brickwork, the effect is close to the Suprematist aesthetic of Ivan Leonidov, in particular to his Culture Park project of 1930.

**234** Mies van der Rohe, preliminary scheme for the Illinois Institute of Technology, Chicago, 1939.

At this point, Mies appears to be struggling with the generic relation of column to wall, particularly where the wall in question is largely of glass. The implicit solution in the first IIT proposal (as in the Reichsbank project) is to set the columns back from the glass face, but in the final 1940 version the columns are integrated into the wall. This development becomes explicit in the first building for the campus. The articulation of the column system in conjunction with the glazed plane becomes increasingly idealized and monumental with each successive structure.

This progressive idealization depended on the replacement of Mies's generic cruciform column section of the early 1930s by the standard American I-beam. The asymmetrical pinwheeling plans of the Barcelona Pavilion and the Tugendhat House at Brno demanded a non-directional column form, similar to the point supports that Mies used in his Berlin Building Exhibition house of 1931. By contrast, his preference from the Reichsbank onwards for a single axis of symmetry favoured the articulation of façades in terms of the directional axis of the I-beam. The development of his work at IIT, from the Minerals and Metals Research Building [235] and the Library of 1942 to the Alumni Memorial Hall of 1945, is towards the idealization of the I-beam column, culminating in the square, concrete-clad steel columns of the Alumni Memorial Hall.

**235** Mies van der Rohe, Minerals and Metals Research Building, IIT, Chicago, 1942.

With the Library and the Alumni Memorial Hall, Mies was on the threshold of the building typology and structural syntax of his late career. At the same time, in the IIT Library he first projected a work whose monumentality depended on its great size – a gargantuanism that has obsessed Chicago architectural practice ever since (see the recent work by the leading designers of Skidmore, Owings and Merrill, and C.F. Murphy). Here Mies audaciously proposed a clear structural span of 20 metres (66 feet) wide, with glass panels measuring  $5.5 \times 3.7$  metres (18 x 12 feet) and a single triple-height volume  $91 \times 61$  metres (300 x 200 feet) in plan, broken only by a floor-to-floor book stack, an enclosed court and a suspended mezzanine. Where the Library anticipated Mies's later single-storey clear-span type (first clearly formulated in his drive-in restaurant project of 1946), the Alumni Memorial Hall anticipated his typical

multistorey slab, in which the glazing, the mullions and the structure of the external wall combine to form an articulated façade. Where the IIT Library led, by way of the drive-in restaurant, to Mies's project for the Mannheim Theatre of 1953 – a technological monument par excellence consisting of a large flat roof, measuring 162 × 81 metres (530 × 266 feet), suspended from seven steel trusses – the detailing of the Alumni Memorial Hall was the formulation of the language that Mies would soon use for the realization of 860 Lake Shore Drive.

The Lake Shore Drive apartments [236, 237], under construction between 1948 and 1951, took the kitchen, bathrooms and access cores of Mies's 1927 Weissenhofsiedlung apartments and compacted them about two elevators in the middle of a thick slab. In this arrangement one gained access, through a service zone comprising kitchens and bathrooms, to a continuous living space running around the perimeter that could be subdivided according to variations in unit size and type. The initial wall/column articulations of the Alumni Hall were here elaborated into a modulated façade which was subtly related to the Suprematist, pinwheeling juxtaposition of the two blocks. Of this relationship Peter Carter has written:

**236** Mies van der Rohe, 860 Lake Shore Drive, Chicago, 1948–51. Ground plan of towers and typical floor plan.

**237** Mies van der Rohe, 860 Lake Shore Drive, Chicago, 1948–51.

*The structural frame and its glass infill become architecturally fused, each losing a part of its particular identity in establishing the new architectural reality. The mullion has acted as a kind of catalyst for this change. The columns and mullion dimensions determine window widths.*

*The two central windows (in each structural bay) are, therefore, wider than those adjacent to the column. These variants produce visual cadences of expanding and contracting intervals; column - narrow window - wide window, then reversing - wide window, narrow window - column, and so on, of an extraordinarily subtle richness. And to this is added the alternating opacity of the steel and reflectivity of the glass caused by the blinker quality of the mullions en masse.*<sup>3</sup>

In short, more than in any other work by Mies, the wall is rendered here – after Semper’s prescription – as a woven fabric; a subtle integration of structure with fenestration that displays the same capacity as load-bearing masonry for limiting any extension of the space.

This restriction may well have contributed, as Colin Rowe has suggested, to Mies’s preoccupation with the creation of an unobstructed, clear-span, single-storey, unitary volume. This, Mies’s other generic type, was to absorb him from the IIT Library onwards. As an archetypal form it was inherently public, yet it did not always accommodate a public programme. In domestic terms the type was first crystallized in the house designed in 1946 for Dr Edith Farnsworth, realized four years later at Plano, Illinois [238]. Here a 23 × 9-metre (77 × 29-foot) single-volume house was sandwiched, as it were, between floor and roof slabs and raised some 1.5 metres (5 feet) above the ground on exterior I-columns set 6.7 metres (22 feet) apart. The resultant box was enclosed by a plate-glass skin, the apotheosis of Mies’s phrase *beinahe nichts*, ‘almost nothing’.

**238** Mies van der Rohe, Farnsworth House, Fox River, Plano, Illinois, 1946–50.

An evident asymmetry deriving in part from Suprematism was here beautifully balanced by the symmetry of the *Schinkelschüler* tradition. Thus the entrance platform slid past the base of the house as a flat plane carried on six columns in opposition to a prismatic volume carried on eight - the asymmetry being evident in the overlapping of two symmetrical elements. For all its limited size, this was the elevation of a house to the status of a monument. The podium, the steps, the terrace and the floor itself were all faced in travertine. The exposed steelwork was sprayed white after having been ground down to remove all the welds. The windows were curtained in natural off-white shantung silk. One is hardly surprised to learn that the inordinate cost of the house led to a rupture between Mies and Dr Farnsworth. Now a museum and National Historic Landmark, it stands appropriately furnished but unoccupied, like some well-maintained but otherwise forgotten Shinto shrine.

At a public level Mies's single-span volume found its most 'Classical' realization in IIT's Crown Hall [239], built in 1952-56, and its most monumental expression in the convention hall for Chicago, projected in 1953. Where the former took Mies away from the Suprematism of his early American career (his designs of 1939-50), the latter must still be regarded as his final Suprematist statement. Unbuilt, this 18-metre (60-foot) high, marble-panelled, lattice-braced, steel frame structure, elevated 6 metres (20 feet) above the ground, would have enclosed an assembly hall roofed by a space-frame with the colossal clear span of 220 metres (720 feet).

**239** Mies van der Rohe, Crown Hall, IIT, Chicago, 1952-56.

Crown Hall, designed at about the same time as the Mannheim Theatre, was a decisive return to the tradition of

Schinkel and in particular to Schinkel's Altes Museum [240] in Berlin, always admired by Mies. This *Schinkelschüler* type-form is generally evident as an organizing paradigm throughout Mies's work of the late 1960s, from the Bacardi Building in Mexico City (1963) to the School of Social Service Administration at the University of Chicago (1965). Needless to say, the programme could not always be appropriately accommodated within such a simple paradigm. Thus, where the School of Social Services with its centralized library to the rear permitted a more or less direct transposition of the portico entry and rotunda of the Altes Museum, Crown Hall could but barely reflect these constituent elements and then only at the expense of the programme.

**240** Schinkel's Altes Museum, Berlin, 1823-30 (above), and Mies van der Rohe's Crown Hall, Chicago, 1952-56.

Colin Rowe has argued that the whole evolution of the International Style in architecture was profoundly affected by a conceptual schism between centripetal and centrifugal space, the one stemming from Palladianism and the other ultimately deriving from the anti-monumentality of Wright's extension of the English Free Style plan. This schism, Rowe claims, is demonstrated in Crown Hall (significantly enough, the IIT school of architecture), where the 67 x 37-metre (220 x 120-foot) span glazed box does not afford an unequivocal reading of its centralized composition. As Rowe has written:

*Like the characteristic Palladian composition, Crown Hall is a symmetrical and, probably, a mathematically regulated volume. But, unlike the characteristic Palladian composition, it is not a hierarchically ordered organization which projects its centralized theme vertically in the form of a pyramidal roof or dome. Unlike the Villa Rotonda, but like so many of*

*the compositions of the twenties, Crown Hall is provided with no effective central area within which the observer can stand and comprehend the whole ... once inside, rather than any spatial climax, the building offers a central solid, not energetically stated, it is true, but still an isolated core around which the space travels laterally with the enclosing windows.*

Also, the flat slab of the roof induces a certain outward pull; and, for this reason, in spite of the centralizing activity of the entrance vestibule, the space still remains, though in very much simplified form, the rotary, peripheric organization of the twenties, rather than the predominantly centralized composition of the true Palladian or classical plan.<sup>4</sup>

Mies's typical suppression of all that was programmatically incompatible with the monumental manifested itself most strikingly at Crown Hall, where the department of industrial design was banished to the basement to rest, literally and symbolically, beneath the grandeur of the department of architecture. Yet, despite the impositions of an *a priori* idealism, Mies was never grandiose and his structures were relatively inexpensive, particularly when they entailed repetitious cellular elements as found in multiple residential or office accommodation.

Mies's approach offered the publicity-conscious client an impeccable image of power and prestige. After the completion of 860 Lake Shore Drive (built for the developer Herbert Greenwald) in 1951, he began to work increasingly for the real-estate and institutional establishment, the final 'breakthrough' coming in 1958 when he was commissioned through the agency of Phyllis Lambert to design the thirty-nine-storey Seagram Building [241] in New York. In this bronze and brown glass office tower, Mies once again achieved that Semperian interweaving of fenestration with structure. This time, however, unlike Lake Shore Drive, he

created a frontalized axial composition facing a granite piazza, the slab itself being set back some 27 metres (90 feet) from the building line, as a compliment to the 1917 Racquet Club by McKim, Mead and White on the other side of Park Avenue. This concession on the part of the client enabled Mies to achieve his one and only monument in Manhattan, and to rival, in grandeur, the one New York structure that he had long since admired, the George Washington Bridge.

**241** Mies van der Rohe and Johnson, Seagram Building, New York, 1958.

As director of the department of architecture at the IIT from 1939 to 1959, Mies had ample opportunity to develop a 'school' of architecture in the broadest possible sense and to generate a culture of simple, logical building, amenable to refinement (*Baukunst*) and open in principle to the optimum utilization of industrial technique. Unfortunately, he could not transmit with equal force that *Schinkel*-*schüler* sensibility which was second nature to him. And while the great strength of the school lay in the clarity of its principles, the followers of Mies, as recent events suggest, were by and large unable to grasp the delicacy of his sensibility, that feeling for the precise proportioning of profiles that alone guaranteed his mastery over form.

## Chapter 29

# The Eclipse of the New Deal: Buckminster Fuller, Philip Johnson and Louis Kahn 1934-64

*Those, like Kahn, who show a marked individualism in a world in which team work is becoming widely accepted, who aim to build for eternity in a world of economy of consumption, find themselves in a certain sense beyond the contingencies of time; and it is from this position that their personalities are consolidated. Kahn's personality evokes a picture of the masterly welding together of coexistent elements in antithesis. While Kahn is classical in fact, in the stability and symmetry of his forms, he is romantic in his nostalgia for the Middle Ages. He earnestly applies the most advanced technological means, but this does not prevent him from using stone supporting pillars for the Adler House. He has gone beyond the schemes of functionalism in his distribution, but in many instances he utilizes functionalist aesthetics. He has a rationalist's cult of stereometry, which the thin casings and total transparency of his blocks tends to refute. He has mastered the vital concepts of the organic, but he does not share in its disturbing morphology.*

Enzo Fratelli  
Zodiac 8, 1960<sup>1</sup>

The European economic and political crises of the 1930s and the social provisions of Roosevelt's New Deal brought to the United States both a refugee intelligentsia and extensive programmes for social welfare and reform. While the Museum of Modern Art and Harvard University were to play major roles in the cultural assimilation of this migration, the Federal Government provided the infrastructural basis for the numerous welfare works that were to be executed between Roosevelt's Housing Act of 1934 and the end of the Second World War. The most famous planning and settlement projects of the New Deal were the Tennessee Valley Authority and Clarence Stein's Greenbelt New Towns, the latter realized after 1936 under the auspices of the Federal Resettlement Administration. Unlike the remarkable dams [242], gantries and slipways built in the Tennessee Valley, Stein's Greenbelt settlements were not graced by works of architectural distinction. From this point of view finer results were obtained in the workers' villages financed over the same period by the Farm Security Administration, a typical example being the adobe farm community at Chandler, Arizona, built in 1937 to the designs of Vernon de Mars. An equally efficient and elegant housing standard was reached in other settlements financed by similar government agencies, including New Kensington village, Pennsylvania, built in 1940 to the designs of Walter Gropius and Marcel Breuer, and Channel Heights, San Pedro, Los Angeles, designed in 1943 by Richard Neutra. An inexplicably ungainly work built under similar auspices was Carver Court Housing at Coatesville, Pennsylvania, designed in 1944 by George Howe, Oscar Stonorov and Louis Kahn. This work seems all the more surprising when one realizes that Kahn had already proven his ability while working for Alfred Kastner on the Jersey Homesteads at Hightstown, New Jersey, between 1935 and 1937.

**242** Tennessee Valley Authority architects and engineers, Norris Dam, 1933–37.

Irrespective of their architectural merit, all of these works evinced the presence of a ‘New Objectivity’ in the United States. That this movement was hardly as self-conscious or as polemical as its European counterpart was due to the fact that a comparable ideological basis did not exist. The ‘movement’ had, in any event, to be more sensitive to the issue of popular acceptance and to this end its anti-monumentality stemmed directly from its use of native materials and from its response to the vagaries of topography and climate.

A unique and contentious figure within the American architectural avant garde during the New Deal, Richard Buckminster Fuller had adopted a recognizably ‘objective’ – not to say Constructivist – attitude as early as 1927, when he designed the first version of his free-standing Dymaxion House, the name being a neologism, signifying *dynamism plus efficiency*. Fuller, like the more extreme members of the Swiss ABC group, had no concern whatsoever for the idiosyncrasies of any given context and projected his house as though it were a prototype for serial production [243]. Hexagonal in plan and sandwiched between two hollow decks, it was suspended and triangulated (on the wire wheel principle) from a central mast. In this form, it was advanced, like Fuller’s even more eccentric Dymaxion automobile of 1933, as the one and only inevitable solution. Fuller, never at a loss for rhetoric, described this light-weight metal house in his *Shelter* magazine of May 1932 as a synthesis between the American skyscraper and the oriental pagoda. Ingeniously equipped with a hollow hexagonal mast containing all the necessary services, it was the first in a series of centralized structures which culminated in Fuller’s much simpler geodesic dome, first adapted for domestic use on his own account at Carbondale, Illinois, in 1959. The

rugged reductive ethic of the pioneering individualist is evident from the doggerel chorus to be sung to the tune of 'Home on the Range' that Fuller composed while teaching as a visitor at Yale University in the mid-1950s:

**243** Fuller, prefabricated bathroom, patented 1938-40.

*Roam home to a dome  
Where Georgian and Gothic once stood  
Now chemical bonds alone guard our blondes  
And even the plumbing looks good.*

Such a utilitarian and yet complacent attitude seems a far cry from the proposals that Fuller seriously made in 1932 for the conversion of empty skyscraper office structures (vacant as a result of the Depression) into emergency residential accommodation. Fuller claimed that by the end of the year ninety per cent of the people then still living in the city would be unable to pay taxes or to buy food. This, more than anything else, tends to confirm the affinity that then coincidentally existed between the concerns of the European Neue Sachlichkeit and the Structural Study Associates group – Simon Breines, Henry Churchill, Theodore Larsen and Knud Lönberg-Holm – Fuller's associates during his brief editorship of *Shelter* in 1932.

The year 1945 appears as the watershed between the socially committed ethos of the New Deal and an incipient impulse towards monumentality. This last seems to have emerged partly out of the demands of America's status as a world power and partly out of the cultural anxiety that attended the end of the Second World War. Two texts published in 1945 establish the climate of the period with some precision: they are *Built in U.S.A. 1932-1944*, edited by Elizabeth Mock, which accompanied an exhibition at the Museum of Modern Art, New York – in which over half the

illustrations were devoted to the works of the New Deal – and *New Architecture and City Planning*, edited by Paul Zucker, which recorded the proceedings of a symposium conducted in the same year. This symposium was devoted to the growing need for monumental expression, a theme most elaborately formulated by Sigfried Giedion in his paper of 1944, *The Need for a New Monumentality*. Kahn himself had argued on the same occasion that

*Monumentality is enigmatic. It cannot be intentionally created. Neither the finest material nor the most advanced technology need enter a work of monumental character for the same reason that the finest ink was not required to draw up the Magna Carta.*<sup>2</sup>

The issue emerged again in 1950 in the first number of *Perspecta - The Yale Architectural Journal*, founded by George Howe, wherein Henry Hope Reed argued that the New Deal had dealt a severe blow to the culture of affluence, and that the provisions arising out of the Depression had effectively inhibited any capacity for the monumental:

*To be sure the New Deal proved to be the greatest patron of the arts in that decade, but never on the basis of pomp and ceremony, or for reasons of national prestige or democratic grandeur. The government instead reached a charitable and philanthropic hand to the starving artist, not that of a magnificent and ‘wasteful’ patron.*

*It is hardly surprising that architects and city planners were ripe for a message from across the waters about a new style which banished ‘waste’, tolerated only the functional and declared the house to be a machine for living, a fitting phrase for a technocratic era.*<sup>3</sup>

Although Reed concluded that the tools to create the monument had been lost, he was soon to be proven wrong, for America was about to enter on a spate of all but unprecedented monument-building. Intimations of this in the 1944 Zucker symposium were vindicated a few years later, in 1949, when Philip Johnson built his small but monumental Glass House at New Canaan, Connecticut [244, 245]. Although inspired by Mies van der Rohe's 1945 sketches for the Farnsworth House, this work wilfully departed from Mies's preoccupation with the expression of structural logic. That the Glass House already anticipated Johnson's later adaptation of the Miesian syntax to decorative ends is hinted at in his description of it written in 1950:

**244, 245** Johnson, Glass House, New Canaan, Connecticut, 1949.

*Many details of the house are adapted from Mies's work, especially the corner treatment and the relation of the column to the window frames. The use of standard steel sections to make a strong and at the same time decorative finish to the façade is typical of Mies's Chicago work. Perhaps if there is ever to be 'decoration' in our architecture it may come from the manipulation of stock structural elements such as this (may not Mannerism be next?).<sup>4</sup>*

Johnson's determination to obscure structure through surface manipulation was to characterize his work throughout the next decade. This approach, first fully broached in monumental terms in his Port Chester Synagogue, New York, of 1954, attained its fullest development in his New York State Theater in Lincoln Center, New York, and in his Klein Laboratory Tower built for Yale University at New Haven, both of which were complete for occupation by 1963.

While the Graduate School of Design at Harvard (under the direction of Gropius after 1963) helped to consolidate the anti-historicist and ‘objective’, Functionalist approach of the New Deal, the School of Architecture at Yale, under George Howe’s leadership after 1950, played a formative role in the development of American post-war monumentality. Howe’s own professional career had certainly been as varied as Gropius’s, ranging from the arch conservatism of his country house practice in Philadelphia to the avant-garde Functionalism of his brief partnership in 1929 with William Lescaze. Howe championed the cause of monumentality not only through his founding of *Perspecta*, but also through his influence on the selection of architects for Yale’s expansion programme which began in the early 1950s. Indeed, when Reed’s article appeared in *Perspecta* in 1950, Louis Kahn had already been selected to design the Yale Art Gallery.

With the completion of the art gallery in 1954, Kahn established American post-war monumentality as a cultural force in its own right. He did so with a building that was hardly to be compared to the vulgar rhetoric generally attained by American official architecture throughout the 1950s. A typical ‘imperialistic’ monument of the period was surely Edward Durell Stone’s U.S. Embassy built at New Delhi in 1957, a work whose level of decorative, not to say laboured, monumentality was to be surpassed in respect of its authoritarian overtones only by Eero Saarinen’s far superior U.S. Embassy in London, completed in 1960.

The Yale Art Gallery [246, 247], like Johnson’s Glass House, was based on a subtle transposition of the late Miesian aesthetic. Yet where Mies had always given priority to the direct expression of structural frame, both Kahn and Johnson concealed the frame, at least externally, placing their particular emphasis on the monumentalization of what might be considered ‘secondary’ components, such as walls, floors and ceilings. By a similar token, where Mies always

chose to emphasize the axiality of his composition, Kahn and Johnson masked the inherent symmetrical order of their work by suppressing the frame. Where Kahn used the palpable opacity of brick for this purpose, Johnson relied on the reflectivity of glass. He exploited its innate capacity, when set flush with the surface, to appear as a continuous membrane: to seem to be of the same metalled substance and formal order as the supporting metal frame. However, these two seminal works had more in common than their ‘hermetic’ attitude to surface. In both instances the main orthogonal volume was animated by a cylindrical form housing primary service elements: the major access stair in the case of the gallery, and the fireplace and bathroom in the case of the house. And while the schema of the Glass House – namely a circle in a rectangle – also served as the essential *parti* of Kahn’s gallery, it was Kahn and not Johnson who was to go on to elaborate the notion of the cylinder as the *servant* and the rectangle as the *served* into the dialectic of a general architectural theory.

**246** Kahn, Yale University Art Gallery, New Haven, Connecticut, 1950–54. Floor plan with diagrid ceiling reflected.

**247** Kahn, Yale University Art Gallery, New Haven, Connecticut, 1950–54.

These early works of Johnson and Kahn created a kind of post-Miesian space: an asymmetrical architecture of ‘almost nothing’, which depended no longer on the manifestation of structure as frame, but rather on the manipulation of surface as the ultimate agent for the revelation of light, space and support. Thus the space of Kahn’s art gallery was as much determined by the concrete tetrahedral space-frame that constituted its floors as it was by the regular grid

of rectangular columns that divided its internal volume into four basic sections.

From the early 1950s on, first Johnson and then Kahn came to be increasingly concerned with reactivating the formal systems of the past. Johnson's own 'historicism' – evident in the Neo-Classical qualities of the Glass House – came directly from his understanding of late Mies and, again after Mies, something of Schinkel's Romantic Classicism. The beginning of Kahn's concern with the past is more difficult to establish. Beaux-Arts-trained in Philadelphia under Paul Cret but close in the late 1930s and 1940s to the radicalism of men like Buckminster Fuller and Frederick Kiesler, Kahn was to return after the New Deal to a remote historical tradition, through his preoccupation with the creation of hierarchic order out of heavy structural form. Certainly Kahn's whole approach changed with his project for the Trenton Jewish Community Centre of 1954, made some two years after he had returned from his sabbatical at the American Academy in Rome.

By the mid-1950s the points of reference were becoming more complex, for while Johnson had shifted his attention from Schinkel to Soane, simultaneously keeping his eye fixed on the totally independent Baroque forays then being made in Brasilia by Oscar Niemeyer, Kahn had begun to be preoccupied with the concept of an architectural totality, whose ultimate historical reference would prove Islamic rather than Western.

At this juncture in Kahn's career one encounters one of the central paradoxes in the work and influence of Buckminster Fuller. For whereas Fuller's contribution was posited by both himself and his followers as the only truly functionalist approach of the age, it has since become evident that his geodesic structural systems should be regarded as evoking through their universal geometry an attitude to both form and life that is fundamentally mystical. It is clear from Kahn's subsequent career that this side of

Fuller's thought exercised a strong hold over his development, and never more so than during the period of his association with Ann Tyng, who was an ardent follower of the Fuller line. The various versions of Kahn's multistorey triangulated city hall for Philadelphia [248], designed in association with Tyng between 1952 and 1957, bracket the period during which he was most directly under Fuller's influence. The basic concept of a geodesic skyscraper, stabilized by tetrahedronal concrete floors – 'a vertical truss against the wind' – enabled Kahn to return to an architectural intention that would have been appreciated by Viollet-le-Duc. This much is evident from one of the clearest statements of intent that he ever produced:

**248** Kahn and Tyng, project for Philadelphia City Hall, 1952–57. Model.

*In Gothic times, architects built in solid stones. Now we can build with hollow stones. The spaces defined by the members of a structure are as important as the members. These spaces range in scale from the voids of an insulation panel, voids for air, lighting and heat to circulate, to spaces big enough to walk through and live in. The desire to express voids positively in the design of structure is evidenced by the growing interest and work in the development of space-frames. The forms being experimented with come from a closer knowledge of nature and the outgrowth of the constant search for order. Design habits leading to the concealment of structure have no place in this implied order. Such habits retard the development of an art. I believe that in architecture, as in all art, the artist instinctively keeps the marks which reveal how a thing was done. The feeling that our present day architecture needs embellishment stems in part from our tendency to fair joints out of sight, to conceal how parts are put together. Structures should be devised which can*

*harbour the mechanical needs of rooms and spaces. ... If we were to train ourselves to draw as we build, from the bottom up, when we do, stopping our pencil to make a mark at the joints of pouring or erecting, ornament would grow out of our love for the expression of method. It would follow that the pasting over the construction of lighting and acoustical material, the burying of tortured unwanted ducts, conduits and pipe lines, would become intolerable. The desire to express how it is done would filter through the entire society of building, to architect, engineer, builder and craftsman.*<sup>5</sup>

The fundamental themes of Kahn's subsequent career are all basically outlined in this remarkable passage, from the notion of conceptually transposing solid and void – see the reference to hollow stones – to the idea of explicitly integrating mechanical systems with the structure and the important corollary that the universal ordering principle (namely 'what the building wants to be') could only make itself manifest through the revelation of the constructional process.

The integrated development of these principles, from the Yale Art Gallery to the Richards Laboratories [249] built for the University of Pennsylvania between 1957 and 1964, led to the first phase of Kahn's postponed maturity. In both works Kahn used a method and mode of expression where the empirical details of the programme have little or no impact on the overall form. It was in fact a case of discrete function having to accommodate itself – as in the past – to the form, but only insofar as the form itself had been invented from a profound understanding of the overall task in the first place. In the case of the Richards Laboratories, the problematic aspect of Kahn's method lay exactly in this issue, as to whether or not the overall form was typologically justified. The subsequent difficulties encountered in using the building would suggest that it was not. We seem to be confronted here with the traditional

American impulse to idealize the work place – to monumentalize the space of process – an intention which is as evident in the Richards Laboratories as it is in Johnson's Klein Tower. The precedent for all this would seem, not surprisingly, to be Wright, first in his Larkin Building at Buffalo of 1904 and then in his complex for Johnson Wax, built at Racine in Wisconsin, in 1936–39. It is an appropriate irony, to say the least, that both Kahn and Johnson should come to debate in *Perspecta* 2 (1953) the validity of Wright's later addition to his Racine complex, namely the laboratory tower built there in 1946. With marked indifference to the status of the tower as it might be determined by the programme in relation to the society, Kahn remarked:

**249** Kahn, A.N. Richards Laboratories, University of Pennsylvania, Philadelphia, 1957–61. Third-floor plan.

*It has to do with the full complexity of making architecture work in the fullest psychological sense. It works because it is motivated. It fills the desires and the needs. And so should the Tower work, as psychological satisfaction.*<sup>6</sup>

Along more aesthetic lines and with greater flamboyance, Johnson declared his own indifference to the issue of function:

*It was the terrific problem of a man who wants a beautiful building but the only thing he has to build is a laboratory. Wright puts it into a tower. It doesn't work: it doesn't have to work. Wright had that shape conceived long before he knew what was going into it. I claim that is where architecture starts, with the concept.*<sup>7</sup>

It is a measure of Kahn's achievement and of his continuing influence today that the 'concept' was exactly where architecture always started for him, even if he was sufficiently flexible to allow the initial 'Form' (Kahn's term for 'type') to be modified by the exigencies of the programme. For him, building remained a spiritual act, and it is hardly an accident that his best work was reserved for religious or extremely honorific structures. In many subsequent commissions he ascribed a highly spiritual connotation to the programme and never more so than in the case of the research centre that he designed for Dr Jonas Salk, at La Jolla, California, between 1959 and 1965 [250]. In this instance, the separation of the whole complex into *working*, *meeting* and *living* sectors seems to have released Kahn from the compulsive need to reduce the laboratory space to an ideal form. The final version of the Salk Laboratories brought him to accept a solution in which the services were as 'repressed' or concealed as in any office building by Mies van der Rohe. Kahn's provision of a whole full-height service floor under each laboratory – a provision which today is fully utilized – yielded a much more flexible space than that generally achieved at Philadelphia. The unbuilt Salk meeting complex was also the first occasion on which Kahn had a chance to develop his anti-glare concept of setting a 'building within a building', a notion which he had first broached at a conceptual level in his 1959 sketches for the American Consulate at Luanda, Angola. This idea, destined to remain unbuilt even at La Jolla, was to become the main theme of his magnificent National Assembly Building, under construction at Dacca in East Pakistan (now Bangladesh) from 1965 to 1974.

**250** Kahn, Salk Institute of Biological Studies, La Jolla, California, 1959–65.  
Section through laboratory wing.

Kahn's rejection of a simple-minded if socially committed functionalism in favour of an architecture capable of transcending utility led him to postulate a parallel approach to urban form. Once again this shift reflected his own development, in which he progressed from projecting the *Ville Radieuse* onto the centre of Philadelphia – in his so-called Rational City studies of 1939–48 – to postulating, in his maturity, the need to make an explicit distinction between the architecture of the 'viaduct' and building at a human scale. This was perhaps never more dramatically expressed than in his plan for midtown Philadelphia of 1956, where he attempted to press the forms of Piranesi's Rome of 1762 into the service of the modern city. Yet for all the rational poetry of this proposition, and the ingenuity of his subtly rearranged traffic patterns (his distinction for instance between the expressways as 'rivers' and the 'stop-go' traffic-light-controlled streets as 'canals'), Kahn's midtown planning proposals remained paradoxically unspecific when it came to imagining the precise relations that should obtain between the pedestrian and the automobile. Kahn, conscious of the profound antipathy between the automobile and the city and of the fatal link between consumerism, the suburban shopping centre and the decline of the urban core (a link that stemmed incidentally from the combined effects of the post-war federal highway subsidy and the mortgage provisions of the G.I. Bill), was no more capable than any other architect of conceiving a satisfactory interchange between the human scale and the scale of the car. His Piranesian 'dock' proposal [251] of 1956, comprising a six-storey cylindrical silo housing 1,500 cars and surrounded on its perimeter by eighteen-storey blocks, was as deprived as any other mega-structure of the period of the necessary elements with which to establish a human scale at its base. The limits of Kahn's profound historicism were never more poignant than in his likening of his Philadelphia midtown plan to

Carcassonne. It was surely a vain utopian hope to argue, as he did, that the ordering of movement within a city would of necessity assure its defence against destruction by the automobile.

**251** Kahn, 'dock' complex projected for Philadelphia, 1956, comprising a multi-storey car park surrounded by apartment and office buildings.

# Part III

# Critical Transformations

# 1925-90

**252** Foster Associates, Willis-Faber & Dumas Building, Ipswich, 1974 (see pp. 337-38).

# Chapter 1

## The International Style: Theme and Variations 1925-65

*The effect of mass, of static solidity, hitherto the prime quality of architecture, has all but disappeared: in its place there is an effect of volume, or more accurately, of plane surfaces bounding a volume. The prime architectural symbol is no longer the dense brick, but the open box. Indeed, the great majority of buildings are in reality, as well as in effect, mere planes surrounding a volume. With skeleton construction enveloped only by a protective screen, the architect can hardly avoid achieving this effect of surface, of volume, unless in deference to traditional design in terms of mass he goes out of his way to obtain the contrary effect.*

Henry-Russell Hitchcock and Philip Johnson  
*The International Style*, 1932 (exhibition catalogue, Museum of Modern Art, New York)<sup>1</sup>

In many respects, the International Style was little more than a convenient phrase denoting a cubistic mode of architecture which had spread throughout the developed world by the time of the Second World War. Its apparent homogeneity was deceptive, since its stripped planar form was subtly inflected so as to respond to different climatic and cultural conditions. Unlike the Neo-Classical manner of the Western world in the late 18th century, the International

Style never became truly universal. Nonetheless, it implied a universality of approach which generally favoured light-weight technique, synthetic modern materials and standard modular parts so as to facilitate fabrication and erection. It tended as a general rule towards the hypothetical flexibility of the free plan, and to this end it preferred skeleton frame construction to masonry. This predisposition became formalistic where specified conditions, be they climatic, cultural or economic, could not support the application of advanced light-weight technology. Le Corbusier's ideal villas of the late 1920s anticipated such formalism inasmuch as they masqueraded as white, homogeneous, machine-made forms, whereas they were in fact built of rendered concrete blockwork held in place by a reinforced-concrete frame.

Dr Philip Lovell's Health House [253], built in Los Angeles in 1927 to the designs of the Austrian émigré architect Richard Neutra, may be regarded as the apotheosis of the International Style, its architectural expression deriving directly from a skeleton steel frame, clad in a light-weight synthetic skin. Set on a bluff overlooking a romantic, half-wild parkscape, its asymmetrical composition of dramatically suspended floors was reminiscent of Wright's West Coast blockhouse style of the 1920s, and this formal similarity already suggests the catholic sources from which the supposed homogeneity of the International Style initially derived.

**253** Neutra, Lovell Health House, Griffith Park, Los Angeles, 1927.

Almost incidentally, the open-plan form of the house was an appropriate reflection of Lovell's expansive personality and served to represent his callisthenic lifestyle. As David Gebhard suggests in his study of Neutra's compatriot and early partner Rudolph Schindler [255] (who had realized a house at Newport Beach [254] for Lovell just one year

before), Lovell could have been regarded as embodying the athletic and progressive attributes of the International Style in his own persona:

**254** Schindler, Lovell Beach House, Newport Beach, California, 1925–26.

**255** Rudolf Schindler with Richard and Dione Neutra and their son, at Schindler's Kings Road house (1921–22), Los Angeles, 1928.

*Dr Lovell was a characteristic Southern California product. It is doubtful whether his career could have been repeated anywhere else. Through his Los Angeles Times column, 'Care of the Body' ... and through 'Dr Lovell's Physical Culture Center' he had an influence which extended far beyond the physical care of the body. He was, and he wished to be considered, progressive, whether in physical culture, permissive education, or architecture.<sup>2</sup>*

The ideology of Lovell and its direct expression in the Health House exercised a decisive influence over the rest of Neutra's career. From now on his work was at its best where the building programme could be interpreted as making a direct contribution to the psycho-physiological wellbeing of its occupants. The central theme of both Neutra's work and his writings was the beneficial impact of a well-designed environment upon the general health of the human nervous system. And while his so-called 'bio-realism' rested largely on unproven arguments linking architectural form to overall health, it is difficult to discredit the extraordinary sensitivity and supra-functional attitude that coloured his whole approach. Nothing could be further removed from the exclusively formal motivations attributed to the International Style by Hitchcock and Johnson than the

overall biological concerns addressed by Neutra in his book *Survival Through Design* (1954), where he wrote:

*It has become imperative that in designing our physical environment we should consciously raise the fundamental question of survival in the broadest sense of the term. Any design that impairs or imposes excessive strain on the natural human equipment should be eliminated or modified in accordance with the requirements of our nervous and more gradually, our total physiological functioning.*<sup>3</sup>

Thus, the primary concern for Schindler and Neutra alike – both of whom had served their American apprenticeships with Wright – was not abstract form as such, but rather the modulation of sun and light and the sensitive articulation of the screens of plants between the building and its general context. This ambient hedonism was never more subtly expressed than in the Sachs Apartments, Los Angeles, built to Schindler's design in 1929, or in Neutra's second masterwork, his Kaufmann Desert House [256], built at Palm Springs, California, in 1946–47.

**256** Neutra, Kaufmann Desert House, Palm Springs, California, 1946–47.

For Alfred Roth, practising in Zürich throughout the 1930s, the essential touchstone of the International Style was a sensitive and strictly doctrinaire approach to the creation of built form. In his remarkable anthology of 1940, *The New Architecture*, he attempted to show that the Neue Sachlichkeit was at its best where neither advanced technique nor the free plan was allowed to become an end in itself. A well-formulated programme and a concern for the environmental impact of detailing seem to have been more highly valued by Roth than the achievement of spectacular solutions in either spatial or technical terms. Roth thus gave

as much space to traditional techniques, such as load-bearing masonry, as to advanced systems of frame construction in timber and steel. And while the latter included Neutra's completely straightforward but beautifully detailed open-air school in Los Angeles of 1934, the former ranged from Vernon de Mars's two-storey adobe terrace housing built in New Mexico in 1939 to the 1932 Neubühl Siedlung [257] built in Zürich to the designs of Roth's compatriots Max Haefeli, Carl Hubacher, Rudolf Steiger, Werner Moser, Paul Artaria and Hans Schmidt. While meeting the non-rhetorical (anti-monumental), social and technical criteria of the ABC group, by whose members it was largely designed, the Neubühl Estate was able to humanize the rigorous *Zeilenbau* approach of the Neue Sachlichkeit, not only through the stepped inflection of the row-house unit over a sloping site, but also through the delicacy of its landscaping.

**257** Haefeli, Hubacher, Steiger, Moser, Artaria and Schmidt, Neubühl Siedlung, Zürich, 1932. Site plan (sloping down from bottom to top) and stepped elevations.

In featuring other equally restrained but elegant works, such as the Bad-Allenmoos swimming facility in Zürich by Werner Moser of 1935 or Roth's own Doldertal apartments, built for Sigfried Giedion in Zürich in 1936 to designs made with Marcel Breuer and his cousin Emil Roth, *The New Architecture* proclaimed the maturity of the Swiss Modern Movement. But despite its decided bias in favour of the work of CIAM members, Roth's anthology was just as cosmopolitan as *The International Style*, featuring works from Czechoslovakia, England, Finland, France, Holland, Italy and Sweden and thereby acknowledging the establishment of the New Architecture (Roth's own term) in all these countries by the late 1930s. France was represented by two

works: by the Perretesque open-air school built at Suresnes outside Paris to the design of Beaudouin and Lods, and by Le Corbusier's proto-Brutalist rubble-walled and timber-roofed house built at Mathes in 1935. Holland was represented by the work of the Opbouw group (a Dutch wing of CIAM), most notably by the practices of Brinkman and Van der Vlugt, and Van Tijen and Maaskant. Britain was accounted for in the singular masterwork of the engineer Owen Williams, the famous Boots Pharmaceutical Plant [258], built at Beeston in 1932. Williams was an outsider in the whole anthology since he was neither an architect nor a member of CIAM. Nonetheless, his reinforced-concrete and glass factory rivalled the brilliance of Brinkman and Van der Vlugt's Van Nelle packing plant, built outside Rotterdam in 1929. Williams's audacious use of giant mushroom columns, supporting bays up to 9.75 × 11 metres (31 × 36 feet) in plan, gave to this four-storey industrial shed a sculptural form of remarkable precision and energy. (The sculptural effect derived from the 45° clipped setbacks in the floor levels of the side elevation is an accident: the building was to be extendable in that direction.)

**258** Williams, Boots Pharmaceutical Plant, Beeston, Nottinghamshire, 1932.

The one country which has always been inadequately represented in any account of the International Style is Czechoslovakia, and an adequate history of the Czechoslovakian Functionalist movement has yet to be written. Roth's anthology did include the insurance offices built in Prague in 1934 to the designs of J. Havlíček and K. Honzík, and *The International Style* featured Otto Eisler's 'double-house' of 1926 and Bohuslav Fuchs's 'formalist' exhibition pavilion of 1929, both built in Brno. Above all they showed Ludvík Kysela's eight-storey Bata shoe store [259] in Prague, built in 1929 and faced entirely in plate glass.

Hitchcock and Johnson failed, however, to include such brilliant figures as Jaromír Krejcar, although admittedly his most spectacular work, his Czechoslovakian pavilion ([fig. 122](#), p. 153) for the 1937 Paris World Exhibition, had yet to come. Perhaps most serious of all, they failed to mention the catalytic role played by the critic Karel Teige, whose Devětsil group was the driving force behind the Czechoslovakian left-wing Functionalist movement.

**259** Kysela, Bata Shoe Store, Prague, 1929.

As in the United States, where the International Style was first practised by Viennese and Swiss émigrés, in England it had its origin in the work of outsiders. First and foremost was Peter Behrens's house for W.J. Bassett-Lowke, New Ways, built at Northampton in 1926. Then came Amyas Connell's house, High and Over, built at Amersham in 1930 for the archaeologist Bernard Ashmole, Connell coming from New Zealand in the late 1920s and soon after founding the London firm of Connell, Ward and Lucas. By far the most influential émigré to enter England at this moment was the Russian architect Berthold Lubetkin, whose impact on the development of modern architecture in England has never been adequately appreciated. Lubetkin, who came from a modest but brilliant career in Paris, brought to Tecton, the firm that he founded in 1932, a capacity for logical organization which has rarely graced English architecture. His 1935 block of flats in Highgate, London, Highpoint 1 [[260](#)], remains a masterpiece even by the standards of today, its internal layout and disposition on an awkward site being a model of both formal and functional order. Despite the success of their subsequent work for the London and Whipsnade Zoos, Lubetkin and his Tecton team – Chitty, Drake, Dugdale, Harding and Lasdun – never attained this level again. Their Highpoint 2 block, built in 1938, already

shows a decided mannerist reaction. One is left to speculate on the extent to which Lubetkin, as an architect of anarcho-socialist persuasion, had become sensitive to Soviet Social Realism, for certainly his essays on Soviet architecture written in the 1950s reveal a sympathy in this direction. The shift in expression between Highpoint 1 and Highpoint 2 was noted at the time, and the ensuing discussion established the ground rules for the ideological struggles of the 1950s. Their central issue, that of the primacy of the formal concept in architecture and the ultimate significance of built form, was touched on by Anthony Cox in 1938, when he wrote of Highpoint 2:

**260** Lubetkin and Tecton, Highpoint 1, Highgate, London, 1935.

*Highpoint 1 stands on tiptoe and spreads its wings; Highpoint 2 sits back on its haunches like Buddha. That this effect is deliberate, Tecton themselves would probably be the first to admit; one has the feeling that a form has been imposed on the rooms (which is an altogether different thing from giving the rooms form). It is as if, during the three years that separate the buildings, rigid conclusions had been reached as to what is formally necessary in architecture. The important point isn't whether or not one personally likes these formal conclusions, but whether one thinks that any such rigid conclusions are expedient . . . The intellectual approach which has produced what we know as modern architecture is fundamentally a functionalist approach. I take it that most of us do not need to argue about that. Functionalism is a rotten name for the antithesis of formalism, because it carries with it dehumanized ideas which nobody wishes to defend - but interpreted in a wide sense, I think the word conveys the method of work underlying this movement. . . My contention is that the recent work of Tecton shows a deviation from this approach.*

*It is more than a deviation of appearance; it implies a deviation of aim. It is more than an adjustment within legitimate limits: it is prepared to set certain formal values above the use values, and marks the re-emergence of the idea as a motive force.*<sup>4</sup>

Preoccupied with the need to create a generally accessible modern architecture, Tecton's work after 1938 seems to have been determined by a conscious attempt to assimilate the rhetorical tradition of the Baroque to the rigours of a cubist syntax. The critical acceptance of Tecton's manneristic Corbusian style, as exemplified by their Finsbury Health Centre, London, of 1938, gave Lubetkin a position of ascendancy in the British scene immediately after the war, and the ten-year period following 1945 was effectively dominated by the language invented by Lubetkin and his colleagues in the previous decade. The Royal Festival Hall, to take one of the most prominent examples, designed in 1950 by a team including Leslie Martin, Robert Matthew and Peter Moro, was obviously indebted to Lubetkin throughout, as was the work of the young ex-Tecton partnership of Lindsay Drake and Denys Lasdun, whose Bishop's Bridge housing, built in Paddington, London, in 1953, extended Lubetkin's façadism to indulge in a crude masking of reality, with syncopated fretwork façades and appliquéd columns.

MARS (Modern Architectural Research Group), the English wing of CIAM, was founded in 1932, on the initiative of the Canadian émigré Wells Coates, who represented MARS at the 1933 Congress dedicated to the theme of 'The Functional City'. While the MARS group possessed, at least initially, the necessary élan to attract the more avant-garde members of the British profession – including Connell, Ward and Lucas, Lubetkin, E. Maxwell Fry and the historian/critic P. Morton Shand – its sole achievement aside from its 'New Architecture' Exhibition staged in the Burlington Galleries in

1938 was its brilliant, if highly utopian, plan for London, drawn up in the early 1940s under the direction of the German architect Arthur Korn and the Viennese engineer Felix Samuely. The MARS group naively hoped for a future which, in the words of Coates, 'must be planned, rather than a past which must be patched up'; yet, unlike Tecton, it was incapable of formulating a truly progressive methodology for the organization of this future. Lubetkin seems to have been the first to sense this lack of orientation, and he abandoned MARS at the end of 1936 to become affiliated with the left-wing ATO (Architects' and Technicians' Organization), which up to the early 1950s was to concern itself exclusively with the problem of working-class housing.

A parallel polemical movement developed in Spain after 1930 under the leadership of the socialist architects José Luis Sert and García Mercadal. Initiated in 1929 as a Catalan cultural movement, it was organized on a national basis, as the Spanish wing of CIAM, under the abbreviation GATEPAC (Grupo de Arquitectos y Técnicos Españoles para el Progreso de la Arquitectura Contemporánea). Its membership included important figures such as Sixte Yllescas, Germán Rodríguez Arias and Torres Clave. Before the Spanish Civil War, in the space of some eight years, these men produced three major theoretical studies, including the Maciá Plan for Barcelona, designed in collaboration with Le Corbusier in 1933. This remarkable low-rise residential project achieved the exceedingly high density of 1,000 persons per hectare (400 per acre), without exceeding two storeys. The most significant realization of GATEPAC was the seven-storey Casa-Bloc communal dwelling, including duplexes, a library, a crèche, a kindergarten and a swimming pool - a type-form that was clearly derived from the *redent* prototype of Le Corbusier's Ville Contemporaine.

The last significant gesture of the Spanish Modern Movement was made under the aegis of the doomed Second Republic, in the form of Sert's Spanish Pavilion

designed for the Paris Exhibition of 1937 [261]. This pavilion was the occasion for the first showing of Picasso's *Guernica*, which commemorated the aerial bombardment of this Basque town earlier in the same year. Commissioned by the Republican government, as a monument to the dead of Guernica, this work was intended as a solemn rebuke to the international betrayal of the Republican cause.

**261** Sert, Spanish Pavilion, World Exhibition, Paris, 1937, showing Picasso's *Guernica*.

After the Hitchcock and Johnson exhibition of 1932 the International Style expanded outside Europe and North America and began to emerge in areas as far flung as South Africa, South America and Japan. The pioneering South African movement, lasting from 1929 to 1942, was a special case since Le Corbusier associated himself with it directly by dedicating the second edition of his first *Oeuvre complète* to Rex Martienssen and his Transvaal Group. He opened his dedicatory letter of 1936 with the words:

*It is a very moving experience to turn over the pages of your South African Architectural Record. Firstly, because one is amazed to find something so vital emanating from a distant point in Africa which lies far beyond the equatorial forests, but yet more because one can discover so much of youth's faith in it, such solicitude for architecture, and so fervent a desire to attain a cosmic philosophy.<sup>5</sup>*

By this date a close rapport had already been established between Le Corbusier and the Transvaal Group, with Le Corbusier contributing a special article to the *South African Architectural Record* and men like Martienssen and Norman Hanson building houses in Johannesburg in an extremely sophisticated post-Corbusian style. By 1942, however,

before the group could become the South African wing of CIAM, Martienssen had died and Hanson had begun to challenge the socio-economic validity of Le Corbusier's planning, arguing against the in-vacuo abstraction of his simplified urbanism.

In Brazil modern architecture had its origins in the mid-1920s partnership of Lúcio Costa and Gregori Warchavchik, an émigré Russian architect who had been influenced by Futurism during his studies in Rome and who was responsible for the first cubistic houses in Brazil. With the revolution headed by Getúlio Vargas in 1930 and the appointment of Costa as head of the School of Fine Arts in Rio de Janeiro in 1931, modern architecture came to be welcomed in Brazil as a matter of national policy. In 1936 Le Corbusier had a direct impact on South America when he was invited to Brazil to act as adviser for the design of a new building for the Ministry of Education in Rio de Janeiro. After working with Costa and his design team, Le Corbusier seems to have endorsed the sixteen-storey slab solution which departed dramatically from his initial sketches. Yet the final version, raised on a peristyle of *pilotis*, was an occasion for the first monumental application of many of the characteristic Corbusian elements, including the *toit-jardin*, the *brise-soleil* and the *pan-verre*. The young Brazilian followers of Le Corbusier immediately transformed these Purist components into a highly sensuous native expression which echoed in its plastic exuberance the 18th-century Brazilian Baroque. The most brilliant exponent of this rhetorical manner was Oscar Niemeyer, who had worked with Costa, Affonso Reidy, Jorge Moreira and others on the design for the Ministry of Education. Niemeyer's freely planned Brazilian Pavilion for the 1939 New York World's Fair [263], designed with Costa and Paul Lester Wiener, gained world recognition for the Brazilian movement and confirmed his own exceptional ability. Niemeyer brought Le Corbusier's concept of the free plan to a new level of fluidity and

interpenetration. Initially planned around an exotic garden court of Brazilian flora and fauna – a micro-Amazonian landscape complete with orchids and snakes – this plastic concept evoked the tropical corniche of Rio itself. The garden layout was the work of the painter Roberto Burle Marx, whose landscapes after 1936 became a seminal force in the Brazilian movement. Burle Marx exploited the Purist concept of the *mariage de contour* in order to organize ‘paradise gardens’, articulated and textured in many instances with newly domesticated plants which he himself had taken from the jungle. With Burle Marx’s landscape a new national style came into being, based to a large extent on indigenous Brazilian vegetation.

Niemeyer’s genius reached its height in 1942 when, at the age of thirty-five, he achieved his first masterwork, the Casino at Pampulha [262]. Here Niemeyer reinterpreted the Corbusian notion of a *promenade architecturale* in a spatial composition of remarkable balance and vivacity. This was a narrative building in every respect, from the welcoming double-height foyer to the gleaming ramps rising to the gaming floor; from the elliptical corridors leading towards the restaurant to the ingenious backstage access to the dance area; in short, an explicit *promenade* which articulated the space of the building as the structure of an elaborate game, a game as intricate as the habits of the society it was intended to serve. The restaurant with its complex accessways, interlocking like the turns of a labyrinth, established not only the routes but also the class roles of the various ‘actors’ divided between clients, entertainers and serving staff. Strong and hedonistic in its general treatment, the building had a severe yet theatrical atmosphere, a contrast in mood established by the propriety of the façades faced in travertine and juparana stone and the exoticism of an interior lined with pink glass, satin and brilliantly coloured panels of traditional Portuguese tiles. Rendered obsolete as a casino through a subsequent

interdiction on gambling, the building now serves as an art museum. Niemeyer was well aware of the limitations of working for such an underdeveloped society when he wrote in 1950:

**262** Niemeyer, Casino, Pampulha, Belo Horizonte, Minas Gerais, Brazil, 1942.  
Second-floor plan.

**263** Niemeyer, Costa and Wiener, Brazilian Pavilion, World's Fair, New York, 1939.

*Architecture must express the spirit of the technical and social forces that are predominant in a given epoch; but when such forces are not balanced, the resulting conflict is prejudicial to the content of the work and to the work as a whole. Only with this in mind may we understand the nature of the plans and drawings which appear in this volume. I should have very much liked to be in a position to present a more realistic achievement: a kind of work which reflects not only refinements and comfort but also a positive collaboration between the architect and the whole society.<sup>6</sup>*

For all that this collaboration was earnestly sought by the reformist president Juscelino Kubitschek, for whom Niemeyer had worked since 1942, such a balance remained elusive. A singular achievement was Reidy's Pedregulho complex, built outside Rio between 1948 and 1954, comprising apartments, a primary school, a gymnasium and a swimming pool, the whole constituting a prototypical neighbourhood unit. Throughout Kubitschek's presidency, from 1955 on, surprisingly little architecture was realized in the name of the whole society.

Brasilia [264], planned by Costa in the mid-1950s, brought the progressive development of Brazilian

architecture to a point of crisis. This crisis, destined eventually to provoke a global reaction against the precepts of the Modern Movement, permeated the entire project, not only at the level of the individual building but also at the scale of the plan itself. The conceptual schism that had already occurred at Chandigarh in 1951, between the isolated monumentality of the government centre as designed by Le Corbusier and the rest of the city, was to be repeated at Brasilia where the overall plan was somewhat less systematic in its basic conception. Where Chandigarh, in the last analysis, at least paid lip service to the time-honoured logic of the colonial grid, Brasilia, despite its orthogonal pattern of *supercuadras*, was fundamentally based on a cross form. It would seem as if the mythic principles of European humanism, as reinterpreted through the late work of Le Corbusier, determined the structure of Brasilia with unfortunate consequences, at least from the point of view of accessibility. Moreover, soon after its foundation, Brasilia emerged as two cities: the monumental city of government and big business to which the bureaucrats commuted by air from Rio, and the 'shanty town' or *favela*, whose inhabitants served the 'radiance' of the high city. Even within its own confines, Brasilia, like Le Corbusier's Ville Radieuse of 1933, was a divided city, zoned into separate sections to accord with its class structure. Yet, aside from the manifest social inequality enforced by such an arrangement, Brasilia also produced formalistic and repressive results at the level of its own representation. In this connection it may be argued that Le Corbusier's development at Chandigarh foreshadowed a critical point in Niemeyer's own career, for clearly Niemeyer's work became increasingly simplistic and monumental after the publication of the first sketches for Chandigarh.

**264** Niemeyer and Costa, Brasilia, 1956–63. View up the east/west axis between ministry buildings, towards Three Powers Square. On the right, the cathedral.

Although Niemeyer could not return to the formal delicacy of his Pampulha Casino, his command of free form, deriving in part from his continual association with Burle Marx, grew in its lyrical authority from the time of his Pampulha restaurant of 1942 to the extraordinary ‘organic’ house that he built for himself in 1953–54 at Gavea, overlooking Rio. At this juncture, however, Niemeyer broke with the informal functionality on which his fluid plan forms had been based, to concentrate on the creation of pure form: to move closer, that is, to the Neo-Classical tradition. One may date this break with his 1955 project for a Museum of Modern Art in Caracas, where he proposed the dramatic use of an inverted pyramid, to be poised on the edge of a precipitous terrain. Inverted or not, this use of the pyramid seems to have signalled a return to Classical absolutes, and the same may be said of his work at Brasilia which, together with Costa’s grid, evoked the aura of the *genre terrible*, the assertion of implacable form against remorseless nature; for beyond the order of Brasilia’s Capitol, edged by an artificial lake, there lay the infinite extent of the savannah. In a direct paraphrase of Chandigarh, Brasilia’s Three Powers Square, at the head of the east-west axis, was assigned to accommodate the executive, legislative and judicial powers, paralleling in content, if not in form, the Secretariat, High Court and Assembly Building at Chandigarh. In both instances, the Capitol was located exactly in the conceptual ‘head’ position that had been zoned for administrative purposes in the initial projection of the Ville Radieuse. The ‘head’ at Brasilia, represented by Niemeyer’s twin-slab Secretariat block, acted like a ‘gun sight’ marker for an axis dividing the convex dome of the Senate from the concave bowl of the House of Representatives.

In contrast to the adjustable *brise-soleil* judiciously applied, some twenty years before, to the north façade of the Ministry of Education, the curtain walls at Brasilia were left unshielded from the sun, although faced with heat-absorbent glass. This indifference to climate seems to have arisen out of a desire to represent the institutions of government by Platonic forms whose purity would stand in strong contrast to the glazed and repetitive slabs housing the ministries. That the initial exuberance of modern Brazilian architecture contained within itself the seeds of such decadent formalism seems to have been most clearly appreciated by Max Bill, who condemned Niemeyer's 1954 Palace of Industry for São Paulo in the following decisive terms:

*In a street here in São Paulo I have seen under construction a building in which pilotis construction is carried to extremes one would have supposed impossible. There I saw some shocking things, modern architecture sunk to the depths, a riot of anti-social waste, lacking any sense of responsibility toward either the business occupant or his customers. ... Thick pilotis, thin pilotis, pilotis of whimsical shapes lacking any structural rhyme or reason, disposed all over the place. ... One is baffled to account for such barbarism as this in a country where there is a CIAM group, a country in which international congresses on modern architecture are held, where a journal like Habitat is published and where there is a biennial exhibition of architecture. For such works are born of a spirit devoid of all decency and of all responsibility to human needs. It is the spirit of decorativeness, something diametrically opposed to the spirit which animates architecture, which is the art of building, the social art above all others.*<sup>7</sup>

Japan, susceptible to Western influence for over fifty years, was well prepared for the assimilation of the

International Style, whose arrival may be dated to 1923, with the realization of Antonin Raymond's first reinforced-concrete house, built in Tokyo for his own occupation [265]. Once again, it was a question of the style being introduced, in its most accomplished form, by an émigré. Raymond was a much-travelled Czech-American who had come to Tokyo at the end of 1919 to work as the supervising architect on Frank Lloyd Wright's Imperial Hotel. As in the case of the careers of Neutra and Schindler in the States, the style emerged from the hands of a Central European who had been formally educated in Europe and afterwards trained by Wright. It is interesting to note that Neutra, Schindler and Raymond freed themselves from the constraints of Wright's stylistic influence within a few years of leaving his employ.

**265** Raymond, the architect's house, Reinanzaka, Tokyo, 1923.

Raymond's own house was remarkable in a number of ways. It was one of the first occasions on which a concrete frame was detailed so as to recall traditional Japanese wooden construction, a mannerism which was to become the architectonic touchstone of Japanese architecture after the Second World War. Its interior was equally in advance of its time by the standards of the International Style, since Raymond made one of the earliest uses of cantilevered tubular steel furniture, antedating the pioneering chairs of Mart Stam and Marcel Breuer. The house itself was detailed with metal fenestration and tubular steel trellises. At the same time, Raymond attempted to integrate into its form elements taken straight from the local vernacular, such as the use of rope rain leaders instead of traditional Western downpipes. Otherwise, in the profiling of its window canopies, the house still recalled something of Wright's Unity Temple style of 1905.

Despite the previous brilliance of Wright's 'reworking' of Japanese culture in America and Paul Mueller's ingenious use of reinforced-concrete technique, the Imperial Hotel in Tokyo gave no indication as to how its ponderous architectural style could ever contribute to an intelligent reinterpretation of Japanese light-weight construction. Its stylistic affinities were closer to the isolated castles of the 16th and 17th centuries than to aristocratic Shinto building of the Heian era; contrary to Louis Sullivan's opinion of 1924 it remained firmly removed from the architectural mainstream of the indigenous culture. Nonetheless, its spectacular survival of the 1923 Tokyo earthquake disaster provided a *post facto* justification for the expense of anti-seismic structure, particularly in the case of public buildings. This 'proof' of reinforced monolithic construction enabled Raymond to take full advantage of the latest concrete technology in his major works of the late 1920s, including his Rising Sun Petroleum Company offices of 1926 and his elaborate and highly mannered Tokyo Golf Club, built outside the capital in 1930. At this juncture Raymond seems to have shifted his stylistic allegiance to Auguste Perret, apparently sensing that an appropriate syntax for exposed reinforced concrete was hardly to be found in Wright.

With the Akaboshi and Fukui houses of 1933-35, Raymond and his wife Noemi Pernessin reached the high point of their early career in the service of an arriviste industrialist class. Together they determined the design of everything from the building itself to its furnishings and fabrics. In these years, they produced a whole series of houses for different members of the Akaboshi family, loosely attempting to integrate their own rather tasteful furniture with the severity of the traditional *tatami* floor and the implacable surface of the *shoji* screen. Their unique Eurasian style seems to have reached its apotheosis in a house and bathing facility that the Raymonds designed for the Fukui family at Atami Bay in 1935, where they

reinterpreted traditional forms in such a way as to liberate themselves finally from the influence of both Wright and Perret.

In 1926, a relatively independent Japanese movement began to develop around the Japanese Secession Group, which included among its early members Mamoru Yamada, who designed the Central Telephone Office in Tokyo in 1926, and Tetsuro Yoshida, who designed the Tokyo General Post Office in 1931. At the same time, those of an even younger generation, such as Kunio Mayekawa and Junzo Yoshimura, began either to work for Raymond or to study abroad. A number of Japanese even ended up by studying at the Bauhaus in the late 1920s, while others such as Mayekawa and Junzo Sakakura worked for Le Corbusier. Sakakura even managed to complete his European experience with a work of international importance, the Japanese Pavilion at the Paris Exhibition of 1937, in which the architectonic order of the traditional teahouse was reinterpreted in modern, not to say Corbusian, terms. Sakakura's open-space planning, together with the clear articulation of his structure and its ramped interconnection of exterior and interior space, bore but a distant resemblance to the spatial order of traditional Japanese architecture.

A more restrained interpretation of tradition informed the domestic practice of Isoya Yoshida, while against such conservatism stood the conceptual boldness of men such as Rentchitchiro Kavakita whose entry for the Soviet Kharkov Theatre competition of 1931 [266] was far removed from the received modernism of the period; that is to say, it was as distant from conventional Constructivist motifs as it was from the Japanese tradition. It was primarily concerned with the excitement of mechanical movement and the rhetoric of structural invention on an enormous scale. This work surely anticipated the quite extraordinary audacity of Kenzo Tange's post-war development, culminating in the twin Olympic stadia that he designed for the Tokyo games in

1964 [267]. While Tange was not concerned with movement, the elliptical and circular volumes of these stadia were covered by catenary steel roofs hung from the prowlike ‘horns’ of elliptical concrete ring beams which also supported the upper tiers of the raked seating.

**266** Kavakita, project for Kharkov Theatre, 1931.

**267** Tange, National Olympic Gymnasium, Tokyo, 1964. Air view showing small basketball stadium and large pools stadium, and interior of pools stadium.

Just prior to his now famous Hiroshima Peace Memorial of 1955 – marking the epicentre of the first nuclear bomb – Tange, a former assistant of Mayekawa, began his career with a whole series of governmental commissions, starting with his rather schematic city halls for Shimizu and Tokyo (1952–54) and culminating in the Kagawa Prefectural Office (1955–58) [268] and the city hall for Kurashiki (1957–60). Where Tokyo City Hall was a meticulous but nonetheless contrived parody in concrete of Jomon timber technique, the Kagawa Prefecture attained a state of almost classic balance which, through its remarkably lucid spatial organization, fused concepts drawn from the Heian era with elements discreetly abstracted from the received vocabulary of the International Style. This work, for all its historicism and its mixed reference to both Buddhist and Shinto prototypes, established Tange as one of the major figures to emerge in Japan after the Second World War. Despite common roots in the work of Le Corbusier, no two designs of the late 1950s could be farther apart than Niemeyer’s Three Powers Square in Brasilia, with its simplistic Classicism, and Tange’s Kagawa Prefecture, with its extraordinarily articulate detailing. That he was acutely aware of the energy released by the intense industrial development of Japan and of the

ambivalent role to be played by tradition in relation to this socially ‘liberating’ force is born out by Tange’s incisive and optimistic analysis made at the time of the Kagawa Prefecture’s completion:

**268** Tange, Kagawa Prefectural Office, Takamatsu, 1955–58. Elevation and site plan.

*Until only very recently, Japan was constantly under the control of an absolute state, and the cultural energy of the people as a whole – the energy with which they might have created new forms – was confined and suppressed. This was especially true in the Tokugawa period, when the government strove relentlessly to prevent social change. Only in our own times has the energy of which I speak begun to be released. It is still working in a confused medium, and much remains to be done before real order is achieved, but it is certain that this energy will do much to convert Japanese tradition into something new and creative.<sup>8</sup>*

The older generation, the men born at the turn of the century, such as Mayekawa and Sakakura, continued to make significant, if less dramatic, contributions: Mayekawa’s theoretical work effectively challenging the whole orientation of 20th-century architecture and its fatal link to the instrumentality of the West. Both the Kamakura Museum of Modern Art by Sakakura (1951) and the Harumi Apartments, Tokyo [269], by Mayekawa (1957), were hybrid works revealing a certain cultural dependency: the one being truly Neo-Classical in a cross-cultural sense, the other being derived from Le Corbusier’s Unité d’Habitation at Marseilles. Where Tange was ultimately to lose any sense of human scale or place in the enormous residential megastructures that he began to propose in the late 1950s,

specifically his Boston Bay project of 1959 and his Tokyo Bay proposal of 1961, Mayekawa was to make a bold attempt to accommodate a part-Western, part-Japanese lifestyle within the multistorey layers of a giant anti-seismic structure. That the Harumi apartment block, like the synthetic lifestyle it was intended to house, could be, at best, only a qualified success seems to have been acknowledged by Mayekawa himself when in 1965, in an essay entitled *Thoughts on Civilization in Architecture*, he came to the sobering conclusion that:

**269** Mayekawa, Harumi Apartments, Tokyo, 1957.

*Modern architecture is and must be squarely based on the solid achievements of modern science, technology, and engineering. Why then does it so often tend to become something inhuman? I believe that one of the main reasons is that it is not always created merely to satisfy human requirements, but rather for some other reason, such as the profit motive. Or an attempt is made to cramp the architecture into the framework of some budget formulated by the mechanical operations of a powerful bureaucratic system of the modern state, this budget having nothing to do with human considerations. Another possibility is that inhuman elements may be contained within science, technology, and engineering themselves. When man attempts to understand a certain phenomenon, science analyses it, breaking it down into the simplest possible elements. Thus, in structural engineering when one attempts to understand a certain phenomenon, the methods adopted are those of simplification and abstraction. The question arises of whether the use of such methods may not cause a departure from human realities ... Modern architecture must recall its rudiments, its initial principles as a human architecture. Whereas science and engineering are*

*the products of human brains, the modern architecture and the modern cities which are built by them tend to become inhuman. That which has beclouded the rudimentary principles of modern architecture, that which is distorting its sense of mission is today's ethical system regulating human action, and the system of value judgments concealed behind this ethical system. These ethical and value criteria are the forces which are moving modern civilization but are also obliterating human dignity and making a mockery of the Declaration of Human Rights. The conclusion of the tragedy is by no means simple. We must go back to the beginnings of Western civilization and discover whether the power to bring about such an ethical revolution can really be found in the inventory of Western civilization itself. If not, then we must seek it, together with Toynbee, in the Orient, or perhaps in Japan.<sup>9</sup>*

With this paradoxical proposition, that traditional Japanese culture may yet in its essence survive as the one force capable of redeeming the technocratic excesses of the West, the era of the International Style was brought to its definitive close, not only in Japan but through out the rest of the world.

## Chapter 2

# New Brutalism and the Architecture of the Welfare State: England 1949-59

*In January 1950 I shared offices with my esteemed colleagues Bengt Edman and Lennart Holm. These architects were at the time designing a house at Uppsala. Judging from their drawings I called them in a mildly sarcastic way 'Neo-Brutalists'. (The Swedish word for 'New Brutalists'!) The following summer, at jollification with some English friends, among whom were Michael Ventris, Oliver Cox and Graeme Shankland, the term was mentioned again in a jocular fashion. When I visited the same friends in London last year, they told me that they had brought the word back with them to England, and that it had spread like wildfire, and that it had, somewhat astoundingly, been adopted by a certain faction of younger English architects.*

Hans Asplund,  
Letter to Eric de Maré, *Architectural Review*, August 1956<sup>1</sup>

After the Second World War, Britain possessed neither the material resources nor the necessary cultural assurance to justify any form of monumental expression. If anything the post-war tendency lay in the opposite direction, since in architecture, as in other matters, Britain was in the final

stages of relinquishing its imperial identity. While Indian independence initiated the disintegration of the Empire in 1945, the class conflict that had so bitterly divided the country during the Depression came to be partially alleviated by the welfare provisions of the Attlee Labour Government. Post-war social reconstruction gained its first impetus from two important Parliamentary Acts: the Education Act of 1944, raising the school leaving age to fifteen, and the New Towns Act of 1946. This legislation was the effective instrument of an extensive government building programme, resulting in the construction of some 2,500 schools within a decade and in the designation of ten new towns, to be built on the model of Letchworth Garden City, with populations ranging from 20,000 to 69,000.

A great deal of this work – outside such precocious authorities as the Hertfordshire County Council which, under the leadership of C.H. Aslin, was to pioneer the wholesale prefabrication of schools – came to be carried out either in the ‘reduced’ Neo-Georgian manner of the average municipal architect, or in the so-called Contemporary Style, which was largely modelled on the official architecture of Sweden’s long-established Welfare State. The syntax of this style – which was presumably considered to be sufficiently ‘popular’ for the realization of English social reform – comprised an architecture of shallow-pitched roofs, brick walls, vertically boarded spandrels and squarish wood-framed picture windows, the last either left bare or painted white. This so-called ‘people’s detailing’ became, with local additions, the received vocabulary of the left-wing architects of the London County Council (LCC), and it acquired a wider acceptance through the influence of the more active editors of *The Architectural Review*, J.M. Richards and Nikolaus Pevsner, who, from having first argued for a stringent modernism, began in the early 1950s to opt for a less rigorous approach to the creation of built form. Pevsner’s Reith Lectures of 1955, ‘The Englishness of English Art’,

publicly asserted picturesque informality as the very essence of British culture. This humanized version of the Modern Movement even came to be propagated under the title of 'The New Humanism' by the editorial of *The Architectural Review*.

The Festival of Britain in 1951 served to give this undemanding cultural policy a progressive and modern dimension by parodying the heroic iconography of the Soviet Constructivists. Its two most potent symbols, the Skylon by Philip Powell and John Hidalgo Moya, and the Dome of Discovery by Ralph Tubbs, represented nothing more consequential through their structural rhetoric than the 'circus' of life for which presumably the 'bread' was soon to be provided. It was not that the exhibition was not without content, but that its content was presented in a gratuitous manner.

While the work of Edman and Holm may have sparked the invention of the term 'New Brutalism', it was in England rather than Sweden that the radical reaction that it denotes first arose. The gratifying populism of the Festival of Britain was rejected outright by Alison and Peter Smithson, the initial proponents of the Brutalist ethos, who counted among their sympathizers and colleagues many of the immediate post-war generation, including Alan Colquhoun, William Howell, Colin St John Wilson and Peter Carter, all of whom were working in the early 1950s for the LCC Architects' Department without subscribing to the 'Swedish line'. Of this situation Reyner Banham observed:

*The negative aspect of the younger generation's attitude may best be summed up in the exasperated statement by James Stirling: 'Let's face it, William Morris was a Swede!' The factual accuracy of this statement need not detain us here: it is its emotional truth as a total rejection of the style of all forms of Welfare architecture that is of consequence. The William Morris revival or People's Detailing or whatever*

*term was commonly employed to satirise attempts to revive nineteenth-century brick-building techniques, complete with small shoulder-arched windows, etc., was occasionally dignified by the grandiose title of 'The New Humanism', which was in itself a reworking of a title invented (by The Architectural Review) for the Swedish retreat from Modern Architecture: The New Empiricism.<sup>2</sup>*

Inasmuch as Brutalism embraced an identifiable Palladian tendency, the Brutalist response to the New Humanism of *The Architectural Review* was to assert the old Humanism, that had in any event always been latent in the pre-war Modern Movement. The 1949 publication of Rudolf Wittkower's *Architectural Principles in the Age of Humanism* had the unexpected effect of engaging the interest of the rising generation in the methodology and aims of Palladio. On another level the Brutalists responded to the challenge of 'people's detailing' by making a direct reference to the socio-anthropological roots of popular culture, while rejecting outright the petit-bourgeois respectability of Swedish empiricism. This anthropological aestheticism (closely related as an impulse to the painter Jean Dubuffet's anti-art cult of *art brut*) brought the Smithsons into contact in the early 1950s with the remarkable personalities of the photographer Nigel Henderson and the sculptor Eduardo Paolozzi, from both of whom Brutalism derived much of its existential character.

The years 1951–54 were crucial to the architectural formation of this sensibility. Already heavily involved with the realization of their Palladian-cum-Miesian school [270] designed for Hunstanton in Norfolk in 1949 and completed some five years later, the Smithsons followed their early success with a sequence of highly original competition entries – projects which, as Banham has remarked, can only be seen as attempts to invent a totally 'other' kind of architecture. Indeed, what little Palladianism there is left in

their projects of this period is heavily mediated, from their Coventry Cathedral of 1951 to their Golden Lane housing, London, of 1952, or their equally remarkable Sheffield University extension [271] of the following year. If anything, these projects are ‘Constructivist’ in their affinities, although their restrained structural rhetoric seems in retrospect to have been of Japanese rather than Russian persuasion. That the failure to premiate any of these designs was a loss to English architectural culture may be judged from the absolute banality of the structures that were eventually erected in their place.

**270** Alison and Peter Smithson, Secondary School, Hunstanton, Norfolk, 1949–54.

**271** Alison and Peter Smithson, Sheffield University extension, 1953.

The underlying ethos of the original Brutalist sensibility – the cryptic element that transcended its Palladianism – first came to public notice with the ‘Parallel of Life and Art’ exhibition, staged at the Institute of Contemporary Arts, London, in 1953. This show comprised a didactic collection of photographs assembled and annotated by Henderson, Paolozzi and the Smithsons. Drawn from news photos and arcane archaeological, anthropological and zoological sources, many of these images ‘offered scenes of violence and distorted or anti-aesthetic views of the human figure, and all had a coarse grainy texture which was clearly regarded by the collaborators as one of their main virtues’. There was something decidedly existential about an exhibition that insisted on viewing the world as a landscape laid waste by war, decay and disease – beneath whose ashen layers one could still find traces of life, albeit microscopic, pulsating within the ruins. Henderson, writing

of his work in this period, stated: ‘I feel happiest among discarded things, vituperative fragments, cast casually from life, with the fizz of vitality still about them. There is an irony in this and it forms at least a partial symbol for an artist’s activity.’

That this was the underlying motivation of Brutalism in the 1950s was not lost on the visitors to ‘This Is Tomorrow’, a show staged in 1956 by the ICA Independent Group at the Whitechapel Art Gallery, under the leadership of Lawrence Alloway. For this exhibition, the Smithsons, once again in collaboration with Henderson and Paolozzi, designed a symbolic temenos – a metaphorical shed in an equally metaphorical backyard, an ironic reinterpretation of Laugier’s primitive hut of 1753 in terms of the backyard reality of Bethnal Green, London, about which Banham remarked:

*One could not help feeling that this particular garden shed, with its rusted bicycle wheels, a battered trumpet and other homely junk, had been excavated after an atomic holocaust, and discovered to be part of [a] European tradition of site planning that went back to archaic Greece and beyond.<sup>3</sup>*

But this gesture was by no means entirely retrospective, for within this cryptic and almost casual metaphor of the shed the distant past and the immediate future fused into one. Thus the pavilion patio was furnished not only with an old wheel and a toy aeroplane but also with a television set. In brief, within a decayed and ravaged (i.e. bombed-out) urban fabric, the ‘affluence’ of a mobile consumerism was already being envisaged, and moreover welcomed, as the life substance of a new industrial vernacular. Richard Hamilton’s ironic collage for this exhibition, entitled *Just what is it that makes today’s homes so different, so appealing*, not only inaugurated Pop culture but also crystallized the domestic image of the Brutalist sensibility.

The Smithsons' 'House of the Future', exhibited at the *Daily Mail* Ideal Home Exhibition in 1956, was evidently intended as the ideal home for Hamilton's muscle-bound 'punch-bag' natural man and his curvaceous companion.

Split between a sympathy for old-fashioned working-class solidarity and the promise of consumerism, the Smithsons were ensnared in the intrinsic ambivalence of an assumed populism. Throughout the second half of the 1950s they moved away from their initial sympathy for the lifestyle of the proletariat towards more middle-class ideals that depended for their appeal on both conspicuous consumption and mass ownership of the automobile. At the same time, they remained far from sanguine about the evident potential for such new-found 'mobility' to destroy both the structure and the density of the traditional city. In their London Roads Study of 1956 they attempted to resolve this dilemma by projecting the elevated freeway as the new urban fix. Meanwhile at a domestic scale they continued to regard the chromium consumer product in the crumbling tenement or the plastic interior as the ultimate liberating icon of their conciliatory style.

Up to the mid-1950s truth to materials remained an essential precept of Brutalist architecture, manifesting itself initially in an obsessive concern for the expressive articulation of mechanical and structural elements, as in the Smithsons' Hunstanton school, and reasserting itself in a more normative but nonetheless anti-aesthetic manner in the small Soho house projected by the Smithsons in 1952. Designed to be built in brick, with exposed concrete lintels and an unplastered interior, this four-storey box made numerous references to the British warehouse vernacular of the late 19th century, antedating by a year the publication of the equally brutal *avant project* for Le Corbusier's Maisons Jaoul, Paris, and anticipating the various projects for village infill housing designed by James Stirling, William

Howell and the Smithsons themselves, and exhibited at the CIAM Aix-en-Provence Congress of 1953.

The mid-1950s clearly saw an extension of the Brutalist base beyond the hermetic preoccupations of the Smithsons, Henderson and Paolozzi. By 1955 both Howell and Stirling were part of a Brutalist formation, although Stirling later denied that he ever thought of himself as such. While his Sheffield University entry of 1953 was indeed Tectonesque his house project of the same year returned Stirling to the utilitarian brick aesthetic of the 19th century, though this work remained removed, in its Neo-Plastic composition of interlocking squares, from the brutal anti-art aura of the Smithsons' Soho house. Meanwhile, within the LCC, architects such as Colquhoun, Carter, Howell and John Killick had begun to realize a number of Corbusian housing schemes culminating in that parody of the 'radiant city', the Alton East Estate built at Roehampton in 1958.

Despite the fact that Mies's IIT campus had been the initial influence in shaping the Smithsons' first building, the subsequent development of the Brutalist style found much of its vocabulary in the late work of Le Corbusier. His revitalization of the Mediterranean vernacular, manifest in his 1948 Roq et Rob project, proved seminal to the formation of the Brutalist sensibility, and the Smithsons followed their enthusiasm for Mies with a subtle reworking of Le Corbusier's *béton brut* manner: as they put it in 1959, 'Mies is great but Corb communicates.' Similarly, the shock first experienced by Stirling on visiting the Maisons Jaoul in 1955 was soon outweighed by the enthusiasm with which he followed its example. The close correspondence between the syntax of the Maisons Jaoul and the style of Stirling's Ham Common housing of 1955 [272] can hardly be disputed, although load-bearing cross walls were used in the two cases to entirely different architectural ends.

**272** Stirling and Gowan, flats, Ham Common, Richmond, Surrey, 1955–58.

The ultimate integration of the British Brutalist aesthetic – the fusion of its contradictory ‘formalist’ and ‘populist’ aspects into a glass and brick ‘vernacular’ drawn from the industrial structures of the 19th century – came with the works of Stirling and his partner James Gowan in 1959, their dormitory project for Selwyn College, Cambridge, and their Engineering Building for Leicester University. Some acknowledgment must be made here of the work of the late Edward Reynolds, whose structurally expressive (not to say expressionist) designs, which he made while still a student, exerted a decisive influence on the development of Brutalism, most notably in the Howell and Killick entry for Churchill College, Cambridge, of 1958, and then in Stirling’s Leicester project.

The Stirling and Gowan Selwyn College proposal [273] not only introduced the crystalline plasticity of their initial style but also presented for the first time the ‘front’ versus ‘back’ theme that was to be typical of their characteristic organization, a theme derived from the solid-versus-glazed expression of the Ville Radieuse slab. Once again it was Reynolds’s warehouse project of 1958 [274] that seems to have been the key influence on the form of the Leicester Engineering Building [275], a work in which Stirling and Gowan finally arrived at their unique expression. What had previously been the slab element in Le Corbusier’s Pavilion Suisse was here transformed (via the Reynolds warehouse scheme) into the horizontal form of a crystalline-roofed laboratory block, while Le Corbusier’s free-standing access tower reappeared as a vertical cluster, comprising flatted laboratories, lecture halls and offices. Leicester absorbed the fundamental contradictions of the initial Brutalist position by recombining the canonical forms of the Modern Movement with elements drawn from the industrial and

commercial vernacular of Stirling's native Liverpool (see, for instance, the pioneering work of Peter Ellis). All that now remained of the Purist paradigm of the late 1920s was the marine detailing – the deck rails, companion ladders and cowls that had been polemically illustrated in *Vers une architecture*. For the rest, Leicester was an eclectic tour de force that recalled, in its remarkable juxtaposition of diverse elements, not only the work of Telford and Brunel but also the work of William Butterfield as manifest in his All Saints' Church, Margaret Street, London, of 1849. What other strategy, one may argue, than the Gothic Revival could have succeeded in combining Purist formal elements with the Romantic imagery of Wright's Johnson Wax complex of 1936–39, while at the same time integrating such Brutal structural components as the exposed diagrid floors drawn from Kahn's Richards Laboratories of 1958?

**273** Stirling and Gowan, project for Selwyn College, Cambridge, 1959.

**274** Reynolds, project for a delivery warehouse, Bristol, 1958.

**275** Stirling and Gowan, Engineering Building, Leicester University, 1959.

While Leicester imposed, as it were, a 45° grid over an otherwise orthogonal geometry, Stirling's History Faculty Building [276] at Cambridge of 1964 rendered the diagonal as the major organizing axis of the plan. At the same time, the History Building stretched the brick and glass syntax of Selwyn and Leicester until the crystalline form of the glass began to overwhelm the controlling armature of the brick. Despite this, it still displayed the coupled elevator stair tower, not only as an articulation of access reminiscent of Kahn's 'servant' element (see the Richards Laboratories)

but also as a typological device that denoted the Stirling house style. This device was to be repeated in the last and least successful of the brick and glass series, namely the Florey Residential Building, designed by Stirling for Queen's College, Oxford, in 1966. The major works of this series – Selwyn, Leicester, the History Faculty and the Florey Building – follow one another as a catalogue of types for the modern university. This typological orientation, with its tendency to dismember and recombine discrete architectural elements, partly in response to empirical demands and partly out of a determination to 'deconstruct' the received forms of the Modern Movement, shaped these late 'monuments' of Brutalism to a far greater degree than any concern for the attributes of place.

**276** Stirling, History Faculty Building, Cambridge University, 1964.

For all that programmatic demands have been invariably met, Stirling's significance to date has lain in the compelling quality of his style: in the brilliant architectonic of his form rather than in the consistent refinement of those 'place' attributes which do of necessity determine the quality of life. Despite his reverence for Aalto, Stirling's achievement has been largely removed from the receptive ambience and self-effacing sensibility of, say, Aalto's Säynätsalo City Hall. It is as though the formal mastery of his syntactical imagination came to disown the critical 'place-creating' potential that he himself had once posited in his village infill housing of the mid-1950s. As Manfredo Tafuri has written of Stirling's later work:

*Suspending the public destined to use his buildings in a limbo of a space that ambiguously oscillates between the emptiness of form and a 'discourse on function' - that is architecture as an autonomous machine, as it is spelled out*

*in the History Building at Cambridge and made explicit in the project for Siemens AG - Stirling carries out the most cruel of acts by abandoning the sacred precinct in which the semantic universe of the modern tradition has been enclosed. Neither attracted nor repulsed by the independent articulation of Stirling's formal machines, the observer is forced into a swinging course, itself just as oscillating as the perverse play of the architect with the elements of his own language.<sup>4</sup>*

# Chapter 3

## The Vicissitudes of Ideology: CIAM and Team X, Critique and Counter-critique 1928-68

1. *The idea of modern architecture includes the link between the phenomenon of architecture and that of the general economic system.*
2. *The idea of 'economic efficiency' does not imply production furnishing maximum commercial profit, but production demanding a minimum working effort.*
3. *The need for maximum economic efficiency is the inevitable result of the impoverished state of the general economy.*
4. *The most efficient method of production is that which arises from rationalization and standardization.*  
*Rationalization and standardization act directly on working methods both in modern architecture (conception) and in the building industry (realization).*
5. *Rationalization and standardization react in a threefold manner:*
  - (a) *they demand of architecture conceptions leading to simplification of working methods on the site and in the factory;*
  - (b) *they mean for building firms a reduction in the skilled labour force; they lead to the employment of less*

*specialized labour working under the direction of highly skilled technicians;*

*(c) they expect from the consumer (that is to say, the customer who orders the house in which he will live) a revision of his demands in the direction of a readjustment to the new conditions of social life. Such a revision will be manifested in the reduction of certain individual needs henceforth devoid of real justification; the benefits of this reduction will foster the maximum satisfaction of the needs of the greatest number, which are at present restricted.*

La Sarraz Declaration,

*Congrès Internationaux d'Architecture Moderne, 1928*<sup>1</sup>

The 1928 CIAM declaration, signed by twenty-four architects, representing France (6), Switzerland (6), Germany (3), Holland (3), Italy (2), Spain (2), Austria (1) and Belgium (1), emphasized *building* rather than architecture as 'the elementary activity of man intimately linked with evolution and the development of human life'. CIAM openly asserted that architecture was unavoidably contingent on the broader issues of politics and economics and that, far from being removed from the realities of the industrialized world, it would have to depend for its general level of quality not on craftsmen but on the universal adoption of rationalized production methods. Where four years later Hitchcock and Johnson were to argue for the pre-eminence of style as determined by technique, CIAM emphasized the need for planned economy and industrialization, denouncing as it did so efficiency as a means for maximizing profit. Instead it advocated the introduction of normative dimensions and efficient production methods as a preliminary step towards a rationalization of the building industry. Thus, that which aesthetes would regard as a formal preference for regularity was for CIAM the initial prerequisite for increasing housing production and for

superseding the methods of a craft era. The La Sarraz document took an equally radical attitude to town planning, when it declared:

*Urbanization cannot be conditioned by the claims of a pre-existent aestheticism; its essence is of a functional order ...*

*The chaotic division of land, resulting from sales, speculations, inheritances, must be abolished by a collective and methodical land policy. This redistribution of the land, the indispensable preliminary basis for any town planning, must include the just division between the owners and the community of the unearned increment resulting from works of joint interest.<sup>2</sup>*

Between the La Sarraz declaration of 1928 and the last CIAM conference held in Dubrovnik in 1956, CIAM passed through three stages of development. The first, lasting from 1928 to 1933 and comprising the CIAM congresses held in Frankfurt in 1929 and Brussels in 1930, was in many respects the most doctrinaire. Dominated by the German-speaking Neue Sachlichkeit architects, who were mostly of socialist persuasion, these congresses addressed themselves first, at Frankfurt, under the title 'Die Wohnung für das Existenzminimum', to the problems of minimum living standards, and then, at Brussels (CIAM III), under the title 'Rationelle Bebauungsweisen', to the issues of optimum height and block spacing for the most efficient use of both land and material. CIAM II, initiated by the Frankfurt city architect, Ernst May, also established a working party, known as CIRPAC (Comité International pour la Résolution du Problème de l'Architecture Contemporaine), whose primary task was to prepare themes for future congresses.

The second stage of CIAM, lasting from 1933 to 1947, was dominated by the personality of Le Corbusier, who consciously shifted the emphasis to town planning. CIAM IV in 1933 was without doubt the most comprehensive

congress from an urbanistic standpoint, by virtue of its comparative analysis of thirty-four European towns. Out of it came the articles of the Athens Charter, which for inexplicable reasons were not published until a decade later. Reyner Banham characterized the achievements of this congress in 1963 in the following, rather critical terms:

*CIAM IV – theme ‘The Functional City’ – took place in July and August 1933 aboard the S.S. Patris, in Athens, and in Marseilles at the end of the voyage. It was the first of the ‘romantic’ congresses, set against a background of scenic splendour, not the reality of industrial Europe, and it was the first Congrès to be dominated by Le Corbusier and the French, rather than the tough German realists. The Mediterranean cruise was clearly a welcome relief from the worsening situation of Europe and in this brief respite from reality the delegates produced the most Olympian, rhetorical, and ultimately destructive document to come out of CIAM: the Athens Charter. The hundred and eleven propositions that comprise the Charter consist in part of statements about the conditions of towns, and in part of proposals for the rectification of those conditions, grouped under five main headings: Dwellings, Recreation, Work, Transportation, and Historic Buildings.*

*The tone remains dogmatic, but is also generalized and less specifically related to immediate practical problems than were the Frankfurt and Brussels reports. The generalization had its virtues, where it brought with it a greater breadth of vision and insisted that cities could be considered only in relation to their surrounding regions, but this persuasive generality which gives the Athens Charter its air of universal applicability conceals a very narrow conception of both architecture and town planning and committed CIAM unequivocally to: (a) rigid functional zoning of city plans, with green belts between the areas reserved to the different functions, and (b) a single type of urban*

*housing, expressed in the words of the Charter as ‘high, widely-spaced apartment blocks wherever the necessity of housing high density of population exists’. At a distance of thirty years we recognize this as merely the expression of an aesthetic preference, but at the time it had the power of a Mosaic commandment and effectively paralyzed research into other forms of housing.*

While the summary consensus of the Athens Charter may well have served to inhibit any further examination of alternative housing models, the fact remains that there was a noticeable shift in tone. The radical political demands of the early movement had been dropped and while Functionalism remained the general credo, the articles of the Charter read like a neo-capitalist catechism, whose edicts were as idealistically ‘rationalistic’ as they were largely unrealizable. This idealistic approach acquired its pre-war formulation in the fifth congress, dedicated to the theme of dwelling and leisure and held in Paris in 1937. On this occasion CIAM was prepared to acknowledge not only the impact of historical structures but also the influence of the region in which the city happened to be situated.

With the third and final stage of CIAM, liberal idealism triumphed completely over the materialism of the early period. In 1947, at CIAM VI, held at Bridgwater in England, CIAM attempted to transcend the abstract sterility of the ‘functional city’ by affirming that ‘the aim of CIAM is to work for the creation of a physical environment that will satisfy man’s emotional and material needs.’ This theme was developed further under the auspices of the English MARS group which prepared the topic ‘The Core’, for CIAM VIII, held at Hoddesdon, England, in 1951. In choosing the theme ‘The Heart of the City’, MARS caused the congress to address itself to a topic that had already been broached by Sigfried Giedion, José Luis Sert and Fernand Léger in their manifesto of 1943, where they wrote: ‘The people want

buildings that represent their social and community life to give more functional fulfilment. They want their aspiration for monumentality, joy, pride and excitement to be satisfied.'

For Giedion, as for Camillo Sitte, the 'space of public appearance' was necessarily contingent on the monumental counterform of the public institutions enclosing it and vice versa. Yet, despite their now manifest concern for the concrete qualities of place, the old guard of CIAM gave no indication that they were capable of realistically appraising the complexities of the post-war urban predicament; with the result that new affiliates, drawn from the younger generation, became increasingly disillusioned and restless.

The decisive split came with CIAM IX held at Aix-en-Provence in 1953, when this generation, led by Alison and Peter Smithson and Aldo van Eyck, challenged the four Functionalism categories of the Athens Charter: Dwelling, Work, Recreation and Transportation. Instead of proffering an alternative set of abstractions, the Smithsons, Van Eyck, Jacob Bakema, Georges Candilis, Shadrach Woods, John Voelcker, and William and Jill Howell searched for the structural principles of urban growth and for the next significant unit above the family cell. Their dissatisfaction with the modified Functionalism of the old guard – with the 'idealism' of Le Corbusier, Van Eesteren, Sert, Ernesto Rogers, Alfred Roth, Kunio Mayekawa and Gropius – is reflected in their critical reaction to the CIAM VIII report. They responded to the simplistic model of the urban core by positing a more complex pattern that would be, in their view, more responsive to the need for identity. They wrote:

*Man may readily identify himself with his own hearth, but not easily with the town within which it is placed.  
'Belonging' is a basic emotional need – its associations are of the simplest order. From 'belonging' – identity – comes the enriching sense of neighbourliness. The short narrow*

*street of the slum succeeds where spacious redevelopment frequently fails.*

In this singularly sharp paragraph they not only dismissed the Sittesque sentimentality of the old guard, but also the rationalism of the 'functional city'. Their critical drive to find a more precise relation between physical form and socio-psychological need became the subject matter for CIAM X, held at Dubrovnik in 1956 – the last CIAM meeting – for which this group, thereafter known as Team X, was basically responsible. The official demise of CIAM and the succession of Team X were confirmed in a further meeting that took place in 1959 in the elegiac setting of Van de Velde's Museum at Otterloo with the old master in attendance. But the essential epitaph of CIAM had already been written, in Le Corbusier's letter to the Dubrovnik congress, when he stated:

*It is those who are now forty years old, born around 1916 during wars and revolutions, and those then unborn, now twenty-five years old, born around 1930 during the preparation for a new war and amidst a profound economic, social, and political crisis, who thus find themselves in the heart of the present period the only ones capable of feeling actual problems, personally, profoundly, the goals to follow, the means to reach them, the pathetic urgency of the present situation. They are in the know. Their predecessors no longer are, they are out, they are no longer subject to the direct impact of the situation.<sup>3</sup>*

The peculiar London cultural climate of the mid-1950s, subject as it was to the influence of Parisian Existentialism, not only decisively shaped the ethos of the British Brutalist movement but also contributed to the Team X polemic with which it was closely associated. In this respect credit must be given to the photographer Nigel Henderson, whose

photographs of London street life were exhibited by the Smithsons at Aix-en-Provence and whose perception and way of life played such a crucial role in shaping the Smithsons' sensibility. That this sensibility was ultimately at odds with the tabula rasa implications of Le Corbusier's CIAM Grid, which was still being propagated as late as 1952, must in no small part be attributed to Henderson's record of the social and physical reality of London's East End - his photographs of community life in Bethnal Green. The Smithsons regularly visited Henderson's home in Bethnal Green from 1950 onwards and it was from their first-hand experience of the street life in the area (now obliterated by the high-rise housing blocks of the Welfare State) that they drew their first notions of *identity* and *association*. Thus the Bye-Law Street, albeit distorted by their own rationalization, became the conceptual 'armature' for their Golden Lane housing proposal of 1952.

For all its resemblance to Le Corbusier's 'Ilot Insalubre' project of 1937, Golden Lane was clearly intended as a critique of the Ville Radieuse and of the zoning of the four functions of the city into Dwelling, Work, Recreation and Transportation. The Smithsons opposed these functions with the more phenomenological categories of House, Street, District and City, although what they meant by these terms grew vaguer as the scale increased. The house in their Golden Lane project was clearly the family unit; the street was evidently a system of one-sided gallery access of generous width, elevated into the air. The district and the city were understandably and realistically regarded as variable domains that lay outside the bounds of physical definition.

Yet, while remaining opposed to the pre-war determinism of the 'functional city', the Smithsons in their Golden Lane proposal became caught in a rationalization process comparable to that of CIAM. For all that the 'yards' in their Golden Lane scheme were indicated as adjunct areas to the

streets, it was clear that the ‘house in the air’ did not have a yard that was in any way akin to the backyard of the Bye-Law Street and that the street itself, now divorced from the ground, could no longer accommodate community life. Above all, its one-sided nature had only the capacity to stress the linearity of the route rather than engender a sense of place. The presence of life on both sides of the Bye-Law Street had clearly been responsible for its social vitality (as an early sketch by the Smithsons would indicate), but the nature of Golden Lane – high density on a small site – and the Smithsons’ own acceptance of Functionalist norms precluded a solution that could have sustained such a life.

From their postulation of this housing pattern as a prototypical solution, one must conclude that the Smithsons were largely unaware of these contradictions: they proceeded to show their Golden Lane scheme, repeated ad infinitum over the metropolitan area, as though it were the manifest critical alternative to Le Corbusier’s Ville Radieuse. And while its random, ‘twig-like’ distribution could no doubt be taken as a polemic against wholesale demolition and as an argument in favour of piecemeal development, their collage of the Golden Lane prototype as a phantom axonometric, apparently erecting itself amid the ruins of Coventry, returned its authors to the central dilemma of CIAM. As imposed on blitzed Coventry [277], Golden Lane appeared to be as much against the continuity of the existing city as the Haussmann-like projections of Le Corbusier’s Plan Voisin of 1925. The axonometric depicted the ‘edge conditions’ between the old street pattern and the new work as a series of inevitable collisions. After the building-out of the Golden Lane concept in 1961 at Park Hill in Sheffield [278], to the design of Jack Lynn and Ivor Smith, it became obvious that aside from the perimeter block form, such as had been realized by Brinkman at Spangen, Rotterdam, in 1919 (a scheme well known to the

Smithsons), there was little possibility of achieving any continuity between decks in the air and streets on the ground.

**277** Alison and Peter Smithson, Golden Lane Housing system applied to central Coventry. (The parish church and ruined cathedral are on the left.)

**278** Lynn and Smith, Park Hill, Sheffield, 1961.

For all that Team X were committed to the multilevel city – an idea stemming via Le Corbusier from Hénard's visions of 1910 – it was to the Smithsons' credit that they remained conscious of its limitations and in consequence produced one of the most critical sketches of their early career, namely a drawing which demonstrated that above the sixth floor one lost all contact with the ground. While the Smithsons were to use this sketch as a way of justifying a megastructural approach, their recognition of tree height as an experiential limit may well have exerted an influence in the 1960s on the general adoption of 'low rise, high density' as the preferred policy for family residential development. This critical awareness was amplified at the time by the Smithsons' own village-infill projects of the mid-1950s – their 'close' and 'fold' houses – and by their insistence, following the 'ecological' argument of their Doom Manifesto of 1954, that 'habitat should be integrated into the landscape rather than isolated as an object within it'.

The sociocultural challenge of Bethnal Green was largely lost on Bakema, despite the anti-Functionalism of his pronouncements in the early 1940s. He was the one member of Team X whose practice was hardly to deviate from the site planning principles of the Neue Sachlichkeit – the row-house principle of open-ended blocks of identical height an optimum distance apart. Bakema's constant point

of reference was clearly the Amsterdam South Plan of 1934 and the pre-war work of Dutch Functionalists such as Merkelbach, Karsten and Stam. All the same, in the Opbouw studies for Pendrecht (1949–51) and for Alexander Polder (1953–56), in all of which Bakema participated, there was a move away from the rigid principle of blocks of uniform height and orientation to a more modulated layout, comprising ‘swastika’ formations, grouped into ‘neighbourhoods’ about clusters of public facilities, swimming pools, schools, etc.

The Kennermerland project, designed by Bakema in collaboration with J.M. Stokla and submitted to the Otterlo Congress of 1959, was a culmination of this research work, as Bakema admitted when challenged by Kenzo Tange as to the origin of the proposal. Yet it says something for the confusion of the time that both Tange and Bakema should insist on Corbusian rationalism as its point of departure, for clearly Kennermerland stemmed from the abstract ‘neighbourhood’ concept first developed by German planners such as Ernst May and Arthur Korn. Even as late as the early 1960s, Bakema was still proposing an extremely hierarchized form of neighbourhood planning as had first appeared in Korn’s MARS plan for London of 1942.

Bakema did not truly come under Le Corbusier’s influence until his Tel Aviv proposal of 1963 [279], when he used the megastructural Obus block projected for Algiers in 1931 (fig. 175) as a means for giving order to the dispersed form of the city. Paradoxically, this continuous superblock in no way served to liberate Bakema from his deterministic tendencies, for while the fiction of the neighbourhood unit was given less importance, its structuring function was replaced by megaforms that either cut across topography, as in the case of his 1962 entry for Bochum University, or alternatively, as in Tel Aviv, paralleled the trajectory of a freeway spine running through the city.

**279** Bakema and Van den Broek, project for megastructural blocks in Tel Aviv, 1963.

It is one of the paradoxes of Team X that Bakema proposed the megabuilding as the psychological ‘fix’ for the megalopolitan landscape just when the Smithsons had begun to entertain doubts as to the viability of such structures. The Smithsons’ ‘open city’ thesis, influenced by the urbanistic concepts of Louis Kahn, was first broached after their initial visit to the States in 1958. In that year they also designed (with Peter Sigmond) their competition entry for the Hauptstadt district of Berlin. In this scheme (strangely similar to that of Scharoun) they posited the notion of the permanently ‘ruined’ city – ruined in the sense that accelerated movement and change in the 20th century were incapable of relating to the pattern of any pre-existing fabric.

While both Bakema and the Smithsons were preoccupied with the notion of ‘urban fix’ – with the sense of place to be established by architecture within the ‘space endlessness’ of Motopia – the Smithsons, rather than continuing to advocate the megastructure, opted for localized traffic-free enclaves, be they the elevated podiums of their Hauptstadt scheme [280, 281] or the Schinkelesque *Paradeplazten* of their Mehringplatz proposal of 1962. Either way round, both Bakema and the Smithsons were, by this date, obsessed with the liberating promise of mass mobility, whose achievement they wanted to celebrate with an appropriate architectural counterform.

**280, 281** Alison and Peter Smithson and Sigmond, project for Berlin-Hauptstadt, 1958. *Above*, southern portion of pedestrian net, showing the growth of causeways above the old street grid; *below*, escalator access to shopping level and roof.

Of the various strategies proffered for dealing with this phenomenon, those of the Smithsons seem to have been the more feasible, and this is reflected in the partial realization of both their Hauptstadt and Mehringplatz prototypes - the one in their *Economist* office complex, London, of 1965, and the other in their Robin Hood Gardens housing, London, of 1969. Yet the sterile conditions imposed by these developments, particularly in the case of Robin Hood Gardens, which was as isolated from its urban context as the towers of any 'functional city', would suggest that the Smithsons had yet to come to terms with the urban consequences of their 'landcastle' approach.

The essential pluralism of Team X found a direct reflection in the very different approach of Aldo van Eyck whose entire career was devoted to evolving a 'place form' which would be appropriate to the second half of the 20th century. From the very outset Van Eyck addressed himself to issues which the majority of Team X would have preferred to have left unformulated, and where Team X kept its initial buoyancy through a naïve optimism Van Eyck was motivated by a critical impulse which verged on the pessimistic. No other Team X member seems to have been prepared to attack the alienating abstraction of modern architecture at its roots, possibly because no one else had had the benefit of Van Eyck's 'anthropological' experience. His personal preoccupation with 'primitive' cultures, and with the timeless aspects of built form that such cultures invariably reveal, dated from the early 1940s, so that by the time he joined Team X he had already developed a unique position. His statement at the Otterlo Congress of 1959, in which he declared his concern for the timelessness of man, was almost as foreign to the mainstream of Team X thought as it was to the ideology of CIAM:

*Man is always and everywhere essentially the same. He has the same mental equipment though he uses it differently*

*according to his cultural or social background, according to the particular life pattern of which he happens to be a part. Modern architects have been harping continually on what is different in our time to such an extent that even they have lost touch with what is not different, with what is always essentially the same.*<sup>4</sup>

Van Eyck's concern for transition, for the amplification of the 'threshold' so as to mediate symbolically between such universal twin phenomena as 'inside versus outside' and 'house versus city', was to make itself manifest in his own work of the late 1950s, most particularly in his children's home in Amsterdam which was then nearing completion. In this school Van Eyck demonstrated his notion of 'labyrinthine clarity' (see pp. 334–35) through an interconnected sequence of domed 'family' units, all united under a continuous roof.

By 1966, however, that which had been the cause for enthusiasm became the occasion for despair. Five years of intense urban development had been enough to convince Van Eyck that the architectural profession, if not Western man as a whole, had so far proved incapable of developing either an aesthetic or a strategy for dealing with the urban realities of mass society. Van Eyck stated: 'We know nothing of vast multiplicity – we cannot come to grips with it – not as architects, planners or anybody else.' Elsewhere Van Eyck characterized this predicament in terms of the cultural void left by the loss of the vernacular. In his various writings of the period, he pointed to the role played by modern architecture in the eradication of both *style* and *place*. He argued that post-war Dutch planning had produced nothing save the organized uninhabitable nowhere of the 'functional city'. His doubts as to the ability of the profession to meet the pluralistic demands of society, without the mediation of a vernacular, led him to question the authenticity of the

society itself. In 1966 he asked: 'If society has no form – how can architects build its counterform?'

By 1963, Team X had already passed beyond the stage of fertile exchange and collaboration, a transformation that was intuitively acknowledged by the Smithsons in their 1962 publication of the *Team X Primer*. From now on, Team X would continue as a movement in name only, since what there had been to achieve through a creative critique of CIAM had already been attained. Little more, in fact, was now to be accomplished in the way of critical reinterpretation, save possibly for the work of two men who had hitherto remained somewhat to one side – an American, Shadrach Woods, and an Italian, Giancarlo de Carlo.

The new departure made by Woods in his Frankfurt-Römerberg competition entry of 1963 [282] was a direct response to Van Eyck's appeal for 'labyrinthine clarity': for what was being proffered in the Frankfurt proposal was a 'city in miniature'. In the place of the medieval centre destroyed in the Second World War, Woods, in collaboration with Manfred Schiedhelm, proposed an equally labyrinthine configuration of shops, public spaces, offices and dwellings, the whole being served by a double-decked basement containing service and parking. If Frankfurt was an urban 'event', it was certainly conceived in different terms from those of the Smithsons or Bakema, for while presenting an orthogonal *counterform* in opposition to the medieval *form* of the city, it also embodied a three-dimensional 'loft' system, served by escalators, whose interstices could be occupied according to demand. That this concept had been anticipated by the infrastructures of Yona Friedman's *L'Architecture mobile* of 1958 in no way detracted from the magnitude of Wood's achievement.

**282** Candilis, Josic and Woods, project for Frankfurt-Römerberg, 1963. Model.  
(Designers: Woods and Schiedhelm.)

Frankfurt-Römerberg, although it remained a project, was without doubt the greatest accomplishment of Woods's career and is probably one of the most important prototypes developed by Team X. In relating to the context of an existing city and refusing the escapism of both 'functional' and 'open' city models, it endeavoured to put the automobile in its place and to continue the tradition of urban culture.

That this Frankfurt scheme as built out in the Free University of Berlin in 1973 [283, 284] lost much of its conviction stems largely from the absence of an urban context. In Berlin-Dahlem it was deprived of that urban culture for which it had been conceived and to which it would have responded had it been built in Frankfurt. However much a university may function like a city in microcosm, it cannot generate the animated diversity of the city proper. Aside from this, Frankfurt's flexibility in terms of space was replaced in Berlin by an idealization of flexibility in terms of technique – by the 'poetic' but somewhat unserviceable detailing of Jean Prouvé's modular clip-on façade of Corten steel.

**283** Woods and Schiedhelm, Free University, Berlin-Dahlem, 1963–73. Sections and ground plan of first phase.

**284** Woods and Schiedhelm, Free University, Berlin-Dahlem, 1963–73. Corten steel cladding system, detailed by Prouvé.

In 1964, the implicit ideology of Woods's Frankfurt scheme found its complement in De Carlo's plan for Urbino. This plan, preceded by an exhaustive topographical study, devotes more space to the tactics of preservation and rehabilitation than to the accommodation of new development. With De Carlo's Urbino, Team X finally arrived

at the complete antithesis to the Cartesian projections of the Ville Radieuse. De Carlo's concern for the reuse of existing stock wherever possible has been confirmed as a policy by recent housing studies, which have shown conclusively that, despite the higher densities usually attained, it may take as long as fifty years for new housing to compensate for the statistical 'housing loss' incurred through the time spent in demolition and construction.

Considerations such as these finally had the effect of precipitating Team X into a realm that it had always strenuously avoided, namely politics. Never was this shift in consciousness more manifest than at the Milan Triennale of 1968 when Woods, in sympathy with student radicals, assisted in the removal of his own work. Only one year before, he had written:

*What are we waiting for? To read the news about a new armed attack with even more esoteric weapons, news which comes to us through the air captured by our marvellous transistorized instruments, somewhere deep in our more and more savaged dwellings? Our weapons become more sophisticated; our houses more and more brutish. Is that the balance sheet for the richest civilization since time began?*<sup>5</sup>

This same theme was taken up by De Carlo in 1968 when he wrote his synoptic analysis of the ideological development of modern architecture, under the title *Legitimizing Architecture*, wherein he reviewed the consequences of the CIAM Declaration of 1928:

*Today, forty years after the Congress, we find that those proposals have become houses and neighbourhoods and suburbs and then entire cities, palpable manifestations of an abuse perpetrated first on the poor and then even on the not-so-poor: cultural alibis for the most ferocious economic speculation and the most obtuse political inefficiency. And*

*yet those ‘whys’ so nonchalantly forgotten in Frankfurt still have trouble coming openly to the surface. At the same time, we have a right to ask ‘why’ housing should be as cheap as possible and not, for example, rather expensive; ‘why’ instead of making every effort to reduce it to minimum levels of surface, of thickness, of materials, we should not try to make it spacious, protected, isolated, comfortable, well equipped, rich in opportunities for privacy, communication, exchange, personal creativity. No one, in fact, can be satisfied by an answer which appeals to the scarcity of available resources, when we all know how much is spent on wars, on the construction of missiles and anti-ballistic systems, on moon projects, on research for the defoliation of forests inhabited by partisans and for the paralyzation of the demonstrators emerging from the ghettos, on hidden persuasion, on the invention of artificial needs, etc.<sup>6</sup>*

For De Carlo, the students' revolt of 1968 was not only a necessary culmination of the crisis in architectural education, but also a reflection of the deeper and more significant dysfunctions of architectural practice and theory - the latter often serving to mystify the true network of power and exploitation permeating the entire society. As an example of this, De Carlo cited the proceedings of CIAM VIII, whose sentimental deliberations on 'The Heart of the City' were largely responsible for the ideology with which the traditional city core was subsequently raped (an ironic, if not cynical, procedure that did not gain its full momentum until a decade later). As De Carlo argued, the Newspeak overtones of this venture were not entirely lost on the critics of Western society, who came to regard the process of urban renewal as a euphemism for the dislocation of the poor.

In the mid-1960s this point still largely escaped most Team X members who, with the exception of Van Eyck,

Woods and De Carlo, seemed to prefer to ignore the destruction of our urban heritage in the name of speculation. The postulative capacities of Team X became paralyzed at this juncture, their inventive energies becoming depleted in the face of an impossible situation. Paradoxically, what now endures from their work is not so much their architectural vision as the suggestive power of their cultural criticism.

# Chapter 4

## Place, Production and Scenography: International Theory and Practice since 1962

*What the word for space, Raum, Rum, designates is said by its ancient meaning. Raum means a place cleared or freed for settlement and lodging. A space is something that has been made room for, something that is cleared and free, namely within a boundary, Greek peras. A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presencing. That is why the concept is that of horismos, that is, the horizon, the boundary. Space is in essence that for which room has been made, that which is let into its bounds. That for which room is made is always granted and hence is joined, that is gathered, by virtue of a location, that is by such a thing as the bridge. Accordingly spaces receive their being from locations and not from 'space'.*

Martin Heidegger  
'Building, Dwelling and Thinking', 1954<sup>1</sup>

No account of recent developments in architecture can fail to mention the ambivalent role that the profession has played since the mid-1960s – ambivalent not only in the

sense that while professing to act in the public interest it has sometimes assisted uncritically in furthering the domain of an optimized technology, but also in the sense that many of its more intelligent members have abandoned traditional practice, either to resort to direct social action or to indulge in the projection of architecture as a form of art. As far as this last aspect is concerned, one cannot help regarding it as the return of a repressed creativity, as the implosion of utopia upon itself. Architects have of course indulged in such unrealizable projections before but, with the classic exception of Piranesi or, more recently, the phantasmagoria of Bruno Taut's Glass Chain, rarely have they projected their images in such inaccessible terms. Both before and after the trauma of the First World War the positive aspirations of the Enlightenment still had the power to carry a certain conviction. Before that, at the threshold of the 19th century, even the most grandiose of Boullée's visions could, one imagines, have been built had sufficient resources been made available, and clearly Ledoux was as much a builder as he was a visionary. What was true of Ledoux was certainly no less true of Le Corbusier, whose vast urban projections could no doubt all have been realized had sufficient power been placed at his disposal. The 412-metre (1,350-foot) World Trade Center, New York, a framed tube structure in the form of twin towers completed to the designs of Minoru Yamasaki in 1972, or the 30-metre (100-foot) higher Sears Tower, Chicago, designed in 1971 by Bruce Graham and Fazlur Khan of Skidmore, Owings and Merrill, both served to demonstrate that possibly not even Wright's 1,600-metre-high (1-mile) skyscraper of 1956 was necessarily unfeasible. But such megabuildings are too exceptional to serve as a model for general practice. Meanwhile, as Manfredo Tafuri has suggested, the aim of the latter-day avant garde is either to validate itself through the media or, alternatively, to redeem its guilt by executing the rite of creative exorcism in isolation. The extent to which

this last may serve as a subversive tactic (Archigram's 'injecting noise into the system') or as an elaborate metaphor with critical implications depends of course on the complexity of ideas involved and on the intent underlying the whole enterprise.

In the case of the English Archigram group, who began to project Neo-Futurist images just before the first issue of their magazine *Archigram* in 1961, it is obvious that their attitude was closely tied to the technocratic ideology of the American designer Buckminster Fuller and to that of his British apologists John McHale and Reyner Banham. By 1960, at McHale's suggestion, Banham had already earmarked Fuller as the redeeming white knight of the future, in the last chapter of his book *Theory and Design in the First Machine Age*. Archigram's subsequent commitment to a 'high-tech', lightweight, infrastructural approach (the kind of indeterminacy implicit in the work of Fuller and even more evident in Yona Friedman's *L'Architecture mobile* of 1958) brought them, rather paradoxically, to indulge in ironic forms of science fiction, rather than to project solutions that were either truly indeterminate or capable of being realized and appropriated by society. It is this more than anything else that distinguishes them from that other prominent Fuller disciple on the British scene, Cedric Price, whose Fun Palace of 1961 and Potteries Thinkbelt of 1964 were nothing if not realizable and, in theory at least, both indeterminate and capable, respectively, of meeting an evident demand for popular entertainment and a readily accessible system of higher education.

Aside from a certain subversive eroticism (the biologically functionalist parody evident say in Michael Webb's 'Sin Centre' of 1962 [285]) Archigram was more interested in the seductive appeal of space-age imagery and, after Fuller, in the Armageddon overtones of survival technology than in the processes of production or the relevance of such sophisticated technique to the tasks of

the moment. For all their surface irony, Ron Herron's 'Walking Cities' of 1964 [286] were clearly projected as stalking across a ruined world in the aftermath of a nuclear war. Like Howard Hughes's 'Glomar Explorer' they suggest some sort of nightmarish salvation, rescuing both men and artefacts after a cataclysmic disaster. These leviathans may be regarded as parallelling Fuller's 1962 proposal to erect a giant dome over the whole of midtown Manhattan [287]. This urban iron lung was projected as a geodesic smog shield, a device which could no doubt be made to double as a fallout shelter in the unlikely event of a nuclear near-miss. With comparable nonchalance, Archigram saw no reason to concern themselves with the social and ecological consequences of their various megastructural proposals, of which Peter Cook's 'Plug-In City' of 1964 was a typical example. Similarly, in their obsession with suspended space-age capsules, Dennis Crompton, Michael Webb, Warren Chalk and David Greene felt under no obligation to explain why one might choose to live in such expensive and sophisticated hardware and yet at the same time in brutally cramped conditions. Like Banham acting out the narcissistic gestures of Vishnu in his solipsistic, inflatable bubble, equipped with high fidelity and presumably other conveniences (in homage probably to the philistine ethos of Fuller's ironic lyric 'Roam Home to a Dome': see p. 273), they all proposed space standards that were well below the *Existenzminimum* established by those pre-war functionalists they supposedly despised.

**285** Webb, 'Sin Centre' project, 1962.

**286** Herron, 'Walking City' project, 1964.

**287** Fuller, project for a geodesic dome over midtown Manhattan (river to river, 64th–22nd streets), 1962.

If anything was destined to reduce architecture ‘to the level of the activities of certain species of insects and mammals’ – to quote Berthold Lubetkin’s 1956 attack on the reductivism of Soviet Constructivist architects (his target was Ginzburg’s OSA group) – it was surely these residential cells projected by Archigram. Modelled on Fuller’s Dymaxion House of 1927 or on his Dymaxion Bathroom of a decade later (see p. 273), these units aspired to being ‘autonomous packages’, in the sense that they were designed chiefly for individuals or couples. Although this preoccupation with the childless unit may have been an implicit critique of the bourgeois family, the ultimate stance of Archigram was hardly critical, as the following passage from Peter Cook’s *Architecture: Action and Plan* of 1967 makes evident:

*it will often be part of the architect’s brief to investigate the ‘possibilities’ of a site ... in other words to use the ingenuity of the architectural concept to exploit the maximum profit from a piece of land. In the past this would have been considered an immoral use of the talents of an artist. It is now simply part of the sophistication of the whole environmental and building process in which finance can be made into a creative element of the design.<sup>2</sup>*

The work of Archigram was surprisingly close to that of the Japanese Metabolists, who, reacting to the pressures of Japanese overcrowding, started in the late 1950s to propose constantly growing and adapting ‘plug-in’ megastructures where the living cells, as in the work of Noriaki Kurokawa, would be reduced to prefabricated pods clipped on to vast helicoidal skyscrapers. Alternatively, as in the projects of Kiyonori Kikutake [288], they would be attached like limpets

to the inner and outer surfaces of large cylinders floating in or on the sea. Kikutake's floating cities are surely among the most poetic visions of the Metabolist movement. Yet, despite the proliferation of offshore drilling rigs with their working complement dedicated to the extraction of energy, Kikutake's marine cities seem even more remote and inapplicable to everyday life than the megastructures of Archigram. It testifies to the rhetorical avant gardism of the movement that most of the Metabolists went on to establish rather conventional practices. With the exception of Kikutake's Sky House of 1958 and Kurokawa's Nagakin bachelor capsule tower [289], built in the Ginza, Tokyo, in 1971 (see Kurokawa's capsule apartments of 1962), very few Metabolic concepts were realized. Although such frantic futurism is to be distinguished from the intelligent additive urban form proposals advanced by such moderates as Fumihiko Maki and Masato Otaka, Gunther Nitschke had this to say when making an assessment of the Metabolist movement in 1966:

**288** Kikutake, 'Marine City' project, 1958.

**289** Kurokawa, Nakagin capsule tower, Tokyo, 1971.

*As long as the actual buildings get heavier, harder, more and more monstrous in scale, as long as architecture is taken as a means of expression of power, be it of oneself or of any kind of vulgar institution, which should be serving not ruling in society, the talk of greater flexibility and change-loving structures is just fuss. Comparing this structure [Akira Shibuya's Metabolic City project of 1966] with any one of the traditional Japanese structures or modern methods suggested by Wachsmann, Fuller, or Ekuan in Japan, it must be considered a mere anachronism, a thousand years out of*

*date, or to say the least, not an advance of modern architecture in terms of theory and practice.*<sup>3</sup>

The decline of the Metabolist vision in Japan came with the evident ideological emptiness of the Osaka Exhibition of 1970. Thereafter the critical lead in Japanese architecture passed from the older Metabolists to the members of the so-called Japanese New Wave, whose work became known largely through the support of two architects of the middle generation, Arata Isozaki and Kazuo Shinohara. While Shinohara's work has remained almost exclusively domestic, Isozaki's stature stems from his double reputation, first as a critical intellectual and second as a public architect whose independent career began with the Oita branch of the Fukuoka Sogo Bank, built in Kyushu in 1966. This successful work led to a whole series of major public structures, including the Gunma Prefectural Museum, Takasaki [290], dating from 1974.

**290** Isozaki, Gunma Prefectural Museum of Fine Arts, Takasaki, 1974.

Isozaki came to the fore internationally in 1968 when he contributed a critical exhibit entitled 'Electric Labyrinth' to the 14th Triennale in Milan. Conceived as a multimedia presentation of the apocalyptic significance of the Hiroshima disaster, this *tour de force* comprising randomly operated pivoting screens and back-projected images established Isozaki's standing with the European avant garde. The Milan Triennale brought him into contact with Archigram and Hans Hollein, and thereafter his work displayed certain aspects of these influences. From Archigram he took the 'high-tech' exuberance of his robot designed for Kenzo Tange's Festival Plaza in the Osaka Exhibition of 1970; from Hollein, his taste for mixing materials with high crafted objects and ironic artistic images, the latter first appearing in the Fukuoka

Sogo Bank headquarters in Kitakyushu (1968–71). Apart from his penchant for elaborate interior finishes, Isozaki was inspired, like Kahn, by the *architecture parlante* of Ledoux. Taking Ledoux's emblematic Neoplatonic geometry as his point of departure, Isozaki pursued a gridded high-tech architecture in a series of branch banks designed in the early 1970s, culminating in the *magnum opus* of the Gunma Museum. With this miragelike, scintillating architecture Isozaki attempted to compensate for the loss of the traditional Japanese 'space of darkness' – the dimly lit, recessive domestic interior which Junichiro Tanizaki had been among the first to lament, in his essay 'In Praise of Shadows' (1933). Sympathetic with Tanizaki's evaluation of the underlit interiors of traditional Japanese buildings but unable to accept the reactionary implications of his cultural nostalgia, Isozaki attempted to evolve a modern equivalent for this traditional illusionistic space. This development reached its peak in the Nagamsami Home Bank (1971), of which he wrote:

*This building has almost no form; it is merely a gray expanse. The multi-level grid guides one's lines of sight but does not focus them on anything in particular. At first encounter, the vague gray expanse seems impossible to decipher and utterly odd. The multi-level lattice disperses vision throughout the space, much as various images might be thrown around an area from a central projector. It absorbs all individual spaces that establish strict order. It conceals them, and when the concealment process is over, only the gray expanse remains.<sup>4</sup>*

Since the early 1970s Isozaki's work has oscillated constantly between gridded atectonic assemblies (grey expanses) controlled by the superimposition of cubic forms, as in the Gunma Museum and the Shukosha Building in Fukuoka City (1974–75), and a series of barrel-vaulted

tectonic structures, such as the Fujimi Country Clubhouse near Oita (1972–74) and the Central Library of Kitakyushu City (1972–75). A version of this last paradigm is the Museum of Contemporary Art in Los Angeles, completed in 1986, which is probably one of his finest later works.

Unlike the Metabolists, Isozaki and Shinohara and other members of the Japanese New Wave accept the fact that today one can hardly hope to achieve any meaningful relationship between the one-off building and the urban fabric as a whole. This critical attitude has been expressed in a series of extremely formal and introspective houses designed by such architects as Tadao Ando, Hiromi Fujii, Hiroshi Hara, Itsuko Hasegawa and Toyo Ito, in addition to similarly introverted works by Isozaki and Shinohara (see also [pp. 362–63](#)).

Ito, who has been influenced to an equal degree by both Isozaki and Shinohara, can be seen as epitomizing the general line of the Japanese New Wave; that is to say, his work is both highly aesthetic and ideologically critical. Like Isozaki and Shinohara he has assumed a fatalistic attitude toward the megalopolis, regarding it as a manifestation of environmental delirium, devoid of sense. He sees the sole possibility for cultural significance to reside in the creation of closed poetic domains, in contrast to the random disorder of the ‘Non-Place Urban Realm’ (see [p. 322](#)). One of his largest urban works, the PMT Building at Nagoya erected in 1978, is a ‘paper-thin’ structural intervention whose hermetic, largely top-lit form possesses a stoic and acerbic beauty. What we have here is the aristocratic counterform (Isozaki) rather than the mask of a patronizing Populism (Venturi). This much is clear from Ito’s essay of 1978, ‘Collage and Superficiality in Architecture’:

*Surface richness in a Japanese city does not consist of a historical accumulation of buildings but rather arises out of a nostalgia for our lost architectural past which is*

*indiscriminately mixed with the superficial icons of the present. Behind an endless desire for nostalgic satisfaction there resides a void without any substance. What I wish to obtain in my architecture is not another nostalgic object, but rather a certain superficiality of expression in order to reveal the nature of the void hidden beneath.*<sup>5</sup>

As we have seen, apart from the geodesic dome ‘drop-out’ culture of the American West, Buckminster Fuller’s greatest impact has been in Japan and, above all, in Britain, where a continuous ‘Dymaxion’ development can be traced from the first space-frame and dome projects of Cedric Price and Peter Cook to the work of Foster Associates.

The paradigm of this movement is the Centre Pompidou in Paris [291, 292], built in 1977 to the designs of the short-lived Anglo-Italian partnership of Richard Rogers and Renzo Piano. The building is obviously a realization of the technological and infrastructural rhetoric of Archigram; and while the full consequences of this approach have become evident through everyday use, it is apparent that certain paradoxical achievements may be claimed on its behalf. In the first place, it is an outstanding popular success – as much for its sensational nature as for anything else. In the second, it is a brilliant *tour de force* in advanced technique, looking for all the world like the oil refinery whose technology it attempts to emulate. It seems, however, to have come into being with the minimum regard for the specificity of its brief – for the art and library holdings it was destined to house. It represents the design approach of indeterminacy and optimum flexibility taken to extremes. Not only was it necessary to build another ‘building’ within its skeletal volume in order to provide sufficient wall surface and enclosure for the exhibition of art; but also the provision of 50-metre (165-foot) lattice truss spans throughout, in order to ensure optimum flexibility, seems to have proved excessive. In the first instance we have an

underprovision of wall surface, in the second an overprovision of flexibility. The additional fact that the scale of the building is quite indifferent to its urban context and that it is incapable of representing its status as an institution is consistent with the ideological position from which it stems, since such concerns were always foreign to the English Dymaxion school of design. One of the unintended ironies of this work seems to derive from the spectacular view of the city which may be gained from the glazed escalator access tubes, hung off the west side of the building. These access ways are now barely adequate to accommodate the average daily attendance of thousands of visitors, a number of whom come not for the cultural facilities offered but for the building and the view.

**291, 292** Piano and Rogers, Centre Pompidou, Paris, 1972-77.

An equally indeterminate approach was adopted in the 1972 design of the English New Town, Milton Keynes [293]. This city, based on a somewhat irregular street grid, was apparently conceived as an instant Los Angeles to be laid over the agrarian landscape of Buckinghamshire. Its empty irregular network, configurated after the topography, was yet another exercise in indeterminacy pushed to absurdity. Despite the Neo-Classicism of its Mesian shopping centre, its capacity to represent a municipal identity is virtually non-existent. One has no notion of arrival here save for the graphic indication of the legal boundary, and for the casual visitor Milton Keynes seems nothing more than a rather random collection of more or less well-designed housing estates. One thinks by contrast of the orthogonal precision of Wright's Broadacre City, where, despite the relentless dispersal of the urban fabric, places would have acquired a certain definition by virtue of their orthogonal boundaries. Here, needless to say, what boundaries there are fail to

correspond to any perceivable order, and this is hardly surprising given that the structure of the town was influenced by the planning theories of Melvin Webber, whose slogan ‘Non-Place Urban Realm’ seems to have been adopted as a credo by the official architects of the plan, Llewelyn-Davies Weeks Forestier-Walker and Bor. The fact that this slogan stemmed from Webber’s commitment to the Kristaller-Losch central place location theory – then as now, the most dynamic model available for the creation of optimum marketing conditions – could hardly have escaped either the architects or the City Corporation. This selection of an open-ended planning model in accordance with the hypothetical interests of a consumer society was surely a conscious choice.

**293** Llewelyn-Davies Weeks Forestier-Walker and Bor, strategic plan for Milton Keynes New Town, Buckinghamshire, 1972. Schematic road grid laid over the landscape. Residential areas (pale shading) and employment areas (dark) are irregularly intermingled.

Within the Hochschule für Gestaltung (HfG) [294] at Ulm in Germany, initially conceived in 1951 by the Swiss architect Max Bill as the institutional successor to the Bauhaus, a rigorous approach to design and technology brought itself in the space of a decade to confront the fundamental contradictions of designing for a consumer society. After Bill’s resignation as director in 1956, the HfG embraced a form of ‘operational research’ by which it intended to evolve a heuristic of design, whereby the forms of objects would be determined in accordance with precise methods for analyzing the nature of their production and use. Unfortunately, this method rapidly degenerated into a form of method-idolatry in which the methodological ‘purist’ was invariably prepared to forego a solution rather than arrive at a design that had not been ergonomically

determined. As far as Herbert Ohl's Department of Industrialized Building was concerned, this led to an emphasis on the design of industrial components to the exclusion of any comprehensive analysis of specific building tasks. Real needs were often overlooked in an effort to produce extremely sophisticated, if relatively simple, prototypical components for the rationalized production of built form. By the mid-1960s the more critical faculty members, Tomás Maldonado, Claude Schnaidt and Gui Bonsiepe, had jointly recognized that this idealization of product design was a dead end, conveniently overlooking in the name of scientific method and functional aesthetics the fundamental contradictions inherent in neo-capitalist society. As far as architecture was concerned this was never more forcibly expressed than by Schnaidt, who in his essay 'Architecture and Political Commitment' (1967) wrote:

**294** Bill, Hochschule für Gestaltung, Ulm, 1953–55, showing workshop block, library, administration building and student housing. In the distance is Ulm Cathedral.

*In the days when the pioneers of modern architecture were still young they thought like William Morris that architecture should be an 'art of the people for the people'. Instead of pandering to the tastes of the privileged few, they wanted to satisfy the requirements of the community. They wanted to build dwellings, matched to human needs, to erect a Cité Radieuse. But they had reckoned without the commercial instincts of the bourgeoisie who lost no time in arrogating their theories to themselves and pressing them into service for the purpose of money-making. Utility quickly became synonymous with profitability. Anti-academic forms became the new decor of the ruling classes. The rational dwelling was transformed into the minimum dwelling, the Cité Radieuse into the urban conglomeration and austerity of*

*line into poverty of form. The architects of the trade unions, co-operatives, and socialist municipalities were enlisted in the service of the whisky distillers, detergent manufacturers, the bankers, and the Vatican. Modern architecture, which wanted to play its part in the liberation of mankind by creating a new environment to live in, was transformed into a giant enterprise for the degradation of the human habitat.*<sup>6</sup>

Later in the same article Schnaidt criticized the achievements of the 'alternative' avant garde of the 1960s:

*It is their philosophy that even the most audacious concepts in architecture and city planning are feasible with modern technological aids. This is what lies behind their quest for something resembling space ships, packing crates, filing systems, refineries, or artificial islands. ...*

*These futurist architects may well have the merit of taking technology to its logical conclusion but more often than not their attitude ends up in technolatry. The refinery and the space capsule may serve as models of technical and formal perfection but if they become the objects of a cult, the lessons they can teach will completely miss their mark. This unlimited confidence in the potentialities of technology goes hand in hand with a surprising degree of disingenuousness concerning the future of man. ... Such visions as these are soothing to many architects: braced by so much technology, by such confidence in the future, they feel reassured and justified in their social and political abdication.*<sup>7</sup>

Yet while one might challenge its effectiveness, the architectural avant garde of the 1960s had not entirely abdicated its social responsibility. Many factions existed whose orientation was decidedly political and whose attitude towards advanced technology was by no means

uncritical. Of these mention must be made of the Italian Superstudio group, who were, in this respect, among the most poetic. Influenced by the 'unitary town planning' concepts of the International Situationist Constant Nieuwenhuys, who, in his New Babylon of 1960, had postulated a constantly changing urban fabric that would respond to the 'ludic' tendency in man, Superstudio, led by Adolfo Natalini, started in 1966 to produce a body of work which was more or less divided between representing the form of a 'Continuous Monument' as a mute urban sign and producing a series of vignettes illustrating a world from which consumer goods had been eliminated. Their work varied from the projection of vast impenetrable megaliths, faced in mirror-glass, to the depiction of a science-fiction landscape in which nature had been rendered benevolent - in short the quintessential anti-architectural utopia. In 1969 they wrote:

*Beyond the convulsions of over-production a state can be born of calm in which a world takes shape without products and refuse, a zone in which the mind is energy and raw material and is also the final product, the only intangible object for consumption.*<sup>8</sup>

And again in 1972:

*The objects we will need will be only flags or talismans, signals for an existence that continues, or simple utensils for simple operations. Thus, on the one hand, there will remain utensils ... on the other, such symbolic objects as monuments or badges ... objects that can easily be carried about if we should become nomads, or heavy and immovable if we decide to stay in one place forever.*<sup>9</sup>

Beyond the rule of the performance principle, which the philosopher Herbert Marcuse had already characterized as

defining life in terms of instruments and consumer goods, Superstudio projected a silent, anti-futurist and technologically optimistic utopia where, in the words of Marcuse's *Eros and Civilization* (1962),

*The level of living would be measured by other criteria: the universal gratification of the basic human needs, and freedom from guilt and fear - internalized as well as externalized, instinctual as well as 'rational'. ... In this case the quantum of instinctual energy still to be diverted to necessary labor ... would be so small that a large area of repressive constraints and modifications no longer sustained by external forces would collapse.*<sup>10</sup>

It is significant that Superstudio chose to represent such a non-repressive world in terms of an architecture that was virtually invisible [295], or, where visible, totally useless and by design auto-destructive (see their self-disintegrating mirror-glass dam for Niagara Falls). For all that they rendered the contradiction of the 'Continuous Monument' as an impenetrable mass reminiscent of Boullée, it was nonetheless a metaphysical image, as fleeting and as cryptic as the Suprematist monuments of Malevich or the 'wrapped' buildings of Christo, an artist who, after wrapping the Kunsthalle at Berne in 1968, went on to package and hence to 'silence' most of the institutional monuments of the Western world.

**295** Superstudio, 'A Journey from A to B', 1969. 'There will be no further reason for roads or squares.'

The growing awareness in the early 1960s that in common practice there was a fundamental lack of correspondence between the values of the architect and the needs and mores of the user led to a whole series of

reformist moves which sought in a variety of counterutopian ways to overcome this divorce of the designer from everyday society. These factions not only challenged the inaccessibility of the abstract syntax of contemporary architecture but also tried to devise ways in which architects could serve those poor sectors of the society not normally addressed by the profession. In his book *Supports: An Alternative to Mass Housing* (1972) N.J. Habraken first tackled the problem of building residential stock that could meet the variable needs of its users, and John Turner and William Mangin began in 1963 to write up their experience as consultants to the spontaneous 'squatter' cities then coming into existence around the perimeters of large South American towns. The following situation, as described by Mangin at the time, may be taken as typical of many other cities throughout the Continent:

*The tremendous population growth in Peru, together with the centralization of social, political, economic and cultural rewards in Lima, the capital city, has led to recent intensified migration from the provinces to Lima. It is safe to say that at least a million of Lima's two million people were born outside the city. The increase in the numbers of migrants to the city and the subsequent dramatic resettlement of many of them in 'unaided self-help' squatter settlements, 'barriadas' ... have drawn considerable attention locally and abroad and for the first time have made many Peruvians aware of the situation. The city has probably grown in the past in much the same way, but the magnitude and the visibility of the recent influx make it seem to be a new phenomenon. The migrants come from practically all regions and all social classes and ethnic groupings in the country.<sup>11</sup>*

Problems of this magnitude, of course, lie beyond the province of architecture as an autonomous discipline and

even outside the process of land settlement and building as it is commonly understood. All the same, the scale of the problem, its visibility and the need to confront it in a way that would assist the squatters to build in a more effective manner (the provision in most instances of water and sewer infrastructures), created a general climate in which the forty-year-old Neue Sachlichkeit formula of slum clearance followed by massive rehousing was for the first time subjected to radical reconsideration. Habraken argued that the whole approach needed to be rethought, not only in respect of the Third World but also in the face of growing user discontent in industrialized economies.

The establishment of alternative modes of practice to meet this situation, for both the developed and the underdeveloped world, has proved elusive, and the panacea of 'user participation' (hard to define appropriately and even more difficult to achieve) has only served to make us acutely aware of the intractability of the problem and of the fact that probably it can be effectively tackled only on a piecemeal basis, by responding appropriately to specific situations. Nevertheless, advocacy planning remains with us as a radical legacy of the 1960s, although the results of its application have varied widely, from the political manipulation of the underprivileged to the achievement of a section of low-rise housing [296] in Terni north of Rome, designed by Giancarlo de Carlo, in accordance with a brief developed as a result of extensive discussions with the local trade union. There is no doubt that this whole undertaking has resulted in housing of remarkable quality and variety, although the manner in which the users' desires were finally interpreted remains a controversial issue.

**296** De Carlo, Matteotti village, Terni, 1974-77.

As far as transforming the practice of the Neue Sachlichkeit was concerned, Habraken and his Foundation for Architectural Research (SAR) in Eindhoven did their technocratic best to take the promise of Yona Friedman's open infrastructural approach, his 'mobile architecture', to its logical conclusion. To this end they proposed a low-rise, multistorey, *support* structure, whose plan arrangement was undetermined, save for fixed access, kitchen and bathroom zones. Outside these zones the occupant would be free to arrange the plan of his allocated volume in any way he wished. Regrettably, Habraken intended to furnish this spatial matrix with industrialized, modular components fabricated along the lines of the car industry and brought to a level of technical sophistication and structural tolerance which has yet to be attained, even in the wholesale prefabricated building programmes of the Soviet Union. Moreover, like Friedman, he tended to overlook the fact that much of the inherent 'freedom' of the system would automatically disappear once it came under the auspices of monopoly capital. Housing after all has yet to become a truly consumable item. Fortunately, the SAR concept does not stand or fall by its technology alone, and Habraken has opened up a line of research which has yet to be fully explored. A quite remarkable work apparently influenced by Habraken's thought is the distinguished 'expandable' terrace housing built in Genterstrasse in Munich in 1971 by Otto Steidle and Doris and Ralph Thut.

## **Populism**

The Loosian recognition of the loss of cultural identity that urbanization had brought in its wake returned with a vengeance in the mid-1960s as architects began to realize that the reductive codes of contemporary architecture had led to an impoverishment of the urban environment. The exact manner in which this impoverishment has come

about, however – the extent to which it is due to abstract tendencies present in Cartesian rationality itself or alternatively to ruthless economic exploitation – is a complex and critical issue which has yet to be judiciously decided. It cannot be denied that the tabula rasa reductivism of the Modern Movement has played a salient role in the wholesale destruction of urban culture; thus the emphasis that the ‘Post-Modernist’ critique has placed on respecting the existing urban context can hardly be discredited. This anti-utopian ‘contextualist’ critique was already available in the 1960s, first in Colin Rowe’s neo-Sittesque approach to urban form (as taught in Cornell University and presented in his book of 1979, *Collage City*), and then in Robert Venturi’s *Complexity and Contradiction in Architecture* of 1966, in which he wrote:

*The main justification for honky-tonk elements in architectural order is their very existence. They are what we have. Architects can bemoan or try to ignore them or even try to abolish them, but they will not go away. Or they will not go away for a long time, because architects do not have the power to replace them (nor do they know what to replace them with), and because these commonplace elements accommodate existing needs for variety and communication. The old clichés involving both banality and mess will still be the context of our new architecture, and our new architecture significantly will be the context for them. I am taking the limited view, I admit, but the limited view, which architects have tended to belittle, is as important as the visionary view, which they have tended to glorify but have not brought about. The short-term plan, which expeditiously combines the old and the new, must accompany the long-term plan. Architecture is evolutionary as well as revolutionary. As an art it will acknowledge what is and what ought to be, the immediate and the speculative.<sup>12</sup>*

With the publication in 1972 of *Learning from Las Vegas*, written by Venturi, Denise Scott Brown and Steve Izenour, Venturi's sensitive and sane assessment of the cultural realities confronting everyday practice – the need to set order against disorder and vice versa – shifted from an acceptance of honky-tonk to its glorification; from a modest appraisal of Main Street as being ‘almost all right’ to a reading of the billboard strip as the transmogrified utopia of the Enlightenment, lying there like a science-fiction transposition in the midst of the desert!

This rhetoric, which would have us see A & P parking lots as the *tapis verts* of Versailles, or Caesar’s Palace in Las Vegas as the modern equivalent of Hadrian’s Villa, is ideology in its purest form. The ambivalent manner in which Venturi and Scott Brown exploit this ideology as a way of bringing us to condone the ruthless kitsch of Las Vegas, as an exemplary mask for the concealment of the brutality of our own environment, testifies to the aestheticizing intent of their thesis. And while their critical distance permits them the luxury of describing the typical casino as a ruthless landscape of seduction and control – they emphasize the two-way mirrors and the boundless, dark, disorientating timelessness of its interior – they take care to disassociate themselves from its values. This does not prevent them, however, from positing it as a model for the restructuring of urban form:

*Beyond the town the only transition between the Strip and the Mojave Desert is a zone of rusting beer cans. Within the town the transition is as ruthlessly sudden. Casinos whose fronts relate so sensitively to the highway turn their ill-kempt backsides towards the local environment, exposing residual forms and spaces of mechanical equipment and service areas.*<sup>13</sup>

The irony with which architects from Lutyens to Venturi have sought to transcend through wit the contradictory circumstances under which they are asked to build here seems to degenerate into total acquiescence; and the cult of ‘the ugly and the ordinary’ becomes indistinguishable from the environmental consequences of the market economy. Between the lines, the authors are brought to concede the superfluity of architectural design in a society that is exclusively motivated by ruthless economic drives, a society which has nothing of greater significance to represent than the giant neon-lit sky sign of the average strip. At the end of their analysis they are almost brought to concede that the loss of the monument is an absence that can hardly be compensated for by the sophistries of the ‘decorated shed’:

*The casino in Las Vegas is a big, low space. It is the archetype for all public interior spaces whose heights are diminished for reasons of budget or air conditioning ... Today, span is easy to achieve, and volume is governed by mechanical and economic limitations in height. But railroad stations, restaurants, and shopping arcades only ten feet high reflect as well a changing attitude to monumentality ... We have replaced the monumental space of Pennsylvania Station by a subway above ground, and that of Grand Central Terminal remains mainly through its magnificent conversion to an advertising vehicle.*<sup>14</sup>

Venturi is determined to present Las Vegas as an authentic outburst of popular fantasy. But, as Maldonado has argued in his book *La Speranza Progettuale (Design, Nature and Revolution)* of 1970, the reality would indicate the contrary, that Las Vegas is the pseudo-communicative culmination of ‘more than half a century of masked manipulatory violence directed towards the formation of an

apparently free and playful urban environment in which men are completely devoid of innovative will'.

Be this as it may, the Venturi faction did not take their Populist stand in isolation. On the contrary, they soon acquired a sympathetic following in both academic and professional circles – from the historian/critic Vincent Scully, who initially rallied to their cause with his laudatory introduction to Venturi's *Complexity and Contradiction*, and who went on to confirm his continuing support with his polemic *The Shingle Style Revisited* (1974), and from architects such as Charles Moore and Robert Stern, who, while adopting more varied *ad hoc* attitudes towards the manipulation of form, were nonetheless equally open to exploiting the essentially atectonic nature of the American balloon-frame.

The net effect, at least in Anglo-Saxon circles, has been to stimulate a rather indiscriminate reaction against all forms of modernist expression in architecture, a situation which the critic Charles Jencks was prompt to identify as 'Post-Modern'. In his book *The Language of Post-Modern Architecture* (1977), Jencks effectively characterized Post-Modernism as being a Populist-Pluralist art of immediate communicability. At the end of the first edition of this text, he hailed Gaudí's 'pre-modern' Casa Batlló (1906) as an exemplary work, which was readily accessible, inasmuch as the populace could decipher and identify with the iconography of Catalan separationism which it embodied (Jencks is referring here to the lancelike tower and the dragon's back roof representing the ultimate triumph of the Catalan hero St George over the 'dragon' of Madrid). Nationalist mythologies cannot be invented overnight, however, and the sobering fact remains that many so-called Populist works have nothing more to convey than a gratifying cosiness or an ironic comment on the absurdity of suburban kitsch. More often than not Post-Modernist architects use the private house as an occasion for indulging

in idiosyncratic obsessions, as is all too evident from the triviality of Stanley Tigerman's Hot Dog and Daisy houses of the mid-1970s.

Each year American Populism seemed to grow increasingly diffuse in its eclectic parodies from the Art Deco conceits of say Venturi's Brant House at Greenwich, Connecticut (1971) and Stern's closely related Ehrman House at Armonk, New York (1975), to the self-styled 'Popular Machinism' (in effect, neo-Art Deco) of Helmut Jahn's typical crystal skyscraper, the high-rise, curtain-walled structure rendered as a giant Wurlitzer organ [297]. These and other Populist divagations indicate that the purging simplicity of 'the dumb and the ordinary' (in Venturi's phrase) has now been left behind, along with the sparsely elegant Trubeck and Wislocki houses which Venturi realized on Cape Cod in 1970.

**297** Jahn, Bank of the South West, Houston, 1982 ff.

By scenographically simulating the profiles of classical and vernacular and thereby reducing the architectonics of construction to pure parody, Populism tends to undermine the society's capacity for continuing with a significant culture of built form. The consequence of this for the field as a whole has been a seductive but decisive drift towards a kind of 'tawdry pathos', to use Jencks's felicitous yet ambivalent assessment of the theatrical effects created by Moore and Turnbull in their designs for Kresge College on the University of California's Santa Cruz campus of 1974. The cynicism which ultimately motivated such scenographic operations would be openly conceded by Moore.

In contrast to the flaccid eclecticism of Moore (who abandoned the constructional purity of his Sea Ranch complex in Sonoma County, California, of 1966 as soon as it was completed), Frank Gehry's domestic work, above all his

own deconstructed ‘anti-house’ (compare Marcel Duchamp’s ‘anti-painting’) built in Santa Monica in 1979 [298], introduced a genuinely subversive element into the complacent decadence of American Populist architecture. However, this creative resistance has been more than balanced by the uncritical absorption of American Populism into the European mainstream, a cultural transfer effected by Paolo Portoghesi’s architectural section of the 1980 Venice Biennale which bore the seductive double title ‘The Presence of the Past’ and ‘The End of Prohibition’. It is significant that the full-size façades of Portoghesi’s ‘Strada Novissima’ in the Arsenal (fig. 315) were realized by scene-builders from the Italian film industry. The only exception was the design by Léon Krier, who, no doubt out of ‘moral’ deference to his beloved Heinrich Tessenow (see the latter’s *Handwerk und Kleinstadt* of 1910), insisted on building his façade out of real materials.

**298** Gehry, Gehry House, Santa Monica, California, 1979.

## Rationalism

Nothing could be further from the Populist programme, at least at its origin, than the Italian Neo-Rationalist movement, the so-called ‘Tendenza’, which was clearly an attempt to save both architecture and the city from being overrun by the all-pervasive forces of megalopolitan consumerism.

This return to the ‘limits’ of architecture was initiated by the publication of two singularly seminal texts, Aldo Rossi’s *L’architettura della città* (1966) and Giorgio Grassi’s *La costruzione logica dell’architettura* (1967). The first stressed the part to be played by established building types in determining the morphological structure of urban form as it develops in time; the second attempted to formulate the necessary compositional or combinatorial rules for

architecture – the intrinsic logic by which Grassi himself had arrived at his own highly restrained expression. While insisting that everyday needs must be met, both men rejected the principle by which form is supposed to follow function – ergonomics – and asserted instead the *relative autonomy* of architectural order. Aware of the tendency of interested rationality to absorb and distort every significant cultural gesture, Rossi structured his work about historical architectonic elements that could recall and yet transcend the rational if arbitrary paradigms of the Enlightenment – the pure form postulated in the second half of the 18th century by Piranesi, Ledoux, Boullée and Lequeu. The most enigmatic, not to say hermetic, aspect of his thought resides in his unstated preoccupation with the Panopticon (see Michel Foucault's *Surveiller et punir* of 1975) under the rubric of which he would surely include – after Pugin's *Contrasts* of 1843 – the school, the hospital and the prison. Rossi seems to have obsessively returned to these regulatory, quasi-punitive institutions which for him, in conjunction with the monument and cemetery, constitute the only programmes capable of embodying the values of architecture *per se*. After the thesis that Loos first set out in his essay *Architektur* of 1910, Rossi has recognized that most modern programmes are inappropriate vehicles for architecture and for him this has meant having recourse to a so-called analogical architecture whose referents and elements are to be abstracted from the vernacular, in the broadest possible sense. To this end his Gallaratese apartment block [299], designed as part of Carlo Aymonino's housing complex built on the outskirts of Milan in 1973, was an occasion to evoke the architecture of the traditional Milanese tenement. Similarly his town hall for Trieste, projected in the form of a penitentiary in 1973, was both a homage to the local 19th-century building tradition and a sardonic comment on the ultimate nature of modern bureaucracy. Like Léon Krier, who has since taken a similar

path, Rossi attempts to evade the twin chimeras of modernity – positivistic logic and a blind faith in progress – by returning to both the building typology and the constructional forms of the second half of the 19th century. Of his contribution to the Gallaratese complex, he wrote:

**299** Rossi, apartment block for the Gallaratese district of Milan, 1969–73.

*In my design for the residential block in the Gallaratese district of Milan (1969–73), there is an analogical relationship with certain engineering works that mix freely with both the corridor typology and a related feeling I have always experienced in the architecture of the traditional Milanese tenements, where the corridors signify a life-style bathed in everyday occurrences, domestic intimacy and varied personal relationships. However, another aspect of this design was made clear to me by Fabio Reinhart driving through the San Bernardino Pass, as we often did to reach Zürich from the Ticino Valley. Reinhart noticed the repetitive element in the system of open-sided tunnels, and therefore the inherent pattern. I understood ... how I must have been conscious of that particular structure ... without necessarily intending to express it in a work of architecture.<sup>15</sup>*

This analogical approach, suspended, as Rossi himself said, between ‘inventory and memory’, permeates his entire oeuvre, from the bunker-like resistance monument projected for Cuneo in 1962 to the Modena Cemetery of 1971 [**300**], with its references not only to the traditional ossuary but also, by association, to the factory and to the traditional farm of the Lombardy region.

**300** Rossi, project for Modena Cemetery, 1971. Aerial perspective.

Other Italians who made important contributions to the Tendenza were Vittorio Gregotti, whose book *Il territorio dell'architettura* (1966) had an extensive influence, and Enzo Bonfanti, who with Massimo Scolari edited the Neo-Rationalist magazine *Contraspazio* in the second half of the 1960s. Finally credit has to be accorded to Manfredo Tafuri, whose writings were a major influence on the movement, and to Franco Purini and Laura Thermes, whose theoretical projects explored the potential range of the Neo-Rationalist syntax. Paradoxically, the Tendenza has realized very little in Italy, though it has had an impact on Italian city planning and the historic preservation of urban centres, the classic example being Cervellati and Scannarini's analytical study of Bologna, which influenced the development of that city throughout the 1970s.

The most extensive realization of the Tendenza outside Italy has undoubtedly been in the Swiss region of the Ticino, where a 'rationalist' school of considerable vigour was already flourishing in the early 1960s. While Bruno Reichlin and Fabio Reinhart followed Rossi closely (see their Tonini House in Torricella, 1974 [301]), the Ticino School included architects whose work came into being under a much broader Rationalist influence. Typical in this regard is Aurelio Galfetti's Corbusian Rotalinti House, Bellinzona (1961), which predates the emergence of the Tendenza as an influence by almost a decade. It should also be noted that the Ticinese architects were privileged with links to the pre-war Italian Rationalist movement, in particular Alberto Sartoris and Rino Tami (see p. 360).

**301** Reichlin and Reinhart, Tonini House, Torricella, 1974.

Since the late 1960s Neo-Rationalism has attained a wide following throughout Continental Europe. In France, its influence is apparent in H.E. Ciriani's Noisy 2 apartment

complex [302] in Marne-la-Vallée near Paris (1980). In Germany, Neo-Rationalism has found its principal manifestation in the typological work of Mathias Ungers, Jürgen Sawade and J.P. Kleihues. Recent works of consequence in this regard are Ungers' extension to the Messehalle (1983) and his Architecture Museum (1984), both in Frankfurt. In Berlin a sampling of Rationalist work would surely include Kleihues' Vinetaplatz perimeter housing block in Wedding (1978) [303] and his megastructural hospital in Neukölln (1984).

**302** Ciriani, detail of Noisy 2, Marne-la-Vallée, 1980.

**303** Kleihues, perimeter block housing, Berlin-Wedding, 1978. This residential type has the capacity to engender both courtyards and streets.

Particularly significant in the German development was Unger's adoption of a modified Neo-Rationalist approach to urban form, after his return from the United States in 1975. His thesis of that time, that in the future we shall often find ourselves confronted with the problem of planned metropolitan shrinkage, rather than expansion or renewal, has imparted a certain urgency to his approach. Unger recommends a fragmentary urban strategy comprising forms of development limited in accordance with the topographical and institutional constraints of a specific task in a particular context. This appears in such projects as his 1976 Hotel Berlin or his 1978 proposal for a multi-use building in the centre of Hildesheim. Where in the Hotel Berlin he opted for a self-contained 'city in miniature', close to the devastated urban landscape of the historic Lutzowplatz, at Hildesheim he attempted to rationalize and reinterpret the received type of the medieval market hall [304]. His Schillerstrasse perimeter block in Berlin,

completed in 1982, was his only truly contextual realization of that period.

**304** Ungers, project for a 'Stadtloggia' in the marketplace at Hildesheim, 1980.

Ungers has been a major Neo-Rationalist theoretician and teacher, first in the Technische Universität in Berlin and then at Cornell University, where from 1967 to 1974 he directed the Department of Architecture. His consistent application of the principle of typological transformation to both teaching and practice gave his pedagogical method great conviction. He made the full range of this transformational precept explicit in 1982:

*When architecture is seen as a continuous process, in which theses and antitheses are dialectically integrated, or as a process, in which history is as closely involved as anticipation of history, in which the past has the same weight as looking forward to the future, then the process of transformation is not only the instrument of design, but it is the very object of design. At the same time it becomes possible to make reference to the specific reality of each individual site where the architecture will be built - and therefore to the genius loci and to discover the poetry of the place and give it expression. In this way the site is used to its best advantage.*

*The principle of transformation is active in all fields of nature, life and art. It is the principle of formation (Gestaltungsprinzip) capable of organizing divergent elements into a planned totality. Thus the principle of transformation as it can be grasped for example in the historical transformations of the town plan of Trier - converts a given stabilized organization into chaos and eventually, following the laws of chance, into a new order. ... A differentiated and planned organisation is submerged over*

*the course of time by chance and spontaneity, which in the end produce an organisation that is genuinely different and contrasts with the previous one; an organisation, that is of immediacy and pragmatic necessity.*<sup>16</sup>

This grounding of architecture in the dialectic of typological transformation exerted a major influence on the Luxembourg architect Robert Krier, who spent a number of years in Ungers' Cologne studio as his assistant. However where Ungers was to remain open to the free interchange and generation of both type and technique, including industrial technique, Robert Krier and, to an even greater extent, his brother Léon adopted an exclusively craft approach to the generation of tectonic and urban form. Thus we find Léon Krier writing in 1976:

*The debate which both Robert Krier and I want to raise with our projects is that of urban morphology as against the zoning of planners. The restoration of precise forms of urban space as against the wasteland which is created by zoning. The design of urban spaces, both traffic and pedestrian, linear and focal is, on the one hand, a method which is general enough to allow flexibility and change and, on the other, precise enough to create both spatial and built continuity within the city ... we try in our projects to re-establish the dialectic of building and public realm, of solid and void, of the built organism and the spaces it necessarily creates around itself ... the architectural language we use for fairly large urban parts is both simple and ambiguous. In Echternach (1970) [305] we used the same craft which after the war reconstructed the city, the Abbey, and the annex buildings.*

**305** L. Krier, project for Echternach, Luxembourg, 1970. The continuous pitched roof (centre to bottom right) contains shops, apartments and a school.

## **Structuralism**

The Krier brothers' credo that 'function follows form', their anti-technocratic attitude and their insistence on the cultural importance of place, all find a parallel in the work and thought of the Dutch architect Herman Hertzberger, who in every other respect could not be further removed from the ethos of the Tendenza. The most crucial influence on the thought and practice of Hertzberger has been Aldo van Eyck, who is responsible for the most consistently sustained and significant critique of modern architecture as an inseparable part of the Enlightenment. In 1962 Van Eyck delivered one of his sharpest attacks on Europocentrism and on the bankruptcy of imperialist culture:

*Western civilization habitually identifies itself with civilization as such on the pontifical assumption that what is not like it, is a deviation, less advanced, 'primitive', or, at best, exotically interesting at a safe distance.*<sup>17</sup>

Five years later, in his magazine *Forum*, Van Eyck anticipated many of the arguments since advanced by the Kriers, including a certain scepticism with regard to the notion of progress:

*It seems to me that past, present and future must be active in the mind's interior as a continuum. If they are not the artifacts we make will be without temporal depth or associative perspective. ... Man after all has been accommodating himself physically in this world for thousands of years. His natural genius has neither increased nor decreased during that time. It is obvious that the full scope of this enormous environmental experience cannot be combined unless we telescope the past. ... Architects nowadays are pathologically addicted to change, regarding it as something one either hinders, runs after, or at best keeps up with. This, I suggest, is why they tend to sever the*

*past from the future, with the result that the present is rendered emotionally inaccessible, without temporal dimension. I dislike a sentimental antiquarian attitude toward the past as much as I dislike a sentimental technocratic one toward the future. Both are founded on a static, clockwork, notion of time (what antiquarians and technocrats have in common), so let's start with the past for a change and discover the unchanging condition of man.*<sup>18</sup>

The unifying concept with which Dutch Structuralism hoped to overcome the reductive aspect of Functionalism was characterized by Van Eyck as labyrinthine clarity, a concept that has since been fully elaborated by his pupils. Thus Hertzberger wrote of their common notion of 'polyvalent space' in 1963:

*What we must look for, in place of prototypes which are collective interpretations of individual living patterns, are prototypes which make individual interpretations of the collective patterns possible; in other words, we must make houses alike in a particular way, such that everyone can bring into being his own interpretation of the collective pattern. ... Because it is impossible (and it always was) to make the individual setting that exactly suits everyone, we have to create the possibility for personal interpretation, by making things in such a way that they are indeed interpretable.*<sup>19</sup>

This precept has been the point of departure from which Hertzberger has evolved the rest of his work, culminating in the erection in 1974 of the Centraal Beheer insurance offices in Apeldoorn [306], built to his designs in the form of a 'city within a city'. This reinforced-concrete frame and concrete-block structure is ordered about an irregular cluster of working platforms set within a *regular* orthogonal tartan grid comprising floors, columns, light slots and

service ducts. Top-lit gallery spaces of varying height separate these 7.5-metre (24-foot) square platforms from one another and allow natural light to filter down to the lowest public levels. The suspended platforms provide a network of activity spaces that may be appropriated as either individual or group working stations, through the rearrangement of modular elements comprising desks, seats, light fittings, cabinets, couches and expresso machines, etc. According to Hertzberger this bunker-like labyrinth – reminiscent in its introspection of Wright's Larkin Building of 1904 – has been deliberately left unfinished so as to encourage the 'spontaneous' appropriation and decoration of the space by its immediate users. Hertzberger's antipathy to the mechanistic provision of flexibility, as found in the sophisticated infrastructural propositions of both Habraken and Friedman, seems to have been vindicated here by the apparent spontaneity and ease with which the working spaces have been taken over and modified. And while one can only be circumspect about the rhetorical comparison that Hertzberger draws between the appropriation of space in the Centraal Beheer and the Saussurian linguistic distinction between *langue* and *parole*, there is little doubt that his approach has done something to overcome the chronic inaccessibility of the architectural discourse in a Taylorized age.

**306** Hertzberger, Centraal Beheer Building, Apeldoorn. Holland, 1974.

The architects of the Tendenza would surely agree with Hertzberger's argument that the functionalist organization of residential units into strictly subdivided areas for living, dining, cooking, washing and sleeping is in itself a tyranny, and that we should attempt to return to the pre-industrial norm of interconnected rooms, offering an altogether looser fit between volume and activity (see Hertzberger's

'Diagoon' experimental houses built in Delft in 1971). On the other hand they would no doubt reject outright his 'casbah' concept, particularly as this appears in the Centraal Beheer, on the grounds that such an introverted type-form is incapable of providing representative public space at an urban scale. The Centraal Beheer is, indeed, indifferently related to its urban context. The fact that these Islamic 'bazaar' or 'patio' building types inherently afford no architectural element with which to express the hierarchical status of the entrance is also confirmed at the Centraal Beheer, where the company found it necessary to put up signs directing visitors to the point of entry.

Since the mid-1970s Hertzberger has modified his structuralist paradigm, not only in terms of the labyrinthine introspective model that has since appeared in an equally complex but spatially more generous version in the Ministry of Social Welfare realized in The Hague in 1990 [307], but also in terms of the mass forms assumed by recent works projected for and realized in Berlin - the unbuilt film centre for the Esplanade (1984) and the realized Lindenstrasse housing (1986), which are unified by circular or semicircular perimeter forms. Similarly, the four-square introspective school type developed in 1980 for his prototypical Apollo School in Amsterdam evolved through superimposed circular perimeters into the Ambonplein School, also in Amsterdam (1986), and then through freer adaptation into the curved and splayed classroom wings of a school extension at Aerdenhout [308, 309] completed in 1989. Of the Aerdenhout school extension building, which was distantly related to the work of Duiker, Joseph Buch has written:

**307** Hertzberger, Ministry of Social Welfare and Employment, The Hague, 1990. Transverse sectional perspective.

**308, 309** Hertzberger, school extension, Aerdenhout, 1989. Plan and section.

*Visibility from the classrooms to the central mixing space has been increased with more glazing; instead of a single, massive masonry stair, there is a mix of concrete seating steps and a light-weight open metal stair to the upper floor. Like the exterior stairs in the Amsterdam schools, this has been carefully composed, with the help of detail models, into a welded sculpture with roofs as in Berlage's Smeedwerk. Hertzberger's metal stairways make a direct link with nautical detailing; after all the modernists' fascination with ocean liners was not only about functionalism, but also the rich and complex spatial requirements of ship-layout. And this is indeed a rich and complex spatial experience – especially in such a small building. Hertzberger's recent work has complemented the sound basis of structuralism with a constantly increasing sense of narrative.<sup>20</sup>*

## Productivism

Nothing could be further from the Centraal Beheer than the three-storey glass-walled Willis-Faber and Dumas insurance offices [252, 310] built at Ipswich in 1974 to the designs of Foster Associates. For here all the emphasis has been placed on the elegance of the production itself, on realizing that which Max Bill once defined as the *Produktform*. It is interesting to note that Norman Foster cites just such *Produktformen* as the antecedents for his work, listing for instance Paxton's Crystal Palace, Charles and Ray Eames's own house built of 'off-the-peg' components at Santa Monica, California (1949), SOM's Marine Gunnery School at Great Lakes, Illinois (1954) [311], and Bill's Lausanne Exhibition Pavilion (1963). Following in this line, in opposition to Venturi's populism, Willis-Faber is the

undecorated shed par excellence; a form whose only differentiation, aside from its faceted serpentine curtain wall ([fig. 252](#)), resided in the swimming pool on the ground floor and the garden terrace restaurant on the roof.

**310** Foster Associates, Willis-Faber and Dumas Building, Ipswich, Suffolk, 1974.

**311** Skidmore, Owings and Merrill, Marine Gunnery School, Great Lakes, Illinois, 1954.

If Centraal Beheer is a hybrid building – derived in part from the 19th-century arcade (see Pomerantsev's New Trading Lines, Moscow, of 1893) and in part from the Middle Eastern casbah – Willis-Faber with its central escalator access hall lies somewhere between the 20th-century office tower and the 19th-century department store. The case can be made, as G.C. Argan has proposed, that building types embody certain values which were inherent at their inception and which survive any subsequent transposition. It is surely pertinent to the cultural significance of these buildings that in both cases the tertiary industry of informational exchange has come to be housed in spatial types which, in part at least, were once spaces of consumption – the casbah and the department store. It is against this background that Centraal Beheer can be seen as an attempt to overcome the bureaucratic division of labour through the 'anthropological' occupation of its labyrinthine office landscape. As in the traditional casbah, Hertzberger's fragmented *Bürolandschaft* encourages a pattern of behaviour that oscillates constantly between moments of work and moments of relaxation. In Willis-Faber, on the other hand, we are confronted with a *Bürolandschaft* that is a natural successor to Bentham's Panopticon of 1791, an open-plan form whose unremitting panorama of

order and control is supposedly compensated for by the provision of centralized amenities such as the staff restaurant and the swimming pool. Since these facilities are equally subject to company control the scope of the Panoptic domain appears to be total.

The contrast between these buildings also extends to the ambience established by their detailing. The exposed concrete-block partitions used throughout the Centraal Beheer are supposed to provoke the ‘anarchistic’ appropriation of the space while Willis-Faber posits the corporate image of a hypothetically egalitarian and affluent society through the absolute impeccability of its pristine skin and interior. Willis-Faber’s undulating curtain wall evokes Mies’s glass skyscraper proposals of the 1920s, although the actual technique employed, namely frameless glass sheets hung from the roof, like a necklace, connected by weatherproof neoprene joints, invites comparison with the achievements of those American minimalists who, having been trained by Eero Saarinen, came to prominence in the 1970s – Kevin Roche (Ford Foundation Building, New York, 1968, and United Nations Plaza Hotel, New York, 1973), Gunnar Birkerts (Federal Reserve Bank, Minneapolis, 1967), Cesar Pelli (Pacific Design Center, Los Angeles, 1971, and San Bernardino City Hall, 1972), and the talented but underappreciated Anthony Lumsden, whose most brilliant work remains largely unbuilt (e.g. his project for the Beverly Wilshire Hotel, Los Angeles, 1973).

The Willis-Faber building is Mies van der Rohe’s ‘almost nothing’ stripped of its Classicism and brought through the use of mirror-glass not only to answer the contextual imperative of relating to the scale and texture of the existing urban environment – in this instance, by simply reflecting it – but also to respond to the modernist predicament of the total loss of any commonly accessible, or acceptable, ‘received’ language. Instead Willis-Faber proffers a range of constantly changing kinaesthetic

sensations, opaque and scintillating in overcast light, reflective in the sun, transparent at night. And yet in a paradoxical way it shares with its Dutch counterpart the lack of any naturally inflective syntax, with the result that its entry is almost as invisible as the entrance to the Centraal Beheer.

Productivism in its purest sense is virtually indistinguishable, as a ‘modernist’ position, from the view which holds that an authentic modern architecture can and should be nothing more than elegant engineering, or certainly a product of industrial design on a giant scale. As I have already indicated, this is a view that has many antecedents in the history of the Modern Movement, not least among them the pioneering work of the French artisan/engineer Jean Prouvé, dating back to his curtain wall detailing of the Roland Garros Aeroclub in Paris of 1935 and his modifiable Maison du Peuple in Clichy, Paris, built in 1939 to designs which were developed in collaboration with the engineer Vladimir Bodiansky and the architects Marcel Lods and Eugène Beaudouin.

In taking Mies literally at his word (i.e. in the cult of ‘almost nothing’), one wing of Productivism has concentrated on air-supported, inflatable structures, as exemplified by Yutaka Murata’s Fuji Pavilion for Expo ’70 at Osaka, or on cable-suspended tent construction, of which the leading exponent is the German architect/engineer Frei Otto. Although Otto’s earliest tented structures date from the mid-1950s, he came to prominence with the large tents he designed for the International Horticultural Exhibition staged in Hamburg in 1963 and with the German Pavilion built for the Montreal World Exposition of 1967 [312]. Understandably, this whole approach has been largely restricted to temporary constructions, the largest to date being Otto’s roof covering the stadium for the Munich Olympics of 1972.

**312** Otto, German Pavilion at Expo 67, Montreal, 1967.

The basic precepts of Productivism may be summarized as follows. In the first place, the building 'task' should be accommodated, as far as is feasible, in an undecorated shed or hangar, this loft structure to be kept as open and as flexible as possible (on the model of the post-Second World War *bürolandschaft* ideal). In the second place, the adaptability of this volume should be maintained by the provision of a homogeneous and integrated network of services – power, light, heat and ventilation (see Cedric Price's concept of well-serviced anonymity). The third precept concerns the necessity of articulating and expressing both the structure and the services, usually achieved by following Kahn's famous separation of *served* and *servant* spaces. This last precept is patently demonstrated in the larger works of Richard Rogers, in his Centre Pompidou and later in his headquarters building for Lloyd's of London, designed in 1976 and completed some eight years later. The same basic idea is given a more discreet (and ultimately more serviceable) expression in Foster's Sainsbury Centre for the Visual Arts, completed at the University of East Anglia outside Norwich in 1978. Here the servant space is accommodated precisely within the depth of the trussed tubular steel supporting frames and 33-metre spans (see Kahn's Salk Institute at La Jolla of 1965: [fig. 250](#)). The fourth and all-important precept of Productivism is of course the 'unimpeded' manifestation of production itself, that is the expression of all component parts as *Produktformen* – a hardline rule which is rarely obeyed within the buildings of American minimalists (who show little interest in revealed construction), though both American and British Productivists strive for a smooth all-enveloping 'consumerist' skin. As Andrew Peckham observed of the Sainsbury Centre, '[Foster's] ability to

persuade us doesn't hinge on the traditional language of architecture but rather on the language of the modern material world – of industrial production and consumable finishes'.

One of the few basic variables in the Productivist approach is the extent to which the skin or the skeleton is the dominant mode of expression. This differentiation formerly permitted one to distinguish between the respective rhetorical attitudes adopted by the Foster and Rogers practices, with the former ultimately favouring the skin and the latter placing the prime expressive burden on the structure. Foster Associates modified their approach, however, turning increasingly towards the extrinsic expression of structure, most notably in their Renault factory at Swindon, Wiltshire, completed in 1983, and in their headquarters building for the Hongkong and Shanghai Banking Corporation in Hong Kong, designed in 1979 [313]. More than any of the more fantastic structures envisaged by Archigram or Buckminster Fuller, this layered skyscraper (comprising three 16.2-metre [53-foot] deep slabs rising to 28, 35 and 41 storeys respectively) invites comparison with the rocket-launching structures of Cape Canaveral – not for its overall size, but for the colossal scale of its articulated components, above all for its double-height deep, giant exposed tubular steel trusses, spanning 38.4 metres (126 feet), from which the floors are suspended, grouped in sets, seven at the bottom, then six, then five, and finally four floors which top out the structure. Foster's own words are only too eloquent of the strange mixture of reality and techno-romanticism which determined this building's form:

**313** Foster Associates, Hongkong and Shanghai Banking Corporation headquarters, Hong Kong, 1979–84.

*The difficulties of building rapidly and quietly on a tight site have been resolved by a combination of technologies ranging from indigenous craft-based family units to the spin-off from aerospace and other advanced industries. For example the fastest way to place caissons is to hand-dig them - a locally based technique that also happens to be noise-free. Likewise the most elegantly efficient structures to be seen in the Colony are the spider-webs of bamboo scaffolding which mark virtually all construction sites. However given the amount of imported hardware that buildings comprise, as well as an awareness of the very real relationship between weight and performance, the design has been strongly influenced by sources outside the traditional building industry. These range from the Concorde design team, to military establishments coping with mobile bridges to take tank loadings to the world of aircraft subcontractors, particularly in the States.<sup>21</sup>*

Foster's approach has been at its best when the repeated structural unit and the overall image of the building are mutually complementary, thereby yielding a structurally explicit yet self-sufficient form, as in the Renault Centre and in the athletic stadium projected for Frankfurt in 1986. The latter is shown roofed by a shallow 70-metre (230-foot) arch in tubular steel latticework. The hollow hexagonal cells formed by this double-layered roof structure afford ample surface and interstitial volume both for the filtration of daylight and for the accommodation of ventilation and lighting. The structural thrust of this metal roof is passed through hinged joints mounted on a series of *in situ* concrete ribs cast integrally with the recessed earthwork that is stepped so as to provide for stadium seating.

The Third London Airport at Stansted [314], completed in 1991, is similarly articulated about the theme of roofwork versus earthwork, the terminal building comprising a single volume poised on top of an undercroft housing baggage

facilities and main-line rail connections. The square glass-sided terminal, roofed by an ingenious assembly of twenty-two shallow domes, is divided by low partitions into departure and arrival concourses running side by side within the basic shed. On the model of the 19th-century railway terminus, every effort has been made to allow the passengers freedom of movement and to afford visual access to the means of transport - in this case, a clear view of the aircraft. While there is ample provision for the extension of the terminal in length, the two fronts to roadway and runway are conceived as fixed planes, thus allowing for expansion while retaining both the basic image and the approach to the terminal as stable conditions. Here as elsewhere in their high-tech work, Foster Associates have been brilliantly assisted by the engineering skills of Ove Arup and Partners.

**314** Foster Associates, Stansted Airport Terminal, 1991. North-south section. The roadway side is to the left, the runway side to the right.

## **Post-Modernism**

The architectural section of the Venice Biennale of 1980, 'The Presence of the Past', announced in various ways the emergence of Post-Modernism at a global level [315]. While it cannot be defined in terms of a specific set of stylistic and ideological characteristics, the fact that it tends to proclaim its legitimacy in exclusively formal - not to say superficial - terms, rather than in terms of constructional, organizational or socio-cultural considerations (such as were still central to the revisionism of Team X), already separates it, as a *modus operandi*, from the architectural production of the third quarter of the century. Notwithstanding Portoghesi's Biennale thesis, however, the past was already a presence in the major monuments of the period.

**315** Part of the ‘Strada Novissima’ at the Venice Biennale, 1980. From right to left the façades are by Hollein, Kleihues, Léon Krier, and Venturi, Rauch & Scott Brown.

Needless to say, the most distinguished American architects of the preceding decades, Mies van der Rohe and Louis Kahn, remained committed to a deconstruction of this historical legacy and to a reassembly of its precepts and components in accordance with the technological capacity of the epoch: the work remained expressive of its time, even if certain tectonic elements and compositional models were patently (and even polemically) determined by historical precedents. Mies van der Rohe’s Neue Nationalgalerie in Berlin (commissioned 1961, built 1965–68) and Kahn’s Kimbell Art Museum at Fort Worth, Texas (1967–72) illustrate this, the one tied to Schinkel and 19th-century ferrovitreous engineering, the other to Mediterranean vaulted construction and the tectonics of reinforced concrete. Millennialistic utopianism is of course largely absent from the later work of both men, the focus being instead upon the irreducible nature of tectonic construction and upon its sublime interaction with light, as the two transhistorical conditions of architecture, and, in Kahn’s case, upon a form of cosmological, cabballistic mysticism. Both Mies and Kahn would have seen the advent of Post-Modernism as cultural decadence; and indeed we have Kahn’s aphoristic reproach to Venturi, on seeing his proposal for the Philadelphia Bicentennial ‘strip’, to the effect that ‘colour ain’t architecture’.

We may claim, in this regard, that no ‘master’ architects in history were more misunderstood by their immediate pupils and heirs than Mies and Kahn. Mies was patently gratified by his success in formulating the normative American mode of corporate building from 1950 to 1975, the Miesian format becoming standard for a certain sector

of development in the post-war world (see Arthur Drexler's 'Buildings for Business and Government', MoMA, 1959), but both he and Kahn tended to find that the latent qualities of their work were better appreciated in Europe. Thus while the Skidmore, Owings and Merrill-dominated Chicago School succeeded in following Mies with verve and audacity, architects like Myron Goldsmith (United Airlines, Des Plaines, Illinois, 1962), Gene Summers (McCormick Place, Chicago, 1971) and Arthur Takeuchi (Wendell Smith Elementary School, Chicago, 1973) all failed to arrive at a fresh point of departure, possibly because they were unable to appreciate sufficiently the Romantic Classical and Suprematist dimensions which lay hidden in Mies's work. In the same way Kahn, despite his disciples of the Philadelphia School (Moore, Venturi, Vreeland and Giurgola), ultimately found a more sensitive following in Italian Neo-Rationalism and Dutch Structuralism.

This eclipse of Late Modernism in America, together with the 'consensus' rejection of what Jürgen Habermas called the 'unfinished modern project', as this had been so fervently integrated into the myth and reality of American development over the past century, is nowhere more evident than in the current repudiation of Frank Lloyd Wright, particularly when one considers Wright's indisputable status as one of the most fertile architects of this century. It is significant how, apart from the antiquarian art market, Wright continues to be ignored by the American protagonists of Post-Modernism, despite the efforts of Charles Jencks to validate Michael Graves by way of Wright in his book *Kings of Infinite Space* (1983). The reason for this amnesia is not hard to find, since Wright has to be counted among those modernists (Aalto would be another) whose work can in no way be dismissed as reductive or inaccessible. One may advance as evidence to the contrary the 200 Usonian houses which Wright built in his own

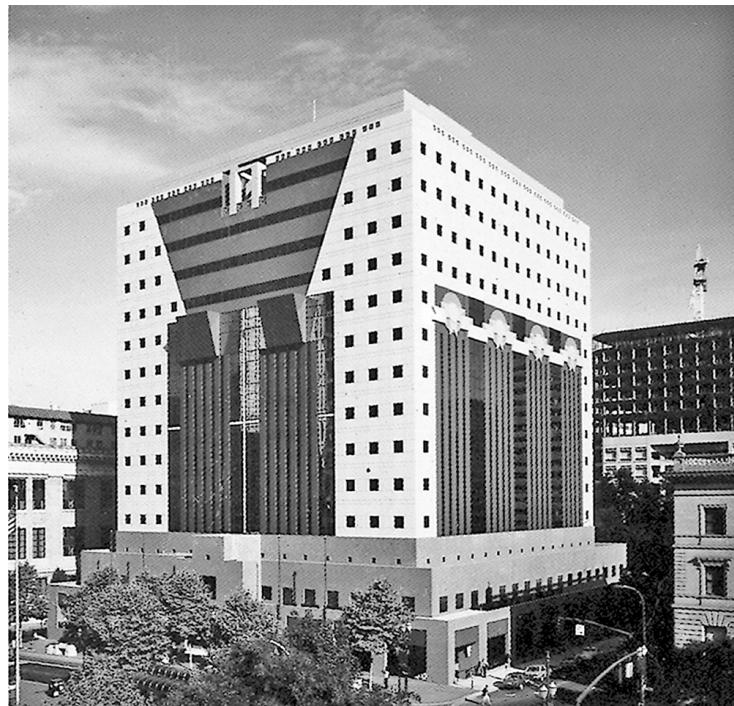
lifetime and think of them as an attempt to render the generic suburb as a cultivated domain.

It is difficult to arrive at the fundamental character of the Post-Modern phenomenon as this has emerged in architecture and almost every other cultural field. From one point of view it has to be acknowledged as an understandable reaction to the pressures of societal modernization and thus as an escape from the tendency of contemporary life to be totally dominated by the values of the scientific-industrial complex. Yet while the utopian emancipatory aims of the Enlightenment may now have to be relinquished in the name of more effective and *reassuring* forms of realism, there is little evidence that modern society either can or, finally, wishes to renounce the fundamental ‘benefits’ of modernization. Moreover, as Habermas suggested in his Theodor Adorno Prize address of 1980, it is the speed and rapacity of modern development, rather than avant-gardist culture, that is responsible for disruptions and disappointments, together with this apparently popular rejection of the new. In the end, even the staunchest Neo-Conservative will admit there is little chance of resisting, in real terms, the relentless progress of modernization.

If there is a general principle that can be said to characterize Post-Modern architecture, it is the conscious ruination of style and the cannibalization of architectural form, as though no value either traditional or otherwise can withstand for long the tendency of the production/consumption cycle to reduce every civic institution to some kind of consumerism and to undermine every traditional quality. Today the division of labour and the imperatives of ‘monopolized’ economy are such as to reduce the practice of architecture to large-scale packaging; and at least one Post-Modern architect, Helmut Jahn, has frankly acknowledged that this is how he sees his role. At its most predetermined, Post-Modernism reduces architecture

to a condition in which the ‘package deal’ arranged by the builder/developer determines the carcass and the essential substance of the work, while the architect is reduced to contributing a suitably seductive mask. This is the predominant situation in city-centre development in America today, where high-rise towers are either reduced to the ‘silence’ of their totally glazed, reflective envelopes or alternatively dressed in devalued historical trappings of one kind or another. Indeed Jahn’s Popular Machinism must be regarded as an attempt to combine both strategies.

Irrespective of whether this dematerialized historicism is made of actual stone and hence of necessity suspended from heavily reinforced steel skeletons, as in the case of Philip Johnson’s AT&T headquarters building, New York (1978–84), or whether more moderately it is a decorative curtain wall of glass hung off steel, or even whether, as in the case of Michael Graves’s Portland Building in Portland, Oregon (1979–82) [316], it is a painted concrete ‘billboard’ which enlarges to a gargantuan scale the graphic image of a ‘ruined’ and hence idealized garden folly, the result is fundamentally the same; that is to say, it is the Populist format of Venturi’s ‘decorated shed’. In any event, in all three options the impulse is scenographic rather than tectonic, so that not only is there a total schism between the inner substance and the outer form, but the form itself either repudiates its constructional origin or dissipates its palpability. In Post-Modern architecture classical and vernacular ‘quotations’ tend to interpenetrate each other disconcertingly. Invariably rendered as unfocused images, they easily disintegrate and mix with other more abstract, usually cubistic forms, for which the architect has no more respect than for his extremely arbitrary historical allusions.



**316** Graves, Portland Building, Portland, Oregon, 1979–82.

Michael Graves has been a symptomatic figure in this whole development. The method and the substance of his Post-Cubist collages (be they painted or built) changed radically around 1975 as he fell under the influence of Léon Krier's Neo-Classical 'speculations' and as Krier himself proceeded to eliminate all traces of modernist syntax from his own work. (Compare Krier's Royal Mint Square project of 1974 to his Lilliputian St Quentin-en-Yvelines school of 1978, where this expurgation has been brought to its logical conclusion.) Similarly, Graves passed from his still 'modernist' Crooks House project (1976) to the Neo-Classical 'folly' of his Fargo-Moorhead Cultural Center, proposed in 1977 for the twin towns on either side of the state line dividing Minnesota from North Dakota. From this point onwards 'inverted' Ledoux-like motifs prevail in his work, mixed with episodic fragments drawn from Krier, Hoffmann, Gilly, Schinkel, Cubism and even Art Deco.

Graves's largest work at the time, the Portland Building, projected him into the centre of the Post-Modern furore with

a public building where the most contentious aspect derived from the arbitrary painted configurations of the façade. To start with, the clients vigorously objected to the smallness of the predominantly square, pierced windows, on the grounds that in Oregon the sky is generally overcast, and as a result the windows were slightly enlarged. Then, as built, the building was criticized on architectonic grounds for the total falseness of its seemingly large windows, much of which consists of heavily tinted plate glass ‘drawn’ deceptively over solid concrete walls. Finally, and perhaps most seriously, it was challenged for its surprisingly insensitive attitude towards the site. Unlike the Beaux Arts buildings on either side – the City Hall and the County Courthouse – the Portland Building fails to acknowledge (except for a service entrance) the public amenity of the park to the south, and it also presents, despite its arcaded ground floor, a strangely inhospitable frontage to the surrounding streets.

Graves later gained commissions which seemed to be more suited to his imagistic approach, as one may judge from the diminutive civic scale of the Public Library in San Juan Capistrano, California (1983), with its regionally inflected Spanish Colonial roofs. Even here, however, a feeling begins to obtrude that like Olbrich, to whom his astonishing talent may be compared more revealingly than to Wright, he is more of a designer of *objets d’art* than an architect. With the later Graves, as Peter Eisenman put it, ‘a house, for example, is no longer conceived as a house (a social or ideological entity) or as an object (in itself) but rather as a painting of an object’.

As with Graves, so with many figures who had hitherto occupied Late Modernist positions – not only James Stirling, Philip Johnson and Hans Hollein, but other more recent converts to the Post-Modernist position such as Romaldo Giurgola, Moshe Safdie and Kevin Roche. In each instance, and to different degrees, the discourse of a ‘dematerialized’

historicism has been self-consciously embraced and virtually mixed at random with modernist fragments. More often than not the result is an inconclusive and seemingly pointless ‘cacophony’ in which the architect loses control of his material. This latter-day version of the ‘disappearance of the author’ is manifest in Stirling’s work, notably in his Stuttgart Staatsgalerie [317]. While that is the most distinguished public building of Stirling’s later career – emerging, as it did, out of three successive ‘neo-classical’ designs for German museums in the second half of the 1970s – it is also a strangely mixed and conflictive design. Framed in reinforced concrete, meticulously detailed and finished in finely wrought ashlar, the Staatsgalerie, while far from scenographic, is nonetheless atectonic in its general expression; that is to say, it is closer to Hoffmann and Asplund, above all to Asplund’s Woodland Cemetery Crematorium, Stockholm, of 1939, than it is to the avant-gardist, Constructivist precepts which inspired Stirling’s early career. The differences between Stirling and Asplund are equally significant, in particular the replacement of Asplund’s sense of liberal *civitas* – his feeling for an egalitarian civic identity – by Stirling’s ‘classical-populism’. I am referring to Stirling’s conviction, derived no doubt from modern museum management, that today the museum is not only an edifying institution but also a place of distraction and amusement. This last accounts for the mediation of the overall monumentality of the Staatsgalerie by certain Constructivist-influenced episodes, by a dramatically undulating curtain wall, by outsize tubular handrails, by symbolic aedicules in light tubular steel, in fact a whole plethora of brightly-coloured, toy-like elements designed to appeal to the man in the street.



**317** Stirling, Staatsgalerie, Stuttgart, 1980-83.

A similar approach asserted itself in other museum work by Stirling, the extension to the Fogg Museum at Harvard and the extension to the Tate Gallery in London. As far as the Tate is concerned it is as though the tradition of tectonic culture was being consumed before our eyes by the fashionable rediscovery of architectural rendering.

Another form of 'disappearance' is to eliminate the building altogether, to bury it in the earth so that it at once becomes an introverted interior rather than a testament to civic virtue. Hollein's Mönchengladbach museum (1983) and Giurgola's Australian Parliament Building in Canberra (completed in 1988) are but two examples of this approach.

Hollein seems to be the only figure among the Post-Modernists who was able to combine an indulgence in craft aestheticism with a revealing critical distance. This dichotomous brilliance was unequivocally demonstrated in his 'anti-façade' for the Venice Biennale of 1980, wherein he rang the changes from 'reality' to 'illusion' and from 'art' to 'nature' around the theme of the archetypal column ([fig. 315](#)). Greater scope for wit and high-quality finish had in

fact already presented itself to Hollein some three years earlier, when he realized an elaborate ceramic exhibition at the Tehran Museum (1977). In many respects that commission served to crystallize his high metaphoric style, which he also demonstrated in his Israeli and Austrian travel bureaus in Vienna realized between 1976 and 1978 [318]. It is no accident, as Friedrich Achleitner implied in his essay 'Viennese Positions' (1981), that Hollein was at his best in the design of interiors. Achleitner's brilliant analysis of Hollein's relationship to Viennese culture merits quoting at length:



**318** Hollein, travel agency in Opernring, Vienna, 1976–78.

*To do justice to Hollein, one cannot ignore the Viennese reality, where there is a tradition that is too old and a sensibility that is too highly developed with regard to the architectural setting as a counter-reality or a substitute reality. Going right back to Baroque, and maybe even*

*earlier, the ambivalence of the media of music and architecture (arising out of the repression of literature by the Hapsburgs) was favoured above the presentation of evident realities, and came to reflect collective and individual psychic states. The funeral processions and parades of the Hapsburgs had heralded the enactment of the passing away of the aristocratic-upper bourgeois world that preceded the first world war and was reflected on the aesthetic level within the Viennese secession. Vienna possessed a tradition of aesthetic heightening of reality, a long praxis of artificial remoteness. The techniques of montage, collage, alienation, striking allusions and disarming quotation are not cultivated in language alone.*

*Hans Hollein seems not only to incorporate this tradition, but his works, seen in an extreme perspective, are to the Viennese the unwelcome confirmation of an unchanged situation. The backdrops become visible once more: he possesses the instruments to give them prominence. Or is the travel office perhaps something different from the visual treatment of the satisfaction of needs that are in themselves simple, represented by the task of supplying information and travel tickets? But what many may find disturbing is that the aesthetic handling of the subject does not illustrate the content in a reductive fashion but the subject itself in all its facets. It is not a question, here, of information and travel documents, but of illusions, of desires, of dreams and even of clichés about the aims of travel. The client enters a world of references and illusions, no object is merely itself. The hall itself is not the lobby of a travel bureau but of a railway station, or at least it creates this association. The allusions possess differing degrees of immediacy; they range from the banal legibility of the airline counter (Adler), of shipping companies (Reling), up to the counter for theatre tickets (moving piece of scenery - the student has to guess the reason for himself) and the most subtle references to Egypt, Greece, India. Illusion and*

*orientation, information and learning are merged together while the money passes through the radiator grill of a Rolls-Royce - a wink at the client.*<sup>22</sup>

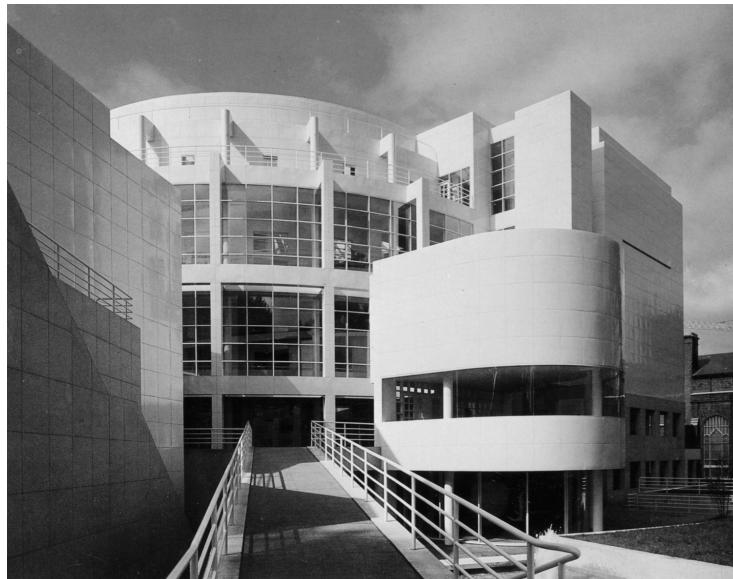
Nothing could be further from this resistant play with multiple levels of reality than the Taller de Arquitectura's Neo-Social-Realist *mega-classicism*, executed in prefabricated reinforced-concrete construction. Confronted with Ricardo Bofill's realization of large public housing projects in a number of French new towns - the urban quarter known as Les Arcades du Lac in St Quentin-en-Yvelines (1974-80) and the theatrical Abraxas perimeter block in Marne-la-Vallée (1979-83) - it would be hard to imagine another contemporary Western practitioner who has enjoyed such a close relationship with State power or indeed one who is so simplistically identified with power at this level. Needless to say this identification, together with the worldly success which it inevitably entails, does nothing to legitimize this 'incarceration' of collective dwelling units within a carcass of kitsch classicism. This technically accomplished parallel to Jahn's Popular Machinism understandably entails a total denial of the values placed on the monument by the Tendenza, for while this is by no means the first time that mass housing has been given a monumental form (see Karl Ehn's Karl Marx Hof, Vienna, of 1927 and Le Corbusier's Unité d'Habitation, Marseilles, of 1952), not since the time of the Ringstrasse - Loos's *Potemkinstadt* - has the aggregation of dwelling units been so scenographically rendered. It is surely symptomatic of our reactionary period, both from a social and an architectural point of view, that there is little accommodation or representation in Bofill's work of those 'social condensers' - nursery schools, meeting rooms, laundries and swimming pools - that public housing should demand. The absence of such amenities is as reactionary as the brutal nature of the standard apartments which are

wilfully encased in these false architraves and empty columns. Deprived of a terrace, since this does not accord with the assumed syntax, the upwardly mobile resident has to be satisfied with the operatic illusion of living in a palace.

### **Neo-Avant-Gardism**

Despite the American following enjoyed by Aldo Rossi, Neo-Rationalism did not exert much influence on the evolution of architecture in the United States. In part this may be attributed to its lack of relevance to the American city, which has nowhere the same typological and morphological complexity as its traditional European counterpart. The Tendenza thesis about the 'continuity of the monument' could have little credibility in a society where the urban context itself was so unstable. On the other hand, an attempt was made in the second half of the 1960s to develop a theoretical and artistic production as rigorous as that achieved by the pre-war European avant garde. This effort crystallized around the work of the Five Architects, a loosely knit association of New York-based architects under the leadership of Peter Eisenman. While two members of this group were to ground their work in pre-war avant-gardist aesthetic practice, namely Eisenman and John Hejduk, who respectively took Giuseppe Terragni and Theo van Doesburg as their models, the remaining three, Michael Graves, Charles Gwathmey and Richard Meier, assumed the Purist period of Le Corbusier as their point of departure. The New York Five's commitment to the idea of an autonomous architecture, removed from what they saw as the reductive functionalism of the Neue Sachlichkeit, was most categorically expressed in Eisenman's House VI, the Frank House, built at West Cornwall, Connecticut, in 1972, and in certain polemical projects by Hejduk - his Diamond House series (1963-67) and above all his Wall House (1970). While Hejduk later abandoned his early formalism to devote his

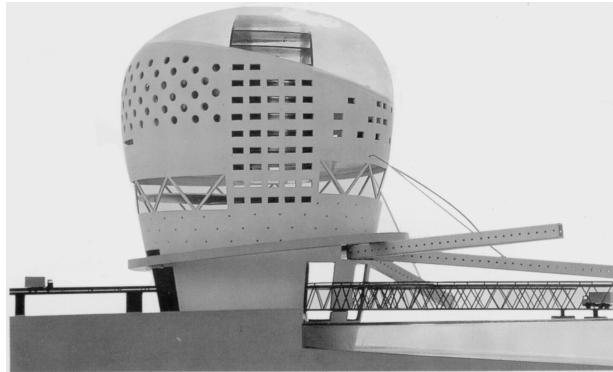
energies to the creation of a series of mythical settings such as his Berlin Masques of 1981, and Graves left behind his early Neo-Purism in favour of a more decorative Post-Modernist approach (e.g. his Disney Hotel in Orlando, Florida, of 1991), Gwathmey and Meier remained faithful to their Purist roots, above all perhaps Meier, whose High Museum in Atlanta, Georgia (1980–83) [319], and Applied Art Museum in Frankfurt (1979–84) have secured him a reputation as one of the most civic-minded architects of his generation. Indeed, he has since gone on to become an architect of world renown with major public works in cities as diverse as Los Angeles, Paris and Barcelona.



**319** Meier, High Museum, Atlanta, 1980–83.

The New York Five were not the only architects of the late 1960s to ground their work in the aesthetic and ideological premises of the 20th-century avant-garde. The role they assumed in New York was echoed in London in the work of OMA (Office for Metropolitan Architecture) [320], comprising Rem Koolhaas, Elia and Zoe Zenghelis and Madelon Vriesendorp. Like Hejduk, whose early work was eclectically inspired to an equal degree by Neo-Plasticism and the later

Mies, Koolhaas and Zenghelis predicated their urban projects on the Suprematist architecture of Ivan Leonidov while at the same time turning to Surrealist practice for ways of achieving what Roland Barthes termed a ‘répétition différente’.



**320** Koolhaas (OMA), project for ferry terminal, Zeebrugge, 1990. Model.

Apart from giving rise through teaching to a further generation of latter-day Neo-Suprematists, most notably Laurinda Spear of Arquitectonica (Spear House, Miami, 1979) and Zaha Hadid (Hong Kong Peak Competition, 1983), OMA created major civic design projects in the early 1980s including a villa colony for the Greek island of Antiparos and a housing quarter for Kochstrasse in Berlin.

By this date Eisenman had already produced his radical proposal for Cannaregio in Venice (1978), wherein rather than relating to the existing fabric he chose to superimpose an arbitrary grid on the city, one wilfully derived from Le Corbusier's unrealized Venice hospital project of 1964. Different-scaled versions of his House Xla, designed in the previous year, were installed at intervals where intersections of the grid coincided with existing open spaces within the Cannaregio district. This anti-humanist play with varying scales, for which Eisenman would later coin the term 'scaling', was meant to subvert any received ideas as to an appropriately anthropomorphic scale or civic dimension. With this singularly apocalyptic work Eisenman

introduced the quasi-Dadaist *modus operandi* with which he has been occupied ever since – namely, the derivation of form from more or less arbitrary overlays of different grids, axes, scales and contours, irrespective of whether these happen to have any connection with the real context: see his Berlin Friedrichstrasse housing (1982–86) and his Wexner Center for the Visual Arts at Columbus, Ohio (1983–89) [321].



**321** Eisenman, Wexner Center for the Visual Arts, Columbus, Ohio, 1983–89. Air view showing the insertion of the new building into the existing campus fabric.

The year 1983 was decisive for Neo-Avant-Gardism, as Rem Koolhaas and the American-based Swiss architect Bernard Tschumi competed openly in the final phases for the commission to realize the Parc de la Villette in Paris as a prototypical urban park for the 21st century. Significantly enough, given the subsequent emergence of ‘Deconstructivism’ in architecture, Tschumi’s premiated design of 1984 drew its essential *parti* from two basic paradigms: from Wassily Kandinsky’s didactic ‘point, line and plane’ as set forth in *Bauhausbücher No. 9*, and from an attitude to disjunctive spatial narrative, as derived from the non-sequential cutting technique pioneered by the Soviet avant-gardist film-maker Kuleshov. Variously indebted to

Russian Constructivism and even to the *mariage de contour* to be found in the early landscapes of Roberto Burle Marx and Oscar Niemeyer, Tschumi aspired to an anti-classical architecture in which unexpected configurations and uses would arise out of the red constructivist ‘follies’ that punctuate the park at regular intervals [322]. Tschumi differentiates between one folly and the next by ringing the changes on a series of prisms, cylinders, ramps, stairs and canopies that reflect to a limited extent basic differences in the structures’ content. This partial match and miss-match between programme and form appears again in the running track incongruously projected into the main volume of Tschumi’s Bibliothèque de France competition design of 1990.



**322** Tschumi, Parc de La Villette, designed 1984.

Similar but by no means identical ‘Deconstructivist’ strategies were employed by other architects throughout the 1980s, starting with Frank Gehry’s own house in Los Angeles of 1978 and continuing with a number of works all from the late 1980s, including Eisenman’s Bio-Center projected for Frankfurt, OMA’s apartment block realized at Checkpoint Charlie in Berlin, Daniel Libeskind’s apocalyptic City Edge proposal for the same city, and Koolhaas’s Dance

Theatre completed in The Hague in 1987. As Mark Wigley wrote in his catalogue to the 1988 show at the Museum of Modern Art, New York, entitled *Deconstructivist Architecture*,

*The form is distorting itself. Yet this internal distortion does not destroy the form. In a strange way, the form remains intact. This is an architecture of disruption, dislocation, deflection, deviation and distortion, rather than one of demolition, dismantling, decay, decomposition and disintegration. It displaces structure instead of destroying it.*

*What is finally so unsettling about such work is precisely that the form not only survives its torture but appears all the stronger for it. Perhaps the form is even produced by it. It becomes unclear which came first, the form or the distortion, the host or the parasite. ... No surgical technique can free the form; no clean incision can be made. To remove the parasite would be to kill the host. They comprise one symbiotic entity.<sup>23</sup>*

For all its critical acuity, much of the theoretical discourse that accompanies this work is both elitist and detached, testifying to the self-alienation of an avant garde without a cause: as the Dutch critic Arie Graafland remarked, where Constructivism intended a synthesis – the creation of a new architecture for a new society – Deconstructivism's anti-thesis derives, at least in part, from the recognition that global modernization is pushing so-called technocratic order beyond its rational limits. The predicament finds reflection in the thought of the founding father of Deconstruction, the philosopher Jacques Derrida, who has collaborated with Eisenman and Tschumi on the project for a small garden in the Parc de la Villette. Disenchanted with the idealistic legacy of the Enlightenment and caught as architecture is caught between the conflicting demands of practical and poetic reason, Derrida seems to aspire to an aporetic middle

ground somewhere between Heidegger's existentialist critique and a form of social pragmatism loosely related to the irreducible ambiguity of language.

# Chapter 5

## Critical Regionalism: Modern Architecture and Cultural Identity

*The phenomenon of universalization, while being an advancement of mankind, at the same time constitutes a sort of subtle destruction, not only of traditional cultures, which might not be an irreparable wrong, but also of what I shall call for the time being the creative nucleus of great civilizations and great culture, that nucleus on the basis of which we interpret life, what I shall call in advance the ethical and mythical nucleus of mankind. The conflict springs up from there. We have the feeling that this single world civilization at the same time exerts a sort of attrition or wearing away at the expense of the cultural resources which have made the great civilizations of the past. This threat is expressed, among other disturbing effects, by the spreading before our eyes of a mediocre civilization which is the absurd counterpart of what I was just calling elementary culture. Everywhere throughout the world, one finds the same bad movie, the same slot machines, the same plastic or aluminum atrocities, the same twisting of language by propaganda, etc. It seems as if mankind, by approaching en masse a basic consumer culture, were also stopped en masse at a subcultural level. Thus we come to the crucial problem confronting nations just rising from underdevelopment. In order to get on to the road toward modernization, is it necessary to jettison the old cultural*

*past which has been the raison d'être of a nation? ... Whence the paradox: on the one hand, it (the nation) has to root itself in the soil of its past, forge a national spirit, and unfurl this spiritual and cultural revendication before the colonialist's personality. But in order to take part in modern civilization, it is necessary at the same time to take part in scientific, technical, and political rationality, something which very often requires the pure and simple abandon of a whole cultural past. It is a fact: every culture cannot sustain and absorb the shock of modern civilization. There is the paradox: how to become modern and to return to sources; how to revive an old, dormant civilization and take part in universal civilization. ...*

*No one can say what will become of our civilization when it has really met different civilizations by means other than the shock of conquest and domination. But we have to admit that this encounter has not yet taken place at the level of an authentic dialogue. That is why we are in a kind of lull or interregnum in which we can no longer practice the dogmatism of a single truth and in which we are not yet capable of conquering the skepticism into which we have stepped. We are in a tunnel, at the twilight of dogmatism and the dawn of real dialogues.*

Paul Ricoeur

'Universal Civilization and National Cultures', 1961<sup>1</sup>

The term 'Critical Regionalism' is not intended to denote the vernacular as this was once spontaneously produced by the combined interaction of climate, culture, myth and craft, but rather to identify those recent regional 'schools' whose primary aim has been to reflect and serve the limited constituencies in which they are grounded. Among other factors contributing to the emergence of a regionalism of this order is not only a certain prosperity but also some kind

of anti-centrist consensus – an aspiration at least to some form of cultural, economic and political independence.

The concept of a local or national culture is a paradoxical proposition not only because of the present obvious antithesis between rooted culture and universal civilization but also because all cultures, both ancient and modern, seem to have depended for their intrinsic development on a certain cross-fertilization with other cultures. As Ricoeur seems to imply in the passage quoted above, regional or national cultures must today, more than ever, be ultimately constituted as locally inflected manifestations of ‘world culture’. It is surely no accident that this paradoxical proposition arises at a time when global modernization continues to undermine, with ever increasing force, all forms of traditional, agrarian-based, autochthonous culture. From the point of view of critical theory we have to regard regional culture not as something given and relatively immutable but rather as something which has, at least today, to be self-consciously cultivated. Ricoeur suggests that sustaining any kind of authentic culture in the future will depend ultimately on our capacity to generate vital forms of regional culture while appropriating alien influences at the level of both culture and civilization.

Such a process of assimilation and reinterpretation seems to be evident in the work of the Danish master Jørn Utzon, above all in his Bagsvaerd Church [323], completed in a suburb outside Copenhagen in 1976, wherein precast concrete infill elements of standardized dimensions are combined, in a particularly articulate way, with *in-situ* reinforced-concrete shell vaults which span the principal public volumes. And while this combination of modular assembly and *in-situ* casting may appear at first to be nothing more than an appropriate integration of the full range of concrete techniques which are now at our disposal, the case can be made that the way in which these

techniques are combined alludes to a number of dialogically opposed values.

**323** Utzon, Bagsvaerd Church, near Copenhagen, 1976: longitudinal section.

At one level, we may claim that prefabricated modular assembly not only accords with the values of universal civilization but also 'represents' its capacity for normative application, whereas an *in-situ* shell vault is a 'one-off' structural invention built into a unique site. It may be argued, in the light of Ricoeur, that where the one affirms the norms of universal civilization, the other proclaims the values of idiosyncratic culture. Similarly, we may construe these different forms of concrete construction as setting the rationality of normative technique against the arationality of symbolic structure.

Yet another dialogue is evoked as soon as one passes from the economically optimum modular cladding of the exterior (be it the concrete panels or the patent glazing in the roof) to the far from optimum *in-situ* frame and shell vault spanning the nave. Such vaulting, a relatively uneconomic mode of construction when compared say to steel trusswork, has been deliberately selected for its symbolic capacity: the vault signifies the sacred in Western culture. And yet the highly configurated section adopted in this instance can hardly be regarded as Western. Indeed the only precedent for such a section in a sacred context is Eastern – the Chinese pagoda roof, cited by Utzon in his seminal essay of 1962, 'Platforms and Plateaus: Ideas of a Danish Architect'.

The subtle and contrary allusions incorporated into this folded concrete shell roof have far greater consequence than the seeming perversity of reinterpreting an oriental timber form in occidental concrete technology; for while the main vault over the nave suggests by its scale and top

illumination the presence of a religious space, it does so in such a way as to preclude an exclusively occidental or oriental reading of the form by which it is constituted. A similar occidental/oriental interpenetration also occurs in the wooden fenestration and slatted partitions which seem to allude both to the Nordic vernacular of the stave church and to the fretted traditional timberwork of China and Japan. The intention behind these procedures of deconstruction and resynthesis seems to be as follows: first, to revitalize certain *devalued* Occidental forms through an Oriental recasting of their essential nature; and second to indicate the secularization of the institutions represented by these forms. This is arguably a more appropriate way to render a church in a secular age, where traditional ecclesiastical iconography always risks degenerating into kitsch.

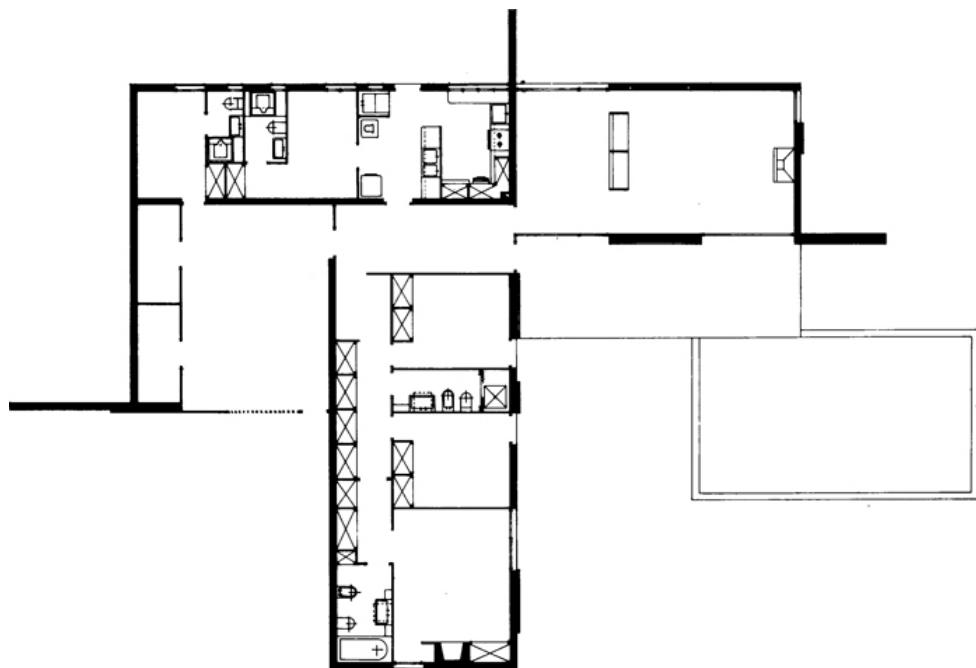
This revitalization of occidental elements with oriental profiles and vice versa by no means exhausts the ways in which the Bagsvaerd Church is inflected with regard to its situation in time and place. Utzon has also given it a barnlike form, using an agricultural metaphor as a way of giving public expression to a sacred institution. But this somewhat cryptic metaphor, associating religion with agrarian culture, may well change somewhat with the passage of time, for when the surrounding saplings have matured the church will for the first time appear within its own proper boundaries. This natural *temenos*, established by a veil of trees, will no doubt encourage a future reading of the building as a temple rather than a barn.

Exemplary of an explicitly anti-centrist regionalism was the Catalan nationalist movement which first emerged with the foundation of Grup R in Barcelona in 1952. This group, led by J.M. Sostres and Oriol Bohigas, found itself caught from the beginning in a complex cultural situation. On the one hand, it was obliged to revive the Rationalist, anti-Fascist values and procedures of GATEPAC (the pre-war Spanish wing of CIAM); on the other, it remained aware of

the political responsibility to evoke a realistic regionalism, accessible to the populace at large. This double-headed programme was first publicly announced by Bohigas in his essay, ‘Possibilities for a Barcelona Architecture’, published in 1951. The various cultural impulses that made up this heterogeneous Regionalism tend to confirm the unavoidably hybrid nature of modern regional culture. In the first place, there was the Catalan brick tradition which dated back to the period of ‘Modernismo’; then there was the influence of Neutra and Neo-Plasticism – the latter indubitably stimulated by Bruno Zevi’s *La Poetica dell’architettura neoplastica* of 1953. There followed the influential Neo-Realist style of the Italian architect Ignazio Gardella, who employed traditional shutters, narrow windows and wide overhanging eaves in his Casa Borsalino at Alessandria, Italy (1951–53). To this must be added, particularly for the practice of Mackay, Bohigas and Martorell, the influence of British New Brutalism (see their Paseo de la Bonanova apartments in Barcelona of 1973).

The career of the Barcelona architect J.A. Coderch has been typically *regionalist* inasmuch as it has oscillated, until recent date, between a Mediterraneanized, modern brick vernacular first formulated in his eight-storey ISM apartment block [324, 325], built in Barcelona in the Paseo Nacional in 1951 ('traditionally' articulated like the Casa Borsalino with full-height shutters and thin overhanging cornices), and the avant-gardist, Neo-Plastic cum Miesian composition of his Casa Catasus completed at Sitges in 1956 [326].

**324, 325** Coderch, ISM apartment block, Barcelona, 1951: view and typical floor plan.



**326** Coderch, Casa Catasus, Sitges, 1956: ground plan.

The more recent deliquescence of Catalan Regionalism is possibly most evident in the work of Ricardo Bofill and the Taller de Arquitectura. For where Bofill's Calle Nicaragua apartments of 1964 displayed an affinity for the reinterpreted brick vernacular of Coderch, the Taller was to adopt an overtly *Gesamtkunstwerk* approach in the late 1960s. With their Xanadu complex built in Calpe in 1967, they indulged in a form of kitsch romanticism. This obsession with castle images reached its apotheosis in their heroic, but ostentatious, tile-faced Walden 7 complex at Sant Just Desvern, Barcelona (1970–75). With its twelve-storey voids, underlit living rooms, minuscule balconies and its now disintegrating tile cladding, Walden 7 marks that unfortunate boundary where what was initially a critical impulse degenerates into highly photogenic scenography. In the last analysis, despite its passing homage to Gaudí, Walden 7 displays an affinity for admass seduction. It is an architecture of narcissism *par excellence*, for the formal rhetoric addresses itself to high fashion and to the mystique

of Bofill's flamboyant personality. The Mediterranean hedonistic utopia to which Walden 7 pretends collapses on closer inspection, above all at the level of the roofscape where a potentially sensuous environment has not been realized in occupation (compare Le Corbusier's Unité d'Habitation at Marseilles).

Nothing could be further from Bofill's intentions than the architecture of the Portuguese master Álvaro Siza Vieira, whose career, beginning with his swimming pool at the Quinta da Conceição, Matosinhos (1958–65), has been anything but photogenic. This much can be discerned not only from the fragmentary evasive nature of the published images but also from a text written in 1979:

*Most of my works were never published; some of the things I did were only carried out in part, others were profoundly changed or destroyed. That's only to be expected. An architectonic proposition whose aim is to go deep ... a proposition that intends to be more than a passive materialization, refuses to reduce that same reality, analysing each of its aspects, one by one; that proposition can't find support in a fixed image, can't follow a linear evolution. ... Each design is bound to catch, with the utmost rigour, a precise moment of the flittering image, in all its shades, and the better you can recognize that flittering quality of reality, the clearer your design will be. ... That may be the reason why only marginal works (a quiet dwelling, a holiday house miles away) have been kept as they were originally designed. But something remains. Pieces are kept here and there, inside ourselves, perhaps fathered by someone, leaving marks on space and people, melting into a process of total transformation.<sup>2</sup>*

This hypersensitivity to the transformation of a fluid and yet specific reality renders Siza's work more layered and rooted than the eclectic tendencies of the Barcelona School

for, by taking Aalto as his point of departure, he has grounded his buildings in the configuration of a specific topography and in the fine-grained texture of the local fabric. To this end his pieces are tight responses to the urban, land and marinescape of the Porto region. Other important factors are his deference towards local material, craftwork, and the subtleties of local light, a deference which is sustained without falling into the sentimentality of excluding rational form and modern technique. Like Aalto's Säynätsalo Town Hall, all of Siza's buildings are delicately laid into the topography of their sites. His approach is patently tactile and tectonic, rather than visual and graphic, from his Beires House built at Póvoa de Varzim in 1973-77 [327-329] to his Bouça Residents' Association Housing in Porto (1973-77). Even his small urban buildings, of which the best is probably the Pinto branch bank built at Oliveira de Azemeis in 1974, are topographically structured.

**327-329** Siza, Beires House, Póvoa de Varzim, 1973-77: view, and plans of the upper floor and ground floor.

The projected work of the New York-based Austrian architect Raimund Abraham seems to be informed by similar concerns, inasmuch as this architect has always stressed place creation and the topographic aspects of built form. The House with Three Walls (1972) and the House with Flower Walls (1973) are typical of his pieces of the early 1970s, wherein the project evokes an oneiric image while insisting on the inescapable materiality of building. This concern for tectonic form and for its capacity to transform the surface of the earth has been carried over into Abraham's designs made for the International Building Exhibition in Berlin, above all into his project for South Friedrichstadt designed in 1981 [330].

**330** Abraham, project for South Friedrichstadt, Berlin, 1981: detail showing half the site.

An equally tactile attitude obtains in the work of the veteran Mexican architect Luis Barragán, whose finest houses (many of which have been erected in Mexico City, in the suburb of Pedregal) assume a topographic form. As much a landscape designer as an architect, Barragán has always sought a sensual and earthbound architecture; an architecture compounded of enclosures, stelae, fountains and watercourses; an architecture laid into volcanic rock and lush vegetation; an architecture that refers indirectly to the Mexican *estancia*. Of Barragán's feeling for mythic and rooted beginnings it is sufficient to cite his memories of the apocryphal *pueblo* of his youth:

*My earliest childhood memories are related to a ranch my family owned near the village of Mazamitla. It was a pueblo with hills, formed by houses with tile roofs and immense eaves to shield passersby from the heavy rains which fall in that area. Even the earth's color was interesting because it was red earth. In this village, the water distribution system consisted of great gutted logs, in the form of troughs, which ran on a support structure of tree forks, 5 meters high, above the roofs. This aqueduct crossed over the town, reaching the patios, where there were great stone fountains to receive the water. The patios housed the stables, with cows and chickens, all together Outside, in the street, there were iron rings to tie the horses. The channeled logs, covered with moss, dripped water all over town, of course. It gave this village the ambience of a fairy tale. No, there are no photographs. I have only its memory.<sup>3</sup>*

This remembrance was surely influenced by Barragán's lifelong involvement with Islamic architecture. Similar

feelings and concerns are evident in his opposition to the invasion of privacy in the modern world and in his criticism of the subtle erosion of nature which has accompanied post-war civilization:

*Everyday life is becoming much too public. Radio, TV, telephone all invade privacy. Gardens should therefore be enclosed, not open to public gaze. ... Architects are forgetting the need of human beings for half-light, the sort of light that imposes a tranquility, in their living rooms as well as in their bedrooms. About half the glass that is used in so many buildings – homes as well as offices – would have to be removed in order to obtain the quality of light that enables one to live and work in a more concentrated manner ...*

*Before the machine age, even in the middle of cities. Nature was everybody's trusted companion. ... Nowadays, the situation is reversed. Man does not meet with Nature, even when he leaves the city to commune with her. Enclosed in his shiny automobile, his spirit stamped with the mark of the world whence the automobile emerged, he is, within Nature, a foreign body. A billboard is sufficient to stifle the voice of Nature. Nature becomes a scrap of Nature and man a scrap of man.<sup>4</sup>*

By the time of his first house and studio built around an enclosed court in Tacubaya, Mexico D.F., in 1947, Barragán had already moved away from the syntax of the International Style. And yet his work has always remained committed to that abstract form which has characterized the art of our era. Barragán's penchant for large, almost inscrutable abstract planes set into the landscape is perhaps at its most intense in his gardens for the residential districts of Las Arboleadas (1958–61) and Los Clubes (1961–64) and in his freeway monument, Satellite City Towers, designed with Mathias Goeritz in 1957 [331].

**331** Barragán and Goeritz, Satellite City Towers, Mexico City, 1957.

Regionalism has, of course, manifested itself in other parts of the Americas: in Brazil in the 1940s in the early work of Oscar Niemeyer and Affonso Reidy; in Argentina in the work of Amancio Williams, above all in Williams's bridge house in Mar del Plata of 1943–45 and more recently perhaps in Clorindo Testa's Bank of London and South America, Buenos Aires (1959); in Venezuela, in the Ciudad Universitaria built to the designs of Carlos Raúl Villanueva between 1945 and 1960; on the West Coast of the United States, first in Los Angeles from the late 1920s in the work of Neutra, Schindler, Weber and Gill, and then in the Bay Area school founded by William Wurster and in the Southern California work of Harwell Hamilton Harris. No-one has perhaps expressed the idea of a Critical Regionalism more forcefully than Harris, in 'Regionalism and Nationalism', an address which he first gave to the North West Regional Council of the AIA in Eugene, Oregon, in 1954. This was the occasion when he first advanced his felicitous distinction between restricted and liberated regionalism:

*Opposed to the Regionalism of Restriction is another type of regionalism; the Regionalism of Liberation. This is the manifestation of a region that is especially in tune with the emerging thought of the time. We call such a manifestation 'regional' only because it has not yet emerged elsewhere. It is the genius of this region to be more than ordinarily aware and more than ordinarily free. Its virtue is that its manifestation has significance for the world outside itself. To express this regionalism architecturally it is necessary that there be building – preferably a lot of building – at one time. Only so can the expression be sufficiently general, sufficiently varied, sufficiently forceful to capture people's*

*imaginings and provide a friendly climate long enough for a new school of design to develop. ...*

*San Francisco was made for Maybeck Pasadena was made for Greene and Greene. Neither could have accomplished what he did in any other place or time. Each used the materials of the place; but it is not the materials that distinguish the work. ... A region may develop ideas. A region may accept ideas. Imaginations and intelligence are necessary for both. In California in the late Twenties and Thirties modern European ideas met a still developing regionalism. In New England, on the other hand, European Modernism met a rigid and restrictive regionalism that at first resisted and then surrendered. New England accepted European Modernism whole because its own regionalism had been reduced to a collection of restrictions.*<sup>5</sup>

Despite an apparent freedom of expression, such a level of liberative regionalism is difficult to achieve in North America today. Within the current proliferation of highly individualistic forms of expression (work which is often patronizing and self-indulgent rather than critical) only a few firms today display any profound commitment to the unsentimental cultivation of a rooted American culture. An atypical example of current 'regional' work in North America is the sensitively sited houses designed by Andrew Batey and Mark Mack for the Napa Valley area in California; another is the work of the architect Harry Wolf, whose activity has been largely restricted to North Carolina. Wolf's metaphorical approach to place-making was polemically demonstrated in his 1982 competition entry for the Fort Lauderdale Riverfront Plaza [332]. As his description indicates, the intention was to inscribe Fort Lauderdale's history into the site through the incidence of light.

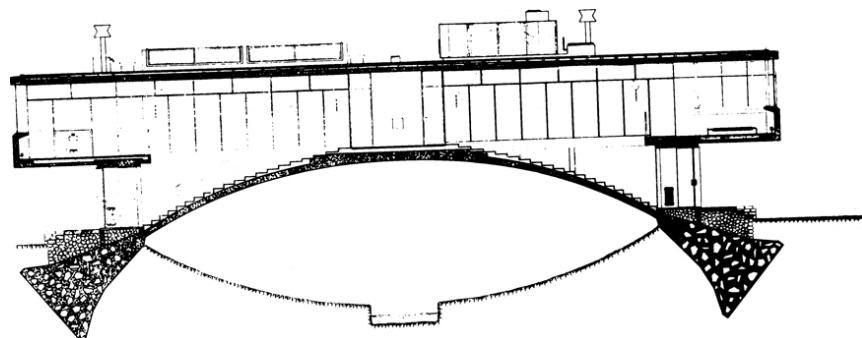
**332** Wolf, model for the Fort Lauderdale Riverfront Plaza, 1982.

*The worship of the sun and the measurement of time from its light reach back to the earliest recorded history of man. It is interesting to note in the case of Fort Lauderdale that if one were to follow a 26° latitudinal line around the globe, one would find Fort Lauderdale in the company of Ancient Thebes - the throne of the Egyptian sun god, Ra. Further to the East, one would find Jaipur, India, where heretofore, the largest equinoctial sundial in the world was built 110 years prior to the founding of Fort Lauderdale.*

*Mindful of these magnificent historical precedents, we sought a symbol that would speak of the past, present and future of Fort Lauderdale. ... To capture the sun in symbol a great sundial is incised on the Plaza site and the gnomon of the sundial bisects the site on its north-south axis. The gnomon of the double blade rises from the south at 26° 5' parallel to Fort Lauderdale's latitude. ...*

*Each of the significant dates in Fort Lauderdale's history is recorded in the great blade of the sundial. With careful calculation the sun angles are perfectly aligned with penetrations through the two blades to cast brilliant circles of light, landing on the otherwise shadowy side of the sundial. These shafts of light illuminate an appropriate historical marker serving as annual historical reminders.<sup>6</sup>*

In Europe the work of the architect Gino Valle may be considered regional inasmuch as his career has always been centred on the city of Udine. Aside from his concern for the city, Valle made one of the earliest post-war reinterpretations of the rural vernacular of Lombardy in his Casa Quaglia, built at Sutrio in 1954-56 [334].



**333** Williams, bridge house, Mar del Plata, 1943–45.

**334** Valle, Casa Quaglia, Sutrio, 1954–56.

It is surely understandable that in Europe, where the vestigial city-state was still very much alive, such a regionalist impulse would emerge spontaneously after the Second World War when a number of significant architects were able to contribute to the culture of their native cities. Among those of the post-war generation who remained committed to a regional inflection one may count Ernst Gisel in Zürich, Jørn Utzon in Copenhagen, Vittorio Gregotti in Milan, Sverre Fehn in Oslo, Aris Konstantinidis in Athens, and last but by no means least Carlo Scarpa in Venice [335].

**335** Scarpa, Querini Stampalia Gallery, Venice, 1961–63.

Switzerland, with its intricate linguistic boundaries and its tradition of cosmopolitanism, has always displayed strong regionalist tendencies. The cantonal principle of admission and exclusion has always favoured extremely dense forms of expression, with the canton favouring local culture and the Federation facilitating the penetration and assimilation of foreign ideas. Dolf Schnebli's Corbusian vaulted villa at Campione d'Italia on the Italo-Swiss frontier (1960) [336] may be seen as initiating the resistance of Ticinese architecture to the influence of commercialized modernism.

This resistance found an echo immediately in other parts of Switzerland, in Aurelio Galfetti's equally Corbusian Rotalinti House in Bellinzona (1961) and in Atelier 5's assumption of the Corbusian *béton brut* manner, as this appeared in Siedlung Halen, built outside Berne in 1960.

**336** Schnebli, Castioli House, Campione d'Italia, 1960.

Today's Ticinese Regionalism has its ultimate origins in the pre-war protagonists of the Italian Rationalist movement in Switzerland, above all the work of the Italian Alberto Sartoris and the Ticinese Rino Tami. Sartoris's main realizations were in the Valais, most notably a church at Lourtier (1932) and two small concrete-framed houses, built in association with viticulture and under construction between 1934 and 1939, of which the most renowned is the Morand-Pasteur residence at Saillon (1935). Of the compatibility between Rationalism and rural architecture Sartoris wrote: 'Rural architecture, with its essentially regional features, is perfectly at home with today's rationalism. In fact it embodies in practice all those functional criteria on which modern building methods are essentially based.' Where Sartoris was primarily a polemicist keeping the Rationalist precepts alive throughout the Second World War and its aftermath, Tami was mainly a builder, and the Ticinese architects of the 1960s were able to take his Cantonal Library at Lugano (1936-40) as an exemplary Rationalist work.

Ticinese practice in the mid-1950s, with the exception of Galfetti, was orientated towards the work of Frank Lloyd Wright rather than the prewar Italian Rationalists. Of this period Tita Carloni wrote: 'We naively set ourselves the objective of an "organic" Ticino, in which the values of modern culture were to be interwoven in a natural way with

local tradition.' Of Ticinese Neo-Rationalism in the early 1970s we find him writing:

*The old Wrightian schemata were superseded, the chapter of 'big commissions' for the State, with good reformist intentions, was closed. It all had to be begun all over again, from the ground upwards, housing, schools, minor didactic restorations, competition entries as an opportunity to investigate and critically assess the contents and forms of architecture. In the meantime cultural confrontation in Italy, political commitment, and the exacting confrontation with our own native intellectuals, especially Virgilio Gilardoni, meant that history books started to appear on our desks, and above all faced us with the challenge of critically reappraising the whole evolution of modernism, most especially that of the 1920s and 1930s.*<sup>7</sup>

As Carloni suggests, the strength of provincial culture resides in its capacity to condense the artistic and critical potential of the region while assimilating and reinterpreting outside influences. The work of Carloni's prime pupil, Mario Botta, is typical in this respect, with its concentration on issues which relate directly to the specific place while adapting methods and approaches drawn from outside. Formally educated under Scarpa, Botta was fortunate enough to work, however briefly, for both Kahn and Le Corbusier during the short period when they projected civic works for Venice. Evidently influenced by these men, Botta went on to appropriate the Italian Neo-Rationalist methodology as his own, while simultaneously retaining, through Scarpa, an unusual capacity for the craft enrichment of his form. One of the most exotic examples of this occurs in his application of *intonaco lucido* (polished plaster) to the fireplace surrounds of a converted farmhouse at Ligrignano in 1979.

Two other traits in Botta's work may be seen as critical: on the one hand, his constant preoccupation with what he terms 'building the site', and on the other, his conviction that the loss of the historical city can only be compensated for by 'cities in miniature'. Thus Botta's school at Morbio Inferiore is interpreted as a micro-urban realm – as a cultural compensation for the evident loss of civic life in Chiasso, the nearest large city. Primary references to the culture of the Ticino landscape are also evoked by Botta at a typological level, such as the house at Riva San Vitale [337], which refers obliquely to the traditional towerlike country summer houses or *rocoli* which were once plentiful in the region.

**337** Botta, house at Riva San Vitale, 1972–73.

Aside from these references, Botta's houses serve as markers in the landscape – as indicators of limits or boundaries. The house in Ligornetto, for example, establishes the frontier where the village ends and the agrarian system begins: its main aperture (a large 'cut-out' opening) turns away from the fields and towards the village. Botta's houses are often treated as bunker/belvederes, where the fenestration opens onto choice views in the landscape, concealing the rapacious suburban development that has taken place in the Ticino since 1960. Instead of being terraced into the site, they 'build the site', after the thesis advanced by Vittorio Gregotti in *// territorio dell'architettura* (1966). They declare themselves as primary forms, set against the topography and the sky. Their capacity to harmonize with the partially agricultural nature of the region stems directly from their *analogical* form and finish; that is to say, from the fair-faced concrete block of their structure and from the silo or barnlike shells in which

they are housed, these last alluding to the traditional agricultural structures from which they are derived.

Despite this feeling for a domestic sensibility which is at once modern and traditional, the most critical aspect of Botta's achievement resides in his public projects; in particular in the two large-scale proposals which he designed in collaboration with Luigi Snozzi. Both of these are 'viaduct' buildings and as such owe something to Kahn's Venice Congress Hall project of 1968 and to Rossi's first sketches for Gallaratese. The 1971 Botta/Snozzi project for the Centro Direzionale, Perugia, is projected as a 'city within a city', and the wider implications of this design clearly stem from its potential applicability to many megalopolitan situations throughout the world. Had it been realized, this centre, conceived as a 'viaduct-megastructure', could have established its presence in the urban region without compromising the historic city or fusing with the chaos of the surrounding suburban development. A comparable clarity and appropriateness obtained in their Zürich Station proposal of 1978, where a multilevel bridge concourse would not only have accommodated shops, offices, restaurants and parking but would also have constituted a new head building while some of the original functions were retained in the existing terminus [338].

**338** Botta and Snozzi, project for the alteration of Zürich Station, 1978: the original station building and bridge across the tracks.

It is no accident that Tadao Ando, who is one of the most regionally conscious architects in Japan, should be based at Osaka rather than Tokyo and that his theoretical writings should formulate more clearly than any other architect of his generation a set of precepts which come close to the idea of Critical Regionalism. This is most evident in the tension that he perceives as obtaining between universal

modernization and the idiosyncrasy of rooted culture. Thus we find him writing in an essay entitled 'From Self-Enclosed Modern Architecture toward Universality':

*Born and bred in Japan, I do my architectural work here. And I suppose it would be possible to say that the method I have selected is to apply the vocabulary and techniques developed by an open, universalist Modernism in an enclosed realm of individual life styles and regional differentiation. But it seems difficult to me to attempt to express the sensibilities, customs, aesthetic awareness, distinctive culture, and social traditions of a given race by means of the open, internationalist vocabulary of Modernism.<sup>8</sup>*

By 'enclosed modern architecture' Ando intends the literal creation of walled enclaves by virtue of which man is able to recover and sustain some vestige of his former intimacy with both nature and culture. Thus he writes:

*After World War II, when Japan launched on a course of rapid economic growth, the people's value criteria changed. The old, fundamentally feudal family system collapsed. Such social alterations as concentration of information and places of work in cities led to overpopulation of urban centers and underpopulation of agricultural and fishing villages and towns (as was probably true in other parts of the world as well). Overly dense urban and suburban populations made it impossible to preserve a feature that was formerly most characteristic of Japanese residential architecture: intimate connection with nature and openness to the natural world. What I refer to as an enclosed Modern Architecture is a restoration of the unity between house and nature that Japanese houses have lost in the process of modernization.<sup>9</sup>*

In his small courtyard houses, often set within dense urban fabric, Ando employs concrete in such a way as to stress the taut homogeneity of its surface rather than its weight, since for him it is the most suitable material ‘for realizing surfaces created by rays of sunlight ... [where] walls become abstract, are negated, and approach the ultimate limit of space. Their actuality is lost, and only the space they enclose gives a sense of really existing.’

While the cardinal importance of light is stressed in theoretical writings of both Kahn and Le Corbusier, Ando sees the paradox of spatial limpidity emerging out of light as being peculiarly pertinent to the Japanese character and with this he makes explicit the broader meaning which he attributes to the concept of a self-enclosed modernity:

*Spaces of this kind are overlooked in the utilitarian affairs of everyday and rarely make themselves known. Still they are capable of stimulating recollection of their own innermost forms and of stimulating new discoveries. This is the aim of what I call closed modern architecture of this kind is likely to alter with the region in which it sends out roots and to grow in various distinctive individual ways. Still, though closed, I feel convinced that as a methodology it is open in the direction of universality.*<sup>10</sup>

What Ando has in mind is the development of an architecture where the tactility of the work transcends the initial perception of its geometric order. Precision and density of detail are both crucial to the revelatory quality of his forms under light. Thus he wrote of his Koshino House of 1981 [**339, 340**]:

**339, 340** Ando, Koshino House, Osaka, 1981: view and ground plan.

*Light changes expressions with time. I believe that the architectural materials do not end with wood and concrete that have tangible forms but go beyond to include light and wind which appeal to our senses. ... Detail exists as the most important element in expressing identity. ... Thus to me, the detail is an element which achieves the physical composition of architecture, but at the same time, it is a generator of an image of architecture.*

In their article on the Critical Regionalism of the Greek architects Dimitris and Susana Antonakakis, entitled 'The Grid and the Pathway' (*Architecture in Greece*, 1981), Alex Tzonis and Liane Lefaivre demonstrate the ambiguous role played by the *Schinkelschüler* in the building of Athens and the founding of the Greek state:

*In Greece historicist regionalism in its neoclassical version had already met with opposition before the arrival of the Welfare State and of modern architecture. It is due to a very peculiar crisis which explodes around the end of the nineteenth century. Historicist regionalism here had grown not only out of a war of liberation; it had emerged out of interests to develop an urban élite set apart from the peasant world and its rural 'backwardness' and to create a dominance of town over country: hence the special appeal of historicist regionalism, based on the book rather than experience, with its monumentality recalling another distant and forlorn élite. Historical regionalism had united people but it had also divided them.<sup>11</sup>*

The various reactions which followed the proliferation of the 19th-century Greek Nationalist Neo-Classical style varied from the vernacular historicism of the 1920s to the committed modernism of the 1930s as this became manifest in the work of such architects as Stamo Papadaki and J.G. Despotopoulos. As Tzonis points out, a consciously

regionalist modernism emerged in Greece with the earliest works of Aris Konstantinidis (his Eleusis house of 1938 and his Kifissia garden exhibition of 1940), and this line was developed further by Konstantinidis in the 1950s, in various low-cost housing schemes and in the hotels he designed for the Xenia national tourist organization between 1956 and 1966. In all of Konstantinidis's public work a tension appears between the universal rationality of the trabeated reinforced-concrete frame and the autochthonous tactility of the native stone and blockwork which is used as infill. A much less equivocal regionalist spirit permeates the park and promenade that Dimitris Pikionis designed for the Philopappou Hill in 1957, on a site adjacent to the Acropolis in Athens [341]. In this archaic landscape, as Tzonis and Lefavire point out,

**341** Pikionis, park paving on the Philopappou Hill, Athens, 1957.

*Pikionis proceeds to make a work of architecture free from technological exhibitionism and compositional conceit (so typical of the mainstream of architecture of the 1950s), a stark naked object almost dematerialized, an ordering of 'places made for the occasion', unfolding around the hill for solitary contemplation, for intimate discussion, for a small gathering, for a vast assembly. ... To weave this extraordinary braid of niches and passages and situations, Pikionis identifies appropriate components from the lived-in spaces of folk architecture, but in this project the link with the regional is not made out of tender emotion. In a completely different attitude, these envelopes of concrete events are studied with a cold empirical method, as if documented by an archaeologist. Neither is their selection and their positioning carried out to stir easy superficial emotion. They are platforms to be used in an everyday sense but to supply that which, in the context of*

*contemporary architecture, everyday life does not. The investigation of the local is the condition for reaching the concrete and the real, and for rehumanizing architecture.*<sup>12</sup>

Tzonis sees the work of the Antonakakis partnership as combining the topographic path of Pikionis with the universal grid of Konstantinidis. This dialectical opposition seems to reflect once again that split between culture and civilization remarked on by Ricoeur. Perhaps no work expresses this duality more directly than their Benaki Street apartments built in Athens in 1975 [**342**, **343**], a layered structure wherein a labyrinthine route drawn from the Greek island vernacular is woven into the regular grid of the supporting concrete frame.

**342, 343** Antonakakis, apartment building in Benaki Street, Athens, 1975.  
Transverse section and view.

As with the largely overlapping categories used in the previous chapter, Critical Regionalism is not so much a style as it is a critical category orientated towards certain common features, which may not always be present in the examples cited here. These features, or rather attitudes, may perhaps be best summarized as follows.

(1) Critical Regionalism has to be understood as a marginal practice, one which, while it is critical of modernization, nonetheless still refuses to abandon the emancipatory and progressive aspects of the modern architectural legacy. At the same time, Critical Regionalism's fragmentary and marginal nature serves to distance it both from normative optimization and from the naïve utopianism of the early Modern Movement. In contrast to the line that runs from Haussmann to Le Corbusier, it favours the small rather than the big plan.

(2) In this regard Critical Regionalism manifests itself as a consciously bounded architecture, one which rather than emphasizing the building as a free-standing object places the stress on the territory to be established by the structure erected on the site. This ‘place-form’ means that the architect must recognize the physical boundary of his work as a kind of temporal limit – the point at which the present act of building stops.

(3) Critical Regionalism favours the realization of architecture as a *tectonic* fact rather than the reduction of the built environment to a series of ill-assorted scenographic episodes.

(4) It may be claimed that Critical Regionalism is regional to the degree that it invariably stresses certain site-specific factors, ranging from the topography, considered as a three-dimensional matrix into which the structure is fitted, to the varying play of local light across the structure. Light is invariably understood as the primary agent by which the volume and the tectonic value of the work are revealed. An articulate response to climatic conditions is a necessary corollary to this. Hence Critical Regionalism is opposed to the tendency of ‘universal civilization’ to optimize the use of air conditioning, etc. It tends to treat all openings as delicate transitional zones with a capacity to respond to the specific conditions imposed by the site, the climate and the light.

(5) Critical Regionalism emphasizes the tactile as much as the visual. It is aware that the environment can be experienced in terms other than sight alone. It is sensitive to such complementary perceptions as varying levels of illumination, ambient sensations of heat, cold, humidity and air movement, varying aromas and sounds given off by different materials in different volumes, and even the varying sensations induced by floor finishes, which cause the body to experience involuntary changes in posture, gait,

etc. It is opposed to the tendency in an age dominated by media to the replacement of experience by information.

(6) While opposed to the sentimental simulation of local vernacular, Critical Regionalism will, on occasion, insert reinterpreted vernacular elements as disjunctive episodes within the whole. It will moreover occasionally derive such elements from foreign sources. In other words it will endeavour to cultivate a contemporary place-orientated culture without becoming unduly hermetic, either at the level of formal reference or at the level of technology. In this regard, it tends towards the paradoxical creation of a regionally based 'world culture', almost as though this were a precondition for achieving a relevant form of contemporary practice.

(7) Critical Regionalism tends to flourish in those cultural interstices which in one way or another are able to escape the optimizing thrust of universal civilization. Its appearance suggests that the received notion of the dominant cultural centre surrounded by dependent, dominated satellites is ultimately an inadequate model by which to assess the present state of modern architecture.

## Part IV

# World Architecture and the Modern Movement

**344** BBPR, Torre Velasca, Milan, 1956–58.

Two publications issued around the millennium attempted to arrive at an assessment of the overall impact of modern architectural culture on a world scale. The first of these surveys consisted of ten volumes, under the series title *World Architecture: A Critical Mosaic, 1900–2000*. This work divided the world into ten ‘continental’ regions, with each of ten regional committees nominating 100 significant buildings, making 1,000 in total for the whole 20th century.

A second publication, with a similar (but not identical) aim, was Luis Fernández-Galiano’s survey *Atlas: Global Architecture Circa 2000*, published in Madrid in 2007. This work also involved dividing the world into ten ‘continental’ regions, although it yielded rather different subsets. Galiano expanded this survey three years later into four separate volumes published under the title *Atlas: Architectures of the 21st Century*. This taxonomy paradoxically broadened the survey by breaking it down into four separate megaregions. Each was further subdivided into ten separate segments, with each segment illustrating works selected by a single commentator who was also commissioned to write a comprehensive critical essay.

Any such critical assessment under the rubric of a single author is subjective. The general question arises as to what criteria justify the selection of particular works and the exclusion of others seemingly accorded a comparable value.

One may oppose any kind of reductive aestheticism whereby architecture is conceived of as fine art writ large. At the same time, we know that certain places at certain times have the capacity to yield a particularly rich collective culture of architecture and that, conversely, in other places and at other times, the situation remains obdurately unproductive and discordant.

Much of this has to do with the absence of consistent patronage. Architecture is an expensive material culture, one that is highly dependent on the development of a society in a particular place over a specific time period. In this regard the impact of underdevelopment and overdevelopment in each instance must be acknowledged: in the former, the lack of necessary wherewithal to develop the society and in the latter, too much development at a pace too fast to allow for the sufficiently critical level of creative mediation.

Another anomalous condition arising out of globalization is the fact that many architects work today outside their home countries. Even if we exclude the spectacular work of peripatetic, so-called ‘starchitects’ because they depend on branding for their worldly success, we are nonetheless left with the fact that a work designed by a foreign architect should be considered part of the architectural culture of the region in which it is realized.

Although the ensuing Part IV is devoted largely to works produced in the last fifty years, on occasion I go back another two decades to the aftermath of the Second World War in both Europe and the United States, or in the case of China, by the Communist Revolution of 1949. Part IV should therefore be read as a mosaic in more ways than one – an assembly of pieces that have a necessarily disjunctive and fragmentary character.

A culture of architectural quality is a relatively ineffable phenomenon. It is sometimes carried forward by a single exceptionally talented individual who will exercise an

extremely fertile influence on an entire epoch; or by a school, whether a more literal academic establishment or a shared architectural ethos or collective practice sustained intensely for a decade or more, but that will peter out owing to a change in patronage or the swings of fashion and economic fortune. Thus, one might identify another deeper strand of ‘regionalism’ that is critically creative in itself, but also ‘critical’ in the sense of its fragile and unique poetic character. This is the key of momentary culture that I seek to identify and recognize in Part IV of this global history. Works that do not rise to this level do not make the cut.

# Chapter 1

## The Americas

The architecture of the North American continent has always been strongly influenced by that of Europe, above all by the prestigious Ecole des Beaux-Arts in Paris. This school played a crucial role in the formation of North American architects throughout the last half of the 19th century, especially such pioneering figures as Richard Morris Hunt, who was the first American to study there. He was followed by Henry Hobson Richardson and, briefly, Louis Sullivan. At the same time, Frank Lloyd Wright's affectionate reference to Sullivan as his *Lieber Meister* ('dear master') testifies to the extent to which Germanic culture was also influential in the United States, particularly on the so-called Chicago School. At the turn of the century, a third of the city's population was of German origin and many people still spoke the language, which in turn served to sustain German theatres and newspapers and, above all, performances of Wagnerian operas in Adler and Sullivan's Auditorium Building of 1889. This Teutonic influence would become more widespread in the 20th century through successive waves of talented German architects who escaped the Third Reich after 1933 and who would eventually have a decisive impact on the evolution of modern architecture in the United States. Even so, the Ecole des Beaux-Arts still exercised an influence, mainly through the activity of French architects who, at the turn of the century, were appointed as professors in a number of leading American universities. The first German-speaking modernists to arrive in the States after the First World War were the Austrians Rudolf Schindler

and Richard Neutra, who went to the Mid-West to work for Wright in 1914 and 1923 respectively, and thereafter established their own practices in Los Angeles. Apart from Ludwig Mies van der Rohe, who arrived in Chicago in 1937 to take up the directorship of the Armour Institute (which would later become the Illinois Institute of Technology, or IIT), the next wave of influential Germans included the Bauhaus refugees Walter Gropius and Marcel Breuer, accompanied by the former Berlin planner Martin Wagner; these three joined forces to establish the Graduate School of Design (GSD) at Harvard University. They were soon accompanied by the Swiss-German architectural historian Sigfried Giedion, whose Charles Eliot Norton Lectures given at Harvard in 1939 were published in 1941 under the title *Space, Time and Architecture*, a book that would exercise a major influence on all subsequent histories of the Modern Movement.

The main aim in this section has been to focus on those aspects of the Modern Movement in the States that have been omitted from previous editions, such as the role played by the Catalan émigré José Luis Sert, particularly with regard to the formulation of the discipline of urban design at Harvard. An equally significant independent contribution was made by the distinguished Finnish architect Eliel Saarinen, who went to the States after gaining second place in the international competition of 1922 for the new headquarters of the *Chicago Tribune* newspaper. Saarinen's design, in effect, established the set-back, attenuated high-rise format of what would become the typical Art Deco skyscraper.

Absent in previous editions is the extent to which both Mies van de Rohe at the IIT and Walter Gropius in Harvard greatly influenced the education of architects in the States, particularly during the first two decades (1945–65) of the Pax Americana, the period of relative peace worldwide overseen by the United States. The scope of this influence is

indicated by the technologically advanced but expressively discreet corporate practice of Skidmore, Owings and Merrill (SOM) and by the works of Gropius's post-war GSD protégés such as John Johansen, Edward Larrabee Barnes, Ulrich Franzen and Paul Rudolph, who in various ways produced their own versions of the New Monumentality. As far as the US is concerned, Rudolph is surely the most egregious omission from previous editions of this history, above all for his singular masterwork, the Art & Architecture Building for Yale University in New Haven, Connecticut, of 1963.

Although modern architecture in the United States has been prominently featured in previous editions of this work, there were few references to its northern neighbour, Canada. At the turn of the century, as Richard Ingersoll has pointed out, Canadian architects were just as classically trained as their American counterparts, although their formation in this regard was as much British as it was French, as is evident from John Lyle's Union Station in Toronto, completed in 1930, with its monumental enfilade of Doric columns. At that time, the most sophisticated classically trained architect in Canada was unquestionably the Quebecois architect Ernest Cormier, whose magnificent Supreme Court of Canada building in Ottawa, with its monumental mansard roofs, was completed five years after his crypto-modernist University of Montreal of 1944. The proto-Art Deco aspects of Cormier's work meant that the Modern Movement *per se* did not fully emerge in Canada until well after the Second World War, most decisively with Arthur Erickson's Simon Fraser University campus laid out on high ground just outside Vancouver in 1962. However, a more general adoption of modern architecture in Canada came with Expo '67, built in Montreal on an island in the St Lawrence River. This happens to be the last time that the US participated seriously in a world exhibition, which it did via the US Pavilion, a large geodesic sphere designed by R. Buckminster Fuller. This technological *tour de force* was

matched by Moshe Safdie's equally radical multistorey housing scheme, known as Habitat '67, which at great cost to the Canadian government attempted to demonstrate the potential for delivering some of the benefits of suburban living in an otherwise dense, medium-rise residential structure.

Both before and after the Second World War, South America would be seen from Europe and even from the United States as a kind of proving ground for the Modern Movement. This much became particularly evident with the New York Museum of Modern Art's exhibition 'Brazil Builds' of 1943 and, twelve years later, 'Latin American Architecture since 1945', curated by Henry-Russell Hitchcock. Brazil has always occupied a privileged position in the received histories of the Modern Movement since the 1950s, as was borne out by the first edition of this history, in which the works of Lúcio Costa and Oscar Niemeyer were highlighted, notably the Brazilian Pavilion at the New York World's Fair of 1939 and the Ministry of Education and Health Building in Rio de Janeiro of virtually the same date.

In this regard, Brazil has served as the template for my analysis of the Modern Movement in other Latin American countries including Argentina, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela. As might be expected, the breakthrough of the Modern Movement in each of these countries occurred at a slightly different time and in different initial works, ranging from Gregori Warchavchik's own house in São Paulo of 1927 to Carlos Raúl Villanueva's Gran Colombia School built in the outskirts of Caracas in 1939, a discernibly modern work following his return to Venezuela after studying at the Ecole des Beaux-Arts in Paris. For each of the eight Latin American countries included in this edition I have not been able to do more than to trace the evolution of a singular manner of building in relation to the modernization of society in general and the ideological line adopted by those in power at a particular

moment in time; for example, when Getúlio Vargas rose to power in Brazil, becoming president in 1930, he immediately commissioned Lúcio Costa to go to Portugal, with the naive aim of evolving an authentic national style for Brazil to be ostensibly derived from the rooted Portuguese vernacular.

It is remarkable that in Latin America, where the political scene has often been in a state of turmoil, it has been possible for successive governments to introduce significant socio-economic reforms irrespective of whether they happen to be implemented from the Left or the Right. A typical leftist government in this regard was the presidency of Lázaro Cárdenas in Mexico. He redistributed land to previously landless tenants and, further, in 1938, expropriated the international oil companies that had invested in the Mexican oilfields. This action was even supported by President Franklin D. Roosevelt during the height of the American New Deal, the programmes, public work projects and reforms designed to stimulate economic recovery after the Great Depression. It was in just such a climate that the Mexican state constructed rural school buildings throughout the country. Something similar would happen during the presidency of Fernando Belaúnde Terry in Peru, over the years 1963–68, when his government backed the international experimental housing settlement known as PREVI, and again during the brief presidency of Salvador Allende in Chile (1970–73), when an attempt was made to build housing *en masse* through the adoption of Russian prefabricated methods.

## **United States**

Apart from Frank Lloyd Wright, who became influential worldwide following the publication of the Wasmuth volumes of his work in 1910, the socially progressive ideology of the Modern Movement first appeared in the US via European émigrés. The first to arrive were the Viennese architects Rudolf Schindler and Richard Neutra, both of whom went to the States with the express purpose of working for Wright, Schindler in 1914 and Neutra in 1924. The other figure of consequence was the Finnish architect Eliel Saarinen, who migrated to the States after gaining second place in the international competition of 1922 for the design of the multi-storey *Chicago Tribune* building with an abstract mullioned design that anticipated the Art Deco skyscraper manner of the 1920s. Soon after his arrival Saarinen met the newspaper tycoon George Booth, who commissioned him to design and direct the Cranbrook Academy of Art in Michigan, which was conceived as a utopian educational community, primarily dedicated to the teaching of applied art. Similarly, in 1922 the young Swiss architect William Lescaze also arrived in the US, where he eventually formed a partnership with the Philadelphia architect George Howe; together they designed the remarkable fifteen-storey Philadelphia Savings Fund Society (PSFS) bank building of 1936 [345], which for the next thirty years remained the only high-rise structure in Philadelphia. These European pioneers were followed by a wave of leading German architects who, after the Nazi seizure of power in Germany in 1933, immigrated either to the USSR or to the US, depending on their ideological affinities. The first was Ludwig Mies van der Rohe, who was invited to the US in 1937 to head up the department of architecture in the Armour Institute, Chicago, its name being soon changed to the Illinois Institute of Technology, or IIT. Mies's arrival in Chicago was followed by that of László Moholy-Nagy, who would found the New Bauhaus in the same city in 1938.

**345** Howe & Lescaze, PSFS Bank Building, Philadelphia, 1936.

It is difficult to overstate the extent of Mies's influence on American post-war architecture, particularly on the post-1945 corporate practice of Skidmore, Owings and Merrill (SOM). Even an architect as individualistic and eclectic as Eero Saarinen, despite being a protégé of his father, Eliel, was equally affected by Mies van der Rohe's work, as is evident from the GM Headquarters built to his design in Detroit between 1949 and 1955. The one exceptional talent in the Chicago office of SOM who had the independence to depart from Mies, despite his professional formation at the IIT, was Myron Goldsmith, whose Kitts Peak Observatory, Arizona (1962), was a striking work of engineering comparable in its originality to Fazlur Khan's Hajj Terminal, Jeddah, Saudi Arabia, of 1981, also designed by the Chicago office of SOM.

Upon their arrival in the States, Walter Gropius and his Bauhaus colleague Marcel Breuer jointly created a form of vernacular modernism, which, while adhering to a white, flat-roofed format, would incorporate a more tactile material palette, invariably combining timber cladding with dry stone (fieldstone) walls. This hybrid manner was recognized by Henry-Russell Hitchcock in his essay 'Marcel Breuer and the American Tradition', which accompanied a 1938 exhibition of the same name, staged at the newly created Graduate School of Design (GSD), Harvard University. Breuer had first ventured into stone walling in his Gane Pavilion designed with the British architect F.R.S. Yorke for the Royal Agricultural Show at Bristol, England, in 1936, one year before his migration to the States. However, his very first attempt at a softer functional mode was manifest in his Doldertal Apartments of the same year, designed in association with Alfred Roth and Emil Roth and built for Sigfried Giedion in the Doldertal, Zürich [347]. Breuer's

move towards a more tactile use of traditional materials would be consolidated in three houses that he and Gropius designed for Lincoln, Massachusetts, in 1938 [346], one each for their own occupation and one for the historian James Ford, whose book *The Modern House in America* (1944) was an early documentation of the Modern Movement in the United States.

**346** Gropius, Gropius House, Lincoln, Massachusetts, 1938. Ground-floor plan.

**347** Breuer, with Emil Roth and Alfred Roth, Doldertal Apartments, Zürich, 1936.

At Gropius's invitation, Sigfried Giedion gave the Charles Eliot Norton Lectures at Harvard in 1939, which would become the substance of his influential book *Space, Time and Architecture*, published in 1941. Gropius and Breuer's Chamberlain Cottage [348, 349], built at Wayland, Massachusetts, in the same year, was clad with redwood boarding and incorporated a free-standing rubble-stone chimney dividing the living from the dining areas in an otherwise open plan. This format was repeated by Breuer in his subsequent domestic practice, amounting to some fifty houses in the States over the next two decades.

**348, 349** Breuer and Gropius, Chamberlain Cottage, Wayland, Massachusetts, 1941. View and ground-floor plan.

Exiled from Spain by the Spanish Civil War (1936–39), José Luis Sert also arrived in the States in 1939 and published his polemical text *Can Our Cities Survive?* in 1941. This, in effect, was a summation of the proceedings of CIAM during the first decade of its existence. Once appointed to a professorship at the GSD he pioneered the

field of urban design as a totally new discipline and this would duly be the basis of his subsequent practice with Paul Lester Weiner, especially with regard to their designs for a number of new cities in Latin America. Later in his career Sert designed one civic set piece after another, ranging from the Holyoke Center (1958) to the Peabody Terrace dormitories (1962) and the Science Center in 1968, with Harvard University acting as the client in each instance. Sert went on to achieve a similar kind of micro-urban form for Boston University in 1966. A decade later Sert demonstrated his mastery as a housing architect with the multistorey apartment buildings on Roosevelt Island, New York City.

The GSD, under Gropius as chair of the Department of Architecture from 1937, trained the leading American architects of the immediate post-war generation, including Eliot Noyes, Paul Rudolph, Philip Johnson, Edward Larrabee Barnes, Ulrich Franzen, I.M. Pei and John Johansen. These architects not only followed Breuer's lead in formulating the post-war American middle-class modern house, but also participated in the creation of the so-called New Monumentality as is evident in a number of US embassies designed by them: in London by Eero Saarinen (1960), in Dublin by John Johansen (1964), in New Delhi by Edward Durell Stone (1959) and in Athens (1961) by Walter Gropius in association with TAC (The Architects Collaborative). Equally monumental, Paul Rudolph's School of Art and Architecture for Yale University of 1963 [350] asserted its proto-Brutalist expressivity through bush-hammered concrete in contrast to Louis Kahn's brick-faced Yale University Art Gallery, completed a decade earlier. Something of this had been anticipated in Breuer's own version of the New Monumentality, beginning with the folded-plate, reinforced-concrete UNESCO Building in Paris of 1954 [351], designed in association with Bernard Zehrfuss and the Italian engineer Pier Luigi Nervi. This work

was the prototype for a number of equally monumental works by Breuer employing the same form of folded-plate construction. St Francis de Sales Church in Muskegon (1966) and the St John's Abbey complex in Collegeville, Minnesota (1968), are exemplary of Breuer's work in this regard.

**350** Rudolph, School of Art and Architecture, Yale University, New Haven, Connecticut, 1963.

**351** Breuer, Zehrfuss and Nervi, UNESCO Building, Paris, 1954.

Richard Meier, who on graduation worked briefly for Breuer, combined Breuer's middle-class house type with a species of Purism derived from Le Corbusier's Villa Savoye, Poissy, of 1929. This hybrid not only determined the pristine cubistic houses that made up his early career but also constituted the point of departure for the public buildings of his maturity: the High Museum of Art, Atlanta (1983); the Museum of Applied Arts, Frankfurt (1984); the Hague City Hall (1995); and the Getty Center for the History of Art and the Humanities, completed as a city-in-miniature on an undulating verdant site in Brentwood, Los Angeles, in 1997. Throughout his later career Meier demonstrated a certain capacity as an urban designer, most notably through the large-scale urban projects that he conceived for various industrial enterprises in Europe, including a campus for Renault at Boulogne-Billancourt, Paris, and one for Siemens in Munich. However, unlike the urban designs of Sert, none of these civic set pieces would be realized. Instead, at the end of the century, Meier found himself designing a series of law courts for the US federal government, in Islip, New York (1993), in Phoenix, Arizona (1994), and in San Diego, California (2002).

Unlike the German émigré architects of the 1930s, Le Corbusier and Alvar Aalto completed only one building each in the States, namely the former's Carpenter Art Center, Harvard University (1963), and the latter's majestically organic, brick-faced Baker House dormitory block [352] built on the banks of the Charles River. Completed in 1949, it still remains the most exemplary modern building on the campus of the Massachusetts Institute of Technology (MIT).

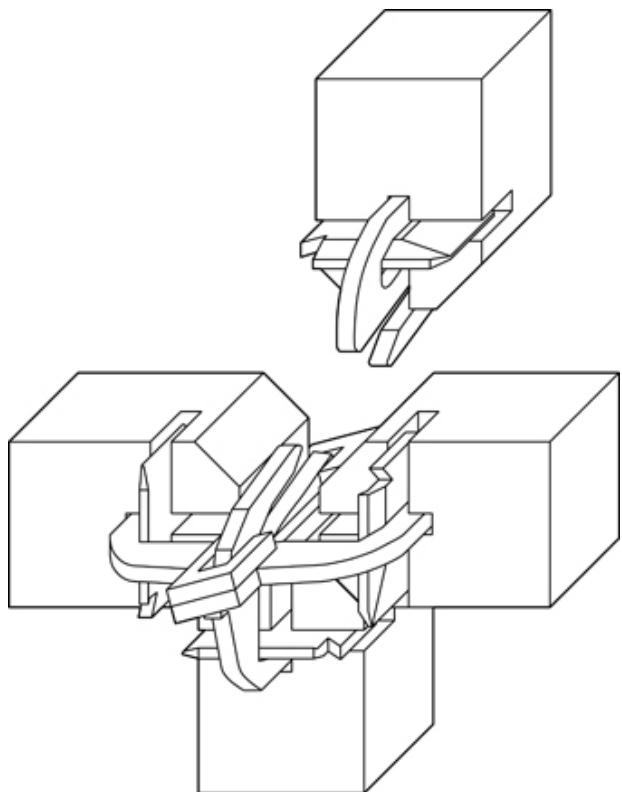
**352** Aalto, Baker House Dormitory, MIT, Cambridge, Massachusetts, 1949.

There were many manifestations of vernacular modernism that proliferated in the States in the second half of the 20th century, in works as varied as Edward Larrabee Barnes's minimalist Haystack Mountain School, clad in shingles and built on Deer Isle, Maine, in 1961, and Charles Moore's timber-clad Sea Ranch, designed with Bill Turnbull and Donlyn Lyndon and built on the northern Californian coast in 1965. However, neither of these came close to the tectonic complexity of Fay Jones's all-timber Thorncrown Chapel erected in the Ozark Mountains, Arkansas, in 1980. This monumental structure and Frank Gehry's deconstructed 'inside-out' house in Santa Monica, California, of 1979 represent two totally different modes of expressive timber construction, both removed from the European organic tradition as represented by Alvar Aalto and Hans Scharoun.

An incomparable American architect who maintained his creative independence throughout the second half of the 20th century was Louis Kahn, particularly with regard to his tectonic masterwork, the Kimbell Art Museum built at Fort Worth, Texas, in 1972. Despite its location in the heart of a vast city dominated by the car, it asserts its presence before a picturesque park now unavoidably eclipsed by Renzo Piano's otherwise sensitive addition. Among the unique aspects of the original Kimbell Museum was Kahn's use of

reinforced-concrete cycloid vaults, as calculated by his brilliant engineer August Komendant.

While architects of the East Coast were largely unable to conceive of modern architecture as transcending the aesthetics of style, Southern California, through the pioneering work of Schindler and Neutra, proved itself capable of cultivating a hedonistic environment suitable to the climate and imbued with a socially liberal, reformist way of living. This ethos carried over into the post-war era, as is evident from John Entenza's Case Study Houses, which were realized in California as built illustrations of the lifestyle that he projected through his magazine *Arts and Architecture* (1945–49). This publication promoted such pioneering works as Charles and Ray Eames's Case Study House No. 8 [354], which was a prefabricated, steel-framed house and studio, assembled out of standard industrial components. The Case Study Houses were mostly designed by such figures as Gregory Ain, Raphael Soriano, R. Davidson, H. Harris and Craig Ellwood. As editor of the magazine, Entenza championed whenever possible the seemingly limitless post-war potential for modular, industrially produced prefabricated houses including Gropius and Konrad Wachsmann's ill-fated General Panel System House system, patented in 1942 [353] and based on a 1-metre (3-foot 4-inch) module. In many ways, the Case Study Houses were an updating of Wright's Usonian vision of transforming the spontaneous suburbanization of the US into a utopian, car-dominated pattern of land settlement, close to Ludwig Hilberseimer's low-rise, high-density green-city vision as advanced in his book *The New Regional Pattern* of 1949. On the East Coast, aside from Stein and Wright's Greenbelt New Towns (1924–50), perfected during the Roosevelt New Deal era, a hypothetical alternative suburban pattern of land settlement was proposed in Serge Chermayeff and Christopher Alexander's *Community and Privacy* of 1963.



**353** Gropius and Wachsmann, General Panel System House, 1942.

**354** Charles and Ray Eames, Case Study House No. 8, Los Angeles, California, 1949.

Notwithstanding the neo-avant-gardist abstract manner adopted by the New York Five – Richard Meier, Peter Eisenman, Michael Graves, Charles Gwathmey and John Hejduk – in the second half of the 1960s, the American grassroots tradition of emphasizing materially expressive form, dating back to the Shingle Style of the 1890s, re-emerged in the 1980s as a ‘culture of materials’. This practice was pursued by the East Coast modernists of the next generation, above all by Steven Holl and by the New York practice of Tod Williams and Billie Tsien. Holl’s initial abstract approach, predicated on the idea of type, stemmed from his admiration for the Italian Neo-Rationalist architect Aldo Rossi. He modified this stance in favour of a species of

vernacular modernism evident in his first built work of consequence, the Berkowitz House on Martha's Vineyard [355], in 1988. This work was inspired by the evocation of a regional literary myth, namely Herman Melville's *Moby Dick*, which Holl regarded as being of relevance to the image of the house, given the maritime affinities of the site and the all but mythical Native American experience of transforming the skeleton of a whale into a dwelling. This long, single-storey building terminated in a two-storey form at one end, suggestive of a wheelhouse and thus embodying a nautical metaphor. While evocative of a ruined vessel, the exposed board and batten 4-inch by 6-inch construction also evokes the framework of a primitive hut. In these multiple ways the Berkowitz House exemplified Holl's habitual, heuristic method of introducing a mythical paradigm into the design process.

**355** Holl, Berkowitz House, Martha's Vineyard, Massachusetts, 1988.

A similar method is evident in Holl's school of art and art history [358] at the University of Iowa (1999–2006), which, apart from the unusual brief, was predicated formally on Picasso's metal sculpture *Guitar* of 1912. Holl and his business partner, Chris McVoy, translated the rusted cubistic form of this sculpture into a set of faceted planes in weathered steel which they then employed to articulate the building within and without. In addition, channel glass was used extensively to illuminate and express the larger volumes of the interior. This juxtaposition of contrasting material surfaces in relation to dynamic form can be found throughout Holl's career from the mid-1980s onwards, including his Nelson-Atkins Museum of Art, Kansas City, which is also covered throughout in channel glass. Although the socially progressive aspects of the Modern Movement are implicit throughout Holl's work, there is a notable shift in

the scale and density of detailing as he passed, for example, from the so-called 'Void Space/Hinged Space' housing that he built in Osaka, Japan, in 1991, to the large urban works that he has completed in China, above all the so-called Linked Hybrid Building, Beijing, or the Vanke Center, Shenzhen, both dating from 2009.

The practice of Tod Williams and Billie Tsien is equally committed to a culture of materials, wherein the tactility of their architecture enhances an inherently topographic approach to the evolution of form. This is evident in their New College dormitories, completed for the University of Virginia in Charlottesville in 1992. In this instance, seven dormitory blocks, clad in brick and of three to four storeys, step down to culminate at the bottom of a slope in a brick-clad dining hall with canted skylights. Three years later, they followed this stepped assembly with an even more organic composition for the Scripps Neuroscience Institute [356, 357] in La Jolla, San Diego, California, constructed of fair-faced concrete and partially clad with fossilized limestone.

**356, 357** Williams and Tsien, Scripps Neuroscience Institute, San Diego, California, 1995. Site plan and view.

**358** Holl, Art Building West, University of Iowa, Iowa City, Iowa, 2006. An unusual combination of the faculties of art and art history in one building.

The regionally inflected modernism that emerged on the West Coast in the first quarter of the 20th century was continued elsewhere in the States, reflecting to different degrees the diversity of climate and landscape. Such an impulse is evident in the work of, among others, O'Neil Ford in San Antonio, Texas, and Fay Jones in Arkansas, largely of brick in the first instance and timber in the second. These

distinctive inflections would be taken further by the next generation, particularly David Lake and Ted Flato, both of whom had worked for Ford, and Antoine Predock. The last made his name with his low-rise, high-density housing scheme in La Luz of 1972, which was constructed of adobe and integrated into a sloping site overlooking the Rio Grande, near Albuquerque, New Mexico. Lake and Flato also turned to adobe construction for their first house built in Santa Fe in 1990, but thereafter they would widen their material palette to combine masonry with steel frame construction, as in their Holt Headquarters, completed in San Antonio in 1994. Of the same generation and using similar materials, William Bruder realized his Phoenix Central Library in Phoenix, Arizona, in 1995 with Wendell Burnette and Rick Joy as assistants. In the same year Burnette built an elegant prefabricated concrete house for himself in a Phoenix suburban subdivision, while four years later, Joy constructed his own studio in Tucson out of adobe. Both men later collaborated with Marwan Al-Sayed on the design of the Amangiri Resort [359] completed at Canyon Point, Utah, in 2009: a thirty-four-room, single-storey, spa-cum-hotel laid out at the foot of a monumental escarpment.

**359** Al-Sayed, Burnette and Joy, Amangiri Resort, Canyon Point, Utah, 2009.

A perennial virtue of the North American pragmatic tradition has been its proclivity for inventing new prototypes. These have come into being not only through technical innovations, such as the balloon frame, the elevator, fireproof steel construction, and the mass production and ownership of the car, but also through the ways of working and living such as Taylorized production – a factory management system developed in the late 19th century to increase efficiency through specialized repeated tasks – the rise of the service industry and the proliferation

of a suburban way of life, focused about the drive-in shopping centre. At the same time North American architects have intermittently devised totally unprecedented building types such as Wright's invention of the modern office space in his Larkin building in Buffalo, New York, of 1904, a generic type that led to Louis Kahn's categoric distinction between *servant* and *served* space. Certain aspects of this pioneering repertoire have contributed to such typological innovations as Harry Wolf's cylindrical twenty-five-storey tower [360] standing out as a refreshing exception in the banal high-rise skyline of Tampa, Florida, or Stanley Saitowitz's Yerba Buena bespoke artists' lofts completed in 2002 as a new type of 'social condenser' within the downtown fabric of San Francisco [361, 362].

**360** Wolf, NCNB Banking Headquarters, Tampa, Florida, 1989.

**361, 362** Saitowitz, Yerba Buena Lofts, San Francisco, California, 2002. Section and view.

## Canada

The mid-1960s saw the beginning of a new architectural tradition in Canada, which took different forms across the country, depending on the regional climate and the scope of the work. At this time, a modern manner with few precedents began to emerge in the three major cities: Montreal in the east, Toronto - slightly further west - and Vancouver in the far west.

Modern environmental culture first manifested itself in Montreal in the work of the Quebecois Art Deco architect-engineer Ernest Cormier, primarily through his Université de Montreal, constructed between 1928 and 1955. After the Second World War modern architecture appeared in Montreal in two downtown mega-developments: the Place Ville Marie (1958), an office and shopping complex by I.M. Pei, and the merchandise mart and rooftop hotel, known as the Place Bonaventure, built to the designs of Ray Affleck in ‘corduroy’ bush-hammered concrete in 1964. Montreal finally came to the fore with Expo ’67, a state-sponsored world exhibition staged in 1967 on an island in the middle of the St Lawrence River. This exhibition was dominated by two monumental works, the first being Buckminster Fuller’s US Pavilion, which took the unique form of an enormous geodesic sphere. As it happens, this was the last national pavilion to be fully supported by the US government in a world exhibition. The other prominent work, which was also predicated on tetrahedral geometry, was Moshe Safdie’s multistorey experimental housing complex, known as Habitat ’67 [363]. Fuller’s sphere, penetrated by a monorail, evoked the space-age condition of weightlessness through the suspension of astronautical objects within its seemingly limitless volume. In this regard it unequivocally represented the techno-scientific superiority of the United States, while Safdie’s Habitat, subsidized by the Canadian government, was an audacious demonstration of the stacking of duplex apartments so as to provide roof terraces for each unit, thereby affording the essential benefits of suburban living in a high-density housing complex.

**363** Safdie, Habitat ’67, Montreal, 1967. Section.

Just over a decade later, one of the more significant architects to emerge in Montreal was the Romanian émigré

Dan Hanganu, who first made his mark with an elegant set of two-storey, brick-faced terrace houses built in the Rue de Gaspé on Nuns' Island, close to the centre of the city in 1980. Hanganu later added two other exceptional mid-rise works to the downtown area: the UQAM (Université du Québec à Montréal) Design School (1996) and the Pointe-à-Callière museum of archaeology and history [364], completed in the old city in 1992.

**364** Hanganu, Musée d'Archéologie et d'Histoire Pointe-à-Callière, Montreal, 1992.

Toronto's entry into modernity began in 1958 with the international competition for Toronto City Hall, won by the Finnish architect Viljo Revell and realized over the next decade. The asymmetrical composition of this work consisted of two curved high-rise slabs of varying heights embracing a shallow-domed, circular council chamber, the whole being elevated on a podium well above the existing street level. However, the first move towards a regionally inflected Canadian architecture appeared in Toronto in the work of Ron Thom, whose part-Brutalist, part-late Gothic Revival enclave of Massey College was constructed in the built-up area of the city in 1963. This was followed in 1965 by the equally Brutalist, organically planned Scarborough College [366] built of concrete on a bucolic site outside the city centre to the designs of the Australian architect John Andrews.

On the west coast, the first figure of stature to emerge during the post-war period was Arthur Erickson, whose Simon Fraser University (1962–72) [365], conceived as a landscaped megastructure, was integrated into the rising site of a small mountain near Vancouver. Erickson followed this achievement with two other megastructural works: his bridge-like design for the University of Lethbridge in Alberta

(1972), and his Robson Square complex, completed as an axial spine running through the centre of Vancouver in 1986. This last, occupying three city blocks, consisted of a continuous structure comprising a courthouse, municipal offices and a stepped rooftop landscape culminating in an ornamental pool and multiple waterfalls. These cascades accompanied a sequence of stramps (stepped ramps), which descended at an angle to street level before an existing Beaux Arts museum. These gardens and water features were designed by the landscape architect Cornelia Oberlander, with whom Erickson would regularly collaborate throughout his career.

**365** Erickson in collaboration with Massey, Simon Fraser University, Vancouver, 1962-72.

**366** Andrews, Scarborough College, Toronto, 1965.

Equally within the Canadian inventive tradition was a uniquely seminal work by the then émigré American architect Barton Myers, who, with Jack Diamond and Richard Wilkin, designed a dormitory for the University of Alberta at Edmonton. This was the so called HUB (Housing Union Building) of 1973 [**367**], a 292-metre (958-foot) long, climate-controlled, top-lit galleria with the students' rooms stacked in five floors on either side of a self-contained volume, which was equipped with a full range of social amenities at ground level. This typologically inventive work was echoed in the 'high-tech', light steel-framed Wolf House built to the designs of Myers in the inner suburbs of Toronto in 1977; it was the second in a sequence of three steel houses that he designed and built, with the first and last being for his own occupation. Myers's final domestic exercise in steel was built in Toro Canyon, Montecito, in

1999; this house and studio was designed for his southern Californian retirement and constructed a full decade after his return to the US and the establishment of his office in Los Angeles in 1984. This singular monumental work seems to refer to the Asian tradition of an open-air pleasure pavilion.

**367** Myers, Diamond and Wilken, Housing Union Building, Alberta, Canada, 1973. Sectional perspective.

The consistently distinguished Canadian practitioners of the next generation are John and Patricia Patkau, who began their significant career in Vancouver with their Seabird Island School, built at Agassiz in 1991 for an Indian band living in the Fraser Valley. The hump-backed, shingle-covered, laminated timber roof of this school was conceived in some measure as a topographic metaphor, consciously harmonizing with the profile of an adjacent mountain range. Its deep eaves sweep low over a south-facing porch and are held in position by a canted pergola, which consciously alludes to the fish-drying racks of the indigenous coastal villages of the Pacific Northwest. Of this and similar structures Patricia Patkau has remarked:

*Many of our buildings have covered porches for various purposes: to modify the sun, shed the rain, or to provide a sense of shelter. Most of our roofs come down low at their edges; some, however, go up to capture light at the top. Most cover an interior volume that is in shadow and lightens toward the edges as an intermediary zone.*

Such a ‘zone’ proved to be equally essential in the peripheral organization of their Strawberry Vale School [**369**], built in Victoria, British Columbia, in 1996, where paired classrooms open onto a common terrace sandwiched

between them and set before a local micro-landscape of moss-covered rocks.

More than any of the other ‘pagoda’ structures designed by Patkau Architects during the last decade of the 20th century the Gleneagles Community Centre in West Vancouver [368] depends on the interaction of a whole range of constructional components besides the laminated timber trusses supporting the roof, thereby engendering a symbiotic combination of environmental elements that is inherently sustainable. Of this they have written:

**368** Patkau Architects, Gleneagles Community Centre, West Vancouver, 2003.

**369** Patkau Architects, Strawberry Vale School, Victoria, British Columbia, 1996.  
Playing areas facing on to moss-covered rocks.

*The structural system consists of cast-in-place concrete floor slabs, insulated double-wythe, tilt-up concrete end walls, and a heavy timber roof. This structure is an important component of the interior climate-control system of the building: it acts as a huge thermal-storage mass, a giant static heat pump that absorbs, stores and releases energy to create an extremely stable indoor climate, regardless of the exterior environment. Radiant heating and cooling in both floors and walls maintains a set temperature; the concrete surfaces act alternately as emitters or absorbers. The thermal energy for this system is provided by water-to-water heat pumps via a ground-source heat exchanger under the adjacent parking area. Since air is not used for climate control, opening windows and doors does not affect the performance of the heating and cooling system.<sup>1</sup>*

The most significant public work to be completed by this practice to date is their Grande Bibliothèque du Québec in Montreal of 2005 [370], said to be the largest public library in the French-speaking world. Built in the Latin Quarter of Montreal, it comprises, in addition to the library, an auditorium, an exhibition space, shops, a restaurant/café, and a series of small stalls for booksellers, located along a pedestrian lane behind the main body of the building. Directly accessible from the city subway system, this long building is served by an elevator shaft and a cable-suspended staircase, both of which rise from the entrance to serve the library above. Faced with locally fabricated extruded glass channel planking, this building has, in many respects, been treated as a structure within a structure, as the open library stacks are housed in a louvred timber case that in its turn is contained within a weatherproof glass enclosure.

**370** Patkau Architects, Grande Bibliothèque du Québec, Montreal, 2005.

Two works by Patkau Architects dating from 2016 testify to their continual inventiveness. The first of these is the Audain Art Museum, projected as a bridge-like, pitched-roof gallery spanning over the flood plan of Fitzsimmons Creek in Whistler, British Columbia. The second is a visitors' centre close to the 200-year-old Fort York National Historic Site, located adjacent to an elevated expressway feeding the centre of Toronto. Parallel to the monumental autoroute, this visitors' centre is clad with inclined plates of corten steel that house a reception area, a café, an orientation space and a semi-subterranean 'time-tunnel' containing a video history of the fort.

One of the most significant Ontario practices of the 21st century is that of Brigitte Shim and Howard Sutcliffe, who opened their office in Toronto in 1994. Like Patkau Architects

they are acutely aware that their work is located in a vast northern territory subject to the stresses of a harsh climate. Shim has characterized the context of their practice in the following terms:

*In Canada, we occupy an enormous landmass with a tiny population. Whether one lives in the countryside or in the city, the mythological Canadian landscape permeates our lives. ... The majority of our work is located at the bottom edge of the Canadian Shield, described as a stone necklace of ancient metamorphic rock wrapping around Hudson's Bay.<sup>2</sup>*

Their first work on the Canadian Shield was their Moorelands Camp dining hall of 2002, which took the form of a large timber shed, built on Lake Kawagama at Haliburton. It was designed for a long-established summer camp catering to the needs of urban youth, and for this reason it was fitted with large, top-hung louvred doors, enabling the hall to be closed down completely at the end of the season. Shim-Sutcliffe would parallel this exercise in modular timber construction in their Harrison Island Camp [371], built as a vacation house for their own occupation, on Georgian Bay, Ontario, in 2010. This house was largely composed of structural insulated panels, which were shipped to the rocky site by barge and then assembled into position.

**371** Shim-Sutcliffe, Harrison Island Camp, Georgian Bay, Ontario, 2010. Section.

Their most complex domestic work realized to date is the so-called Integral House [372], built on the edge of a ravine in the Don Valley, Toronto, in 2009. Built for the mathematician and musician James Stewart, this is a luxurious bachelor's residence expressly designed around a

semi-public recital space, capable of accommodating an audience of around 150 people. Indirectly influenced by both Frank Lloyd Wright and Alvar Aalto's works, the house looks out over a heavily wooded ravine in the centre of the city. Its organic, curvilinear form is intended as a reference to integral calculus, a branch of mathematics from which the house derives its name. An important feature of its perimeter are the timber *brisés-soleil*, which echo the pattern of the tree clusters that line the ravine.

**372** Shim-Sutcliffe, Integral House, Don Valley, Toronto, 2009.

In their exceptional study *41° to 66°: Regional Responses to Sustainable Architecture in Canada* of 2006, John McMinn and Marco Polo characterize the wet climate of Canada's Atlantic region as 'subject to the warm Gulf Stream from the south and the Labrador current from the north - which brings the cooling influence of icebergs in the spring - resulting in widely varying ocean temperatures and highly variable weather'. No one has responded more creatively to the fluctuating harshness of this climate than Brian MacKay-Lyons, who set the stage for his reinterpretation of the local vernacular in 1983, when he self-consciously returned to his Acadian heritage with the purchase of a 1½-acre (0.6-hectare) coastal farm at Shobac in Upper Kingsburg, near Halifax, Nova Scotia. Five years later he would establish the firm of MacKay-Lyons Sweetapple Architects. Typical of their evolving domestic practice over the next two decades would be the timber-framed and -clad Messenger House II, completed in 2003 on a drumlin (a low oval mound) overlooking the Shobac Farm. To date, this practice has designed and built some 300 timber-framed homes on the Nova Scotia coast, ranging from long houses with roofs sloping down for the entire length of the dwellings, to residences with transverse monopitched roofs, such as the

Danielson Cottage, completed on an exposed site at Cape Breton in 1996. Partially inspired by Wright's Usonian houses, this practice owes an equally substantial debt to a more recent American master, namely Louis Kahn, for his well-known distinction between *servant* and *served* spaces. A typical MacKay-Lyons house has a 'servant' module running throughout its length. In most instances this 'thick wall' not only braces the building but also accommodates a whole range of different service functions such as staircases, toilets, showers, storage facilities, kitchenettes and bathrooms. There is perhaps no single work that so captures the unique character of the MacKay-Lyons approach to formulating an image for Canada's Atlantic coast than in his typical linear plan covered by a long-spanning roof, seen, for example, in the Howard House [373] built at West Pennant, Nova Scotia, in 1995.

**373** MacKay-Lyons Sweetapple Architects, Howard House, West Pennant, Nova Scotia, 1995.

## Mexico

Despite the leading role played in Mexico by the Ecole des Beaux-Arts well into the 1930s, as is evident from Adamo Boari's monumental Palace of the Fine Arts of 1934 and Carlos Obregón Santacilia's Monument to the Revolution of 1938, the Modern Movement in Mexico came into being via José Villagrán García's Institute of Hygiene built in Mexico City in 1925. The exposed *in situ* concrete character of this symmetrical two-storey building, with its regularly spaced square windows and oversailing flat cornices – reminiscent

of Tony Garnier's work in Lyons at the beginning of the 20th century – could hardly have been more removed from the Mexican Pavilion erected for the Ibero-American Exhibition staged in Seville in 1929. This pavilion, designed by Manuel Amabilis, incorporated sculptural forms and decorative elements of Aztec origin, a provocative assertion of pre-Hispanic culture that did not find favour with the exhibition authorities, who relegated the pavilion to a remote corner. However, the indigenous roots of Mexican culture would gather momentum with the Mexican Muralist movement, which flourished through to the middle of the century, as is evident from the Pre-Columbian iconography of the mosaic designed by Juan O'Gorman in 1951 for the bookstack of the National Autonomous University of Mexico (UNAM) [374].

**374** O'Gorman, National Autonomous University of Mexico Library, Mexico City, 1951.

Graduating from UNAM in 1925, after studying with Villagrán García, O'Gorman began his independent career in 1929 by designing a small studio for his father, Cecil O'Gorman, which promptly led to his being commissioned for the design of two adjoining studios on an adjacent site for the artists Frida Kahlo and Diego Rivera [376, 377]. All three buildings were exercises in Le Corbusier's Purist manner as this had appeared in the Paris studio which Le Corbusier designed for the painter Amédée Ozenfant in 1922. What O'Gorman added to the Purist syntax was an exceptionally dynamic use of colour, the cubistic forms of the studios being differentiated from one another by a particularly vibrant contrast.

Convinced by the polemic advanced by Le Corbusier in his *Vers une architecture* (1923), O'Gorman felt that the priority for a post-revolutionary society was the mass production of housing and schools to serve the needs of the

working class. Throughout the first half of the 1930s, on Rivera's recommendation, O'Gorman found himself designing and building schools [375], which were elegant functionalist essays in reinforced concrete frame construction. By the early 1940s, however, O'Gorman had become totally disillusioned with the Modern Movement, not only because it had been appropriated by real estate developers but also because its austere abstract character rendered it inimical to the more picturesque values of the Mexican working class. This impasse led him to abandon architecture altogether in favour of mural painting, and with this shift he became increasingly preoccupied with folkloric symbolism, overwhelmingly evident in the self-consciously primitive, troglodyte house that he built for himself close to El Pedregal in Mexico City in 1948. The form of this work was as retrogressive as the equally cryptic studio that Diego Rivera built for himself in Anahuacalli in 1957. Indifferent to the latter-day populism of O'Gorman and Rivera, Villagrán García continued to pursue his rationalist agenda in the design of health facilities, beginning with a tuberculosis hospital that he built in the manner of Garnier in 1929 and continuing with a cardiological hospital in 1937 and a children's hospital in 1942, all of which were built in Mexico City.

**375** O'Gorman, secondary school project, 1932.

**376** O'Gorman, house-studio of Frida Kahlo, Mexico City, 1929. Elevation.

**377** O'Gorman, house-studio of Diego Rivera, Mexico City, 1929. Elevation.

The Swiss-German architect Hannes Meyer and the German architect Max Cetto were among the most

significant designers to come to Mexico in the late 1930s as political refugees. Where Meyer's political reputation found immediate favour with the left-wing government of Lázaro Cárdenas, leading on his arrival in 1938 to his appointment as director of the State Institute of Urbanism and Planning, the relatively apolitical Cetto would eventually find work with Luis Barragán, collaborating on the design of the apartment buildings that would characterize the beginning of Barragán's career in Mexico City. This association led to their subsequent collaboration on the design of the El Pedregal neighbourhood on a site that had hitherto been regarded as an inhospitable volcanic terrain. Cetto built his own house [378] there in 1948, dramatically combining random rubble stone walling with an exposed reinforced concrete frame.

**378** Cetto, Max Cetto House, El Pedregal, Mexico City, 1948.

Coming to Mexico in 1949, the German-born Mathias Goeritz made his mark on the Mexican scene with his polemical essay *Emotional Architecture* of 1953, in which he was as critical of the received notion of integrating plastic arts with architecture as he was opposed to the reductive functionalism of the Modern Movement. Instead he favoured the direct intervention of artists into the process of architectural design such as he was to demonstrate in the gateways and fountains that he designed in collaboration with Barragán for El Pedregal in 1957. This led to his subsequent work with Barragán on the design of the multicoloured Satellite City Towers. These buildings were conceived as a landmark within a large suburban subdivision which had been laid out by Mario Pani on the outskirts of Mexico City (fig. 331). These experiences eventually led to Goeritz's collaboration with Ricardo Legorreta: first, on the twin cooling towers that he added to

Legorreta's Automex Factory [379], built at Toluca, capital of the State of Mexico, in 1964, and, second, on the entry court and fountain that he designed for Legorreta's Camino Real hotel, completed in Mexico City in 1968.

**379** Legorreta and Goeritz, Automex Factory, Toluca, 1964.

Félix Candela, who graduated as an architect in 1935, was among the 250,000 Spaniards who migrated to Mexico as a result of the Spanish Civil War (1936–39). He was obsessed with the pioneering work of the Spanish engineer Eduardo Torroja, who had demonstrated his professional prowess by building the cantilevered shell concrete canopies over the tribune of the Madrid hippodrome in 1935. Candela's own first excursus in this genre came with his 1951 construction of a diminutive shell over the Cosmic Rays Laboratory in the UNAM campus. Designing and realizing over 100 thin shell reinforced concrete structures in Mexico between 1950 and 1971, Candela is still insufficiently appreciated as an engineer, despite the fact that the distinguished writer Carlos Fuentes would regard Candela's work as a continuation of the Ibero-American Baroque tradition as directly expressed in his famous shell concrete church, Our Lady of the Miraculous Medal [380], completed in Navarte in 1955. At the height of his career Candela collaborated as an engineer with many leading Mexican architects, including with Pedro Ramírez Vázquez on their design of the Coyoacán market dating from 1957. Among the more elegant structures designed by Candela alone was the Hernáiz warehouse of 1956, made up of square hyperbolic umbrella roofs poised at alternating levels so as to allow for clerestory lighting between each square roof unit. These cantilevered roofs, each poised on top of a single column, were virtually identical to the trial concrete

mushroom canopies built by the Argentine architect Amancio Williams at about the same time.

**380** Candela, Our Lady of the Miraculous Medal church, Navarte, 1955.

At the end of the Second World War, Mexico entered into a period of intense industrialization as the political tenor of its society shifted from the radical left to the centre. The most prolific architect to come to the fore at this juncture was Mario Pani. Prior to his conversion to the Modern Movement he had been commissioned for two prestigious academic institutions which he designed and realized in a quasi-Art Deco language: a music conservatory built around an open-air theatre (1946) and the Escuela Nacional de Maestros (National School for Teachers; 1945), both erected in Mexico City. Pani's career as a modern architect began in earnest with his 1946 plan for the UNAM campus, which he designed in collaboration with the architect Enrique del Moral. Pani's first major housing development in Mexico City was his Aleman housing complex, completed in 1950 [**381**], in which a zigzag sequence of thirteen-storey blocks accommodated 1,000 apartments plus a school, childcare provision, public spaces and sports facilities. He followed this achievement in the mid-1960s with the much larger 11,000-unit Nonoalco-Tlatelolco development in Mexico City built in anticipation of the 1968 Olympic Games.

**381** Pani, aerial view of the Aleman housing complex, Mexico City, 1950.

The other architect to have a major impact on the development of Mexican architecture at this time was Pedro Ramírez Vázquez, who in 1964 realized two major museums within the prestigious Chapultepec Park in Mexico City – the National Anthropological Museum and the Museum of

Modern Art. Vázquez had been one of the designers of a lightweight steel frame system expressly conceived as an anti-seismic armature with which to facilitate the construction of rural schools throughout the country, of which some 35,000 units were built during the 1960s with local materials and labour. Despite this excursion into light-weight steel-framed construction, the next decade saw the emergence of a decidedly Brutalist monumentality, as seen in the two major institutional buildings that Teodoro González de León and Abraham Zabludovsky built in Chapultepec Park, the Colegio de México of 1976 and Museo Rufino Tamayo of 1981. A reinforced concrete architecture of greater refinement was achieved with the National Laboratory of Genomics [382] built in Guanajuato in 2009 to the designs of TEN Arquitectos, wherein the pattern of the timber formwork for the concrete corresponds to the orthogonal form of the building.

**382** TEN Arquitectos, National Laboratory of Genomics, Guanajuato, 2009.

The traces of a highly sophisticated minimalism may be found in Mexican architecture throughout the second half of the 20th century in works as varied as the Quintana House (1956) [383], the Jaysour Building (1964) and the Escuela Bancaria y Comercial (1989), all three works being designed by the brilliant yet still insufficiently recognized Augusto Álvarez. Within this Mexican minimalist tradition can also be counted the much later San Pablo Oztotepec Market in Milpa Alta built to the designs of Mauricio Rocha in 2003.

**383** Álvarez, Quintana House, Jardines del Pedregal, 1956.

Programmatically inventive and meticulously detailed, one of the the most arresting works of the first decade of

the 21st century is the Vasconcelos Library [384] in Mexico City completed in 2008 to the designs of Alberto Kalach, assisted by Gustavo Lipkau, Juan Palomar and Tonatiuh Martínez. This technological *tour de force*, rendering the national library as a mechanistic labyrinth, is comparable as a high-tech manifestation to the Centre Pompidou, Paris, of 1972, which was also treated as if a cultural institution were merely a giant machine. In this instance, however, the sublime scale recalls the monumentality of the 18th-century French architect Étienne-Louis Boullée, an effect which is paradoxically due to the extensive use of glass roof lights, equally translucent floors and a continuously louvred glass envelope. This is complemented by an array of suspended steel bookcases and stairways that hang down in a somewhat ominous way, so much so as to visually interrupt the spatial thrust of the main axis. Despite the bold cantilevered concrete canopy over the entrances, there is little here of the civic deportment that accompanied such institutions in the past. Instead this 300-metre long (984-foot) long galleria, covered by a stepped canopy of dematerialized bookcases, has a disturbingly Babelic character. Fortunately, the megastructure as a whole is paralleled by an *allée* of trees and a beautiful landscape that permeates the site throughout, so as to temper the technological severity of the work.

**384** Kalach, Vasconcelos Library, Mexico City, 2008.

## Brazil

In the late 1920s the Russian émigré architect Gregori Warchavchik played a fundamental role in the development of the Paulista School of architecture, initially by designing a symmetrical, cubic villa for his own occupation in 1929 [385]. While stripped of ornament, this house was surrounded by one of the earliest cacti gardens in Brazil, designed by Warchavchik's wife, the autodidact landscape architect Mina Klabin. Both Oscar Niemeyer and Lúcio Costa worked with Warchavchik during the late 1920s, Niemeyer as his assistant and Costa as his business partner prior to his appointment at the age of twenty-eight to head up the Escola de Belas Artes (School of Fine Arts) in Rio de Janeiro.

**385** Warchavchik, Casa Mariana, São Paulo, 1929.

An intriguing aspect of Lúcio Costa's career is that he was as much involved with historic preservation as with modernism and to this end he became involved in research into the Portuguese vernacular, first in 1948, when the Brazilian government sent him to Portugal to study the evolution of agrarian typologies in the 'home country'. His initial research in this area informed his contribution to the 1950 Luso-Brazilian Congress in Washington, DC, when he argued that masterpieces of the Minas Gerais region in south-eastern Brazil should be seen as the colonial version of the original Portuguese Baroque. His second visit to Portugal in 1953 not only confirmed his initial findings but also prompted the Salazar regime to conduct a survey of its own into the Portuguese vernacular with the similar aim of deriving an authentic, yet hybrid national style, appropriate to the modern epoch. Carlos Ramos, director of the School of Architecture of Porto, became profoundly involved in orchestrating this state-sponsored research into the Portuguese vernacular.

As previously noted, Brazil first presented its baroque version of modern architecture to the world with the Brazilian Pavilion, built for the New York World's Fair of 1939 to the designs of Costa and Niemeyer (fig. 263). The pavilion was complemented by an equally organic aquatic garden designed by Roberto Burle Marx, who had previously been responsible for the roof garden of the Ministry of Education and Health in Rio de Janeiro of 1938. This building had been designed by a team of young architects under the leadership of Costa and enriched with murals by the painter Cândido Portinari made of blue and white traditional Portuguese tiles (*azulejos*) [386]. This was the first synthesis of the lyrical manner that Niemeyer would develop further with the various buildings he realized around in Pampulha, a suburb of Belo Horizonte, between 1942 and 1944, including the casino that he built on a promontory in the centre of an artificial lake (fig. 262). However, the one work that would be decisive in transferring the plastically dynamic manner of Rio to São Paulo was Affonso Eduardo Reidy's Museum of Modern Art [388], built in Rio de Janeiro in 1953 in the midst of Burle Marx's Flamingo Park. Predicated on a reiteration of a single reinforced-concrete portal frame, repeated throughout the length of the museum, the main floor was held above the ground on canted point supports, while the two exhibition levels above were cable-suspended from the portal frames. The tectonically expressive character of this building had a profound influence on the Paulista School of architecture, first on João Batista Vilanova Artigas, whose bold structural approach would also have an impact on successive architects, then on his younger colleague Paulo Mendes da Rocha and subsequently on the leading architect of the next generation, Angelo Bucci. One of the most direct translations of Reidy's reinforced-concrete portal system was the reinforced-concrete blade walls carrying the roof of Mendes da Rocha's Paulistano Stadium, realized in São

Paulo in 1958 [387]. Artigas also took from Reidy the idea of bringing the rigid-frame, reinforced-concrete portals down to the ground on point supports, as found in his singular architectural school, FAU-USP (Faculdade de Arquitetura e Urbanismo da Universidade de São Paulo) [389], completed in São Paulo in 1967. This consisted of a large reinforced-concrete box elevated two floors above ground level on fourteen tapering concrete columns. The unique feature of this building was its monumental top-lit assembly hall, which Artigas conceived as the political heart of the school.

**386** Costa, Ministry of Education and Health, Rio de Janeiro, 1938.

**387** Mendes da Rocha, Paulistano Stadium, São Paulo, 1958. Section.

**388** Reidy, Museum of Modern Art, Rio de Janeiro, 1953. Section.

**389** Artigas and Cascaldi, FAU-USP (School of Architecture and Urbanism), University of São Paulo, 1967.

Both Artigas and Mendes da Rocha shared a socio-political commitment, which accounts for their dismissal from the faculty of the architecture school by the US-backed military *junta* that seized power in Brazil in 1964, thereby inaugurating twenty-one years of military rule. This political upheaval also led to Niemeyer's exile, owing to his lifelong adherence to the Communist cause (see his credo on p. 290). It would seem that the exceptionally felicitous lyricism of the Rio-based wing of the Brazilian Modern Movement in the 1950s did not survive Niemeyer's enforced exile, not even in his own work. In this way, the sweeping, majestic form of his Copan Building, a residential tower realized in

São Paulo in 1965, gave way to an arcuated formalism that characterized the second half of his career.

Mendes da Rocha continued to work throughout the period of military rule, building his gigantic Serra Dourada stadium in Goiânia in 1973 and going on in the 1980s to realize a number of small but significant apartment buildings. In perhaps no other work by Mendes da Rocha does his civic commitment more patently express itself than in his Poupatempo ('Timesaver') Public Service Centre [390, 391], built in São Paulo in 1998. Equally accessible by metro and car, this 300-metre (984-foot) long structure is rendered as an elevated viaduct, referencing the heroic Brazilian reinforced-concrete tradition as exemplified in the work of Niemeyer and Reidy. The Poupatempo building is distinguished by the way in which its cantilevered concrete deck is carried on widely spaced *pilotis* and is capped by a light-weight, welded-steel roof. It is typical of Mendes da Rocha's sense of structural economy that this elegant steel superstructure should overhang the viaduct upstands in such a way as to obviate the need for *brisés-soleil*.

**390, 391** Mendes da Rocha, Poupatempo Public Service Centre, São Paulo, 1998. View, and section through elevated concrete deck with steel roof.

For Mendes da Rocha, the revelation of engineering form is a precondition of endowing a work with civic significance, as we find in the 60-metre (197-foot) portico spanning the *podium* of the Brazilian Museum of Sculpture, built in São Paulo in 1988. The other characteristic element of Mendes da Rocha's work is his penchant for designing waterscapes at a territorial scale, such as his 1988 proposal for transforming the bay of Montevideo into a perfect square. A similar territorial scale obtains in the Sports Boulevard that he planned for Paris in 2008 as part of the French bid for the 2012 Olympic Games. This project stands out as a public

domain within the automotive megalopolitan chaos that surrounds it on every side. Mendes da Rocha's Arc of the Patriarch [394], suspended over a subterranean passageway in the centre of São Paulo, constitutes a similar monumental impulse on a more modest scale: a welded steel aerofoil section measuring 19 by 23 metres (62 by 75 feet) in plan is hung from a 38-metre (125-feet) triangular steel beam raised up on steel columns. For Mendes da Rocha, the socio-cultural potential of a work is inseparable from the symbolic generosity of its form combined with the social programme of its spatial organization, so that for him even a house may be given a public character, as we find in his own house built in Butanta, São Paulo, in 1960 [392, 393].

**392, 393** Mendes da Rocha, house in Butanta, São Paulo, 1960. Section and plan.

**394** Mendes da Rocha, Arc of the Patriarch, São Paulo, 2002.

The leading Brazilian architect of the next generation to come out of the FAU-USP was Angelo Bucci [396, 397], who started his career as a leading designer within the collective practice of MMBB. This team would produce a number of large-scale urban works in collaboration with Mendes da Rocha, including the Dom Pedro II bus terminal in São Paulo, completed in 2001 in the park bearing the same name. The most impressive domestic work to date to be completed by the MMBB practice is the exceptionally elegant Aldeia da Serra House [395] of 2002, wherein – as with certain works by Mendes da Rocha – reinforced-concrete construction is combined with passerelles and stairs executed in welded steel, the house being partially entered from above via an

adjoining earthwork. It is also accessible from the car park beneath the house.

**395** MMBB with Bucci/SPBR, house in Aldeia da Serra, São Paulo, 2001.

**396, 397** Bucci, house in Ubatuba, São Paulo, 2009. Plan and study model.

The heroic Paulista line in reinforced concrete is also evident in the work of the Italian émigré architect Lina Bo Bardi, who first came to prominence on the Brazilian scene with her São Paulo Museum of Modern Art (MASP), which was finally realized on the Avenida Paulista in 1968 after a decade of development. This 75-metre (246-foot) span bridge structure comprised two gallery floors, suspended from two giant reinforced-concrete beams, which, together with subterranean offices and other spaces, comprise the museum proper. Beneath the bridge form, a public plaza provides a heroic belvedere overlooking a park and a major autoroute.

Traumatized by Fascism, which she had experienced in Italy before migrating to Brazil at the end of the Second World War, Bo Bardi moved to Salvador in the north-eastern state of Bahia as soon as the military *junta* came to power in Brazil. There she became involved with the African culture that still existed in the Brazilian savannas, which coloured her work long after her return to São Paulo in 1977. On her return she received the second major commission of her life, namely the conversion of an abandoned industrial complex into a community centre and sports facility [398]. This so-called SESC Fábrica de Pompéia not only involved restoring and adapting obsolete factory buildings, but also entailed constructing two reinforced-concrete towers, linked by a diagonal stairway and a horizontal passerelle. These monumental additions were cast from rough timber

formwork, in the so-called *béton brut* manner of Le Corbusier. A quarter of a century later, this Brutalist tour de force exerted some influence on the Portuguese architect Álvaro Siza's Iberê Camargo museum, built at Porto Alegre in 2001. The irregularly shaped window openings that punctuate the concrete walls of Bo Bardi's SESC towers find a subtle echo in the external concrete ramps of Siza's museum, which first fold out of and then crank back into the main body of the building.

**398** Bo Bardi, Pompeia Factory Leisure Centre, São Paulo, 1987.

After graduating as an architect from the Faculdade Nacional de Arquitetura (National Faculty of Architecture) in Rio de Janeiro in 1955, João da Gama Filgueiras Lima, popularly known as 'Lelé' [400], began his career as an assistant to Oscar Niemeyer on the construction of Brasília (see pp. 290–91). In 1970 the *junta* decided to build a new administrative centre in Bahia and hired Lúcio Costa to design the site plan amid the rolling hills north of the city. Due to the tight schedule, Costa called on Lima to establish a prefabricated concrete plant capable of realizing the complex in a short time. After this experience, Lelé became one of the most sophisticated masters of prefabricated concrete construction, leading him in the late 1980s to design and construct hospitals throughout the northern region. As Adrian Forty and Elisabetta Andreoli have written of this achievement:

**399** Hereñú + Ferroni Architects, Estadual Vilanova School, São Paulo, 2005.

**400** Lelé, Macapá Outpost, Macapá, 2001–05.

*Easy to transport and handle, these precast units could be effortlessly assembled in a variety of forms and combined with lighter metallic elements, reducing both building costs and production times while providing functional, pleasant, and playful environments ... To avoid the use of costly mechanical air conditioning systems, he designed a natural cooling alternative in which fresh air was circulated through an underground network of galleries, from where, once warmed, it left the building through ducts formed by curved openings in the roof.*

One cannot conclude this account of the Brazilian Modern Movement without acknowledging the other major urban achievement apart from Brasília, namely Jorge Wilheim's 1965 master plan for expanding Curitiba, the state capital of Paraná, a plan predicated on installing an economic and feasible system of city-wide mass transit [401]. This system was based on the provision of articulated buses, each with a seating capacity of 100 and running on dedicated bus lanes. Their access from elevated tubular boarding platforms at the level of the bus floor speeded up the process of entry and exit of passengers at each stop. Since ticketing was handled in the access tubes, this enabled buses to arrive and depart with great frequency. This system, combined with the greater floor area ratios permitted for high-density development adjacent to the transit corridors, proved to be both profitable and socially beneficial at many levels: above all, people received municipal inducements to bring their rubbish out of the *favelas* to centralized collection points in exchange for either food or tickets for the transit system. Such a welfare-state approach to urban planning under the mayoralty of Jaime Lerner would not have been successful without the support of the military government. As Luis Carranza and Fernando Luiz Lara have noted, 'The extent to which such innovative policies could be applied under normal democratic processes has been the subject of

heated and heavily politicized debates after the re-democratization of Brazil in 1985.<sup>1</sup> Despite the political demands of enacting such an ambitious scheme, a similar transit system of city-wide, high-speed buses running on dedicated lanes would eventually be introduced to the Colombian capital of Bogotá in 1997 by the then mayor Enrique Peñalosa, under whose administration the city would build 298 kilometres (185 miles) of bicycle routes and add some 929,000 square metres (10 million square feet) of new park space to the existing fabric. In Brazil the one other radical career to benefit in paradoxical ways from the military coup of 1964 was that of Severiano Porto, who, going to the Amazon basin with the aim of building for its impoverished population, was employed by the state to build for what under military rule had become a tax-free region, stimulating the local economy. This led Porto to design several buildings for the University of Amazonas and to build a 40,000-seat soccer stadium sunken some 10 metres (33 feet) in the ground.

**401** High-speed mass-transit bus system on designated bus lanes, Curitiba, Paraná.

## Colombia

The first school of architecture in Colombia was founded in the National University of Bogotá in 1935 and was staffed largely by immigrant architects – Bruno Violi and Vicente Nasi from Italy, the urban planner Karl Brunner from Austria and Leopoldo Rother from Germany – with these last two introducing an emphasis on urban design in the school.

From 1933 onwards Brunner had taken the lead in urban planning in Colombia by designing plans for the expansion of a number of prominent cities, including Barranquilla, Cali, Medellín and Bogotá itself, well before Le Corbusier projected a schematic plan for the capital in 1947. Rother was responsible for the master plan of the campus of the National University (1937–45) and for the design of a number of its faculty buildings, including the School of Engineering (1945), which he designed with Violi.

In 1948 Rogelio Salmona, who was of Franco-Spanish origin and had been born in Paris in 1927, left the National University to enter Le Corbusier's atelier in Paris. There he would work as an apprentice during a particularly fertile period of Le Corbusier's post-war career, extending from the Unité d'Habitation at Marseille, already underway in the late 1940s, to the entirety of the architect's work in India. Towards the end of his apprenticeship, Salmona worked on the design, detailing and site supervision of the Maisons Jaoul (1952–57), and this experience influenced him for the rest of his life.

On his return to Colombia in 1957, Salmona's disenchantment with what he saw as Le Corbusier's formalism prompted him to work with the established Colombian architect Fernando Martínez Sanabria on the design of four houses for a steeply sloping site, north of Bogotá (1962–63). Built out of brick and linked to one another by low brick walls, these Aaltoesque houses anticipated the brick syntax of Salmona's mature career. Salmona followed this experience with the small three-storey El Polo cluster housing that he designed with Guillermo Bermúdez and built in Bogotá from 1960 to 1963. After this came the Fundación Cristiana de la Vivienda (Christian Housing Foundation) complex [402] designed with Hernán Vieco and built at San Cristóbal, Bogotá, in 1966. Built on a flat site and comprising twin apartment blocks set at an angle to each other with largely blank side

walls in brick, these inclined structures recall by association the pyramidal profiles of Pre-Columbian architecture.

**402** Salmona, Fundación Cristiana de la Vivienda, San Cristóbal, Bogotá, 1966.

Salmona's next work of consequence was the public housing Residencias El Parque (1965–70) [**403**, **404**], designed and realized with Luis Eduardo Torres. Overlooking the bullring in Bogotá, these three towers, ranging from twenty to thirty-three storeys, make up a cluster of fan-shaped spiralling apartment blocks that echo in their format Hans Scharoun's medium-rise Romeo and Juliet apartment blocks, built in Stuttgart in 1962. What is exceptional about Salmona's work is the multilevelled complexity of the entire undertaking, evident not only in the apartment plans that are stacked as spiralling assemblies gradually diminishing in size as each tower block rises to its apex, but also, at a micro-scale, in the brickwork, each course being an exercise in solid geometry as the angle of each brick varied through the arc of each wall as one course succeeds to the next. Despite the prestigious location, the actual floor area of the apartments is relatively modest since this scheme was intended to serve as social housing. A similar but simpler section is evident in Salmona's Alto de los Pinos apartments of 1982, north of Bogotá, arranged as a stepped formation on either side of a communal garden which also steps down in the form of terraces, following the natural slope of the site and the location of the pre-existing pine trees on the site that give the building its name.

**403, 404** Salmona, El Parque residential complex, Bogotá, 1965–70. Unit plans and aerial view.

In the early 1980s Salmona's career moved away from residential work to the design of a series of public buildings, mostly cultural institutions, university faculties and museums. Around this time he received the most prestigious commission of his career, the Presidential State Guest House, otherwise known as the Casa de Huespedes (1980–82) [405], built on a peninsula projecting out into the Bay of Cartagena, next to one of the fortifications of this colonial city. Conceived as an austere, self-contained, cloistered retreat for the president and his honoured guests, it was constructed out of a mixture of bricks and local coral stone. The most poetic aspect of this work is the way in which it conveys the atmosphere of a Pre-Columbian ruin embedded in a tropical landscape, which Salmona designed with his wife, the landscape architect María Elvira Madriñán.

**405** Salmona, Casa de Huespedes, Cartagena, 1980–82.

After completing the state guest house, Salmona was engaged with a social project in the Candelaria district of Bogotá. This exercise in urban renewal was based on nine perimeter blocks, of which only four were built. Each block was grouped around a courtyard which was at its corners stepped in section so that one could pass through the neighbourhood diagonally from one courtyard to the next. This relatively open circulation testified to Salmona's lifelong opposition to gated communities.

Among the talented Colombian architects of the 1980s, equally committed to the importance of the public realm, one needs to acknowledge the work of Oscar Mesa, an architect who was particularly influenced by the work of Louis Kahn, as his Metropolitan Theatre in Medellín of 1986 [406] makes abundantly clear. Equally notable is the 1,500-unit La Mota housing complex built in Medellín in 1987 [407] to the designs of Laureano Forero Ochoa, a rational

Brutalist three- to four-storey scheme, the units of which were ingeniously organized.

**406** Oscar Mesa, Metropolitan Theatre, Medellín, 1986.

**407** Forero Ochoa, La Mota Residential Complex, Medellín, 1987. Plan.

Despite continual political strife in the country at large, progressive policies were pursued in Bogotá by one government after another, beginning with Jaime Castro Castro, who as mayor reorganized the administrative and financial structure of the city to bring it into line with the country's new constitution in 1991. Castro was followed by Antanas Mockus and Enrique Peñalosa, the successive mayors of the city from 1995 to 2003, with Peñalosa greatly expanding the city's park system and the provision of public libraries as well as introducing the TransMilenio bus rapid transit system, modelled on the system developed for Curitiba.

After an era of violence induced by the drug cartels, an equally progressive policy was pursued in Medellín, beginning with the mayoralty of Sergio Fajardo (2005–07), who commissioned a number of public projects including the so-called Four Sports Arena [408]. This was built in the centre of the city in 2009 to the designs of Giancarlo Mazzanti and Felipe Mesa, and comprises a partially open area covered by a light-weight folded-plate structure consisting of welded tubular steel latticework trusses.

**408** Mazzanti and Mesa, Four Sports Arena, Medellín, 1987.

# Venezuela

Carlos Raúl Villanueva was the most internationally renowned modernist architect practising in Venezuela during the second half of the 20th century. Of Venezuelan origin but born in London in 1900 to a diplomatic family and educated in Paris at the Ecole de Beaux-Arts, Villanueva returned to Caracas in 1929, where, after an apprenticeship in the Ministry of Public Works, he would start his independent practice in 1935 with the commission to design the Museo de Bellas Artes for Los Caobos, Caracas. He followed this work in 1939 with the design of the somewhat Art Deco Gran Colombia School [410], built in Santa Teresa. In 1942 he won the competition for an inexpensive, medium-rise housing scheme in the newly emergent central district of Caracas, known as El Silencio. This rambling neighbourhood unit was a hybrid work, the front being rendered in a muted Spanish colonial manner, while the rear comprised an array of stacked terraces in reinforced concrete. In 1957 he was commissioned to design two large high-rise, low-cost housing schemes on the outskirts of the city. These were made up of free-standing slab blocks of different heights set on undulating ground, the most significant of which was the 23 de Enero estate, commemorating the date of the 1958 coup d'etat, designed in association with José Manuel Mijares.

**409** Domínguez, Centro Simón Bolívar, Caracas, 1949–57. Elevation.

**410** Villanueva, Gran Colombia School, Caracas, 1939.

Villanueva's ultimate masterwork was the University City of Caracas, built on the fringes of the city, the master plan of which was first outlined in 1944. This plan was integrated by a serpentine covered walkway linking the different faculties. Villanueva subsequently designed all the principal faculty buildings, including the Aula Magna - a large auditorium- enlivened by a giant polychromatic mobile specially created as a decorative acoustical device by the celebrated American artist Alexander Calder [411]. The cantilevered reinforced-concrete canopy meandering through the campus [412] was interspersed with exotic gardens, which were enriched by free-standing sculptures and wall reliefs created by distinguished artists of the international modernist avant garde, such as Henri Laurens, Fernand Léger, Jean Arp, Victor Vasarely and Antoine Pevsner.

**411** Calder, acoustical artwork in the Aula Magna, University City of Caracas, 1944.

**412** Villanueva, University City of Caracas, 1944. Plan of covered walkways.

Villanueva's lifelong commitment to abstract art was also evident in the Venezuelan Pavilion that he designed for Expo '67 in Montreal. It consisted of three interconnected, double-height cubes fabricated out of welded-steel sheet, each one painted in a different colour - yellow, blue or red - of the Venezuelan national flag. Each cube was designed to exhibit an aspect of contemporary Venezuelan culture. While the first displayed a four-screen documentary dedicated to the history of the country, the second contained a 'rainforest' sculpture designed by the Venezuelan artist Jesús Rafael Soto. This was a maze of plastic cables hanging from the ceiling through which visitors had to weave their way in

order to arrive at the third and final cube, which contained a bar musicale where *musicians* played Venezuelan folk music.

Another important architect at work in Caracas during the 1950s was Cipriano Domínguez, who designed the monumental twin towers of the Centro Simón Bolívar [409], situated at the head of the urban axis devised in 1939 by the French planner Maurice Rotival. An equally prominent architect who left his mark on the city was Tomás José Sanabria, who designed the Hotel Humboldt (1956), located at the top of the Ávila mountain range that separates Caracas from the sea and linked by cable car to the downtown of the city. The exceptionally sensitive Jesús Tenreiro-Degwitz was the first Venezuelan architect to make a name for himself outside the capital with his headquarters for the CVG electrical company [413], built in the boom town of Guayana in 1968. This exceptional work took the form of a dematerialized pyramid made up of thin brick panels held in place by an equally delicate steel frame. These panels served as *brisés-soleil* shielding the stacked office floors within from the sun. With characteristic melancholy Degwitz remarked:

**413** Jesús Tenreiro-Degwitz, CVG electrical company, Guayana, 1968.

*The site is the highest point in Ciudad Guayana, and it was barren, with nothing built around it. There was no city plan establishing limitations on height or bulk. The CVG architects requested something like a landmark, and the pyramid came forth as a natural form for human beings living in a difficult tropical climate ... The stepped pyramid allows for the interaction of inner and outer space through a façade of continuous balconies with shaded gardens, a beautiful sight that is visible from almost all the working areas inside. It was to be the first building in the future*

*centre of Alta Vista, the heart of the new city, so it had the character of a foundation stone for an imagined beautiful metropolis - one that ultimately never came to be.<sup>1</sup>*

The ultimate manifestation of Degwitz's architectural maturity was the city hall of Barquisimeto [414], of 1967. Perhaps the most remarkable aspect of this work is the geometrical rationality of the *in-situ* concrete walls by which the building is organized in a manner reminiscent of the rhythmic order to be found in the work of Louis Kahn.

**414** Jesús Tenreiro-Degwitz, Barquisimeto City Hall, Barquisimeto, 1967.

A tectonic and spatial probity of an entirely different kind would appear much later in the work of his brother, Oscar Tenreiro. Typical of this other Tenreiro is a multi-purpose gymnasium [415] that he proposed for the Ciudad Deportiva in San Carlos, Cojedes, in 2003. This hybrid steel and concrete structure was ingeniously designed in collaboration with his son, the structural engineer Esteban Tenreiro.

**415** Oscar Tenreiro, covered gymnasium for Ciudad Deportiva, San Carlos, Cojedes, 2003.

The one other Venezuelan architect of this generation to have a prolific career was Walter James (Jimmy) Alcock, who, although born in Caracas, spent his formative years in England, where he took a master's degree in chemistry in Cambridge. On his return to Venezuela in 1953 he obtained a master's degree in architecture at the Central University of Caracas and soon after began to work with Alexander Pietri and Roberto Burle Marx on the development of Burle Marx's Parque del Este in Caracas. In 1959 he entered into a

partnership with José Miguel Galia and together they designed parks for various provincial cities in Venezuela, including San Felipe and Urachiche. Opening his own office in 1962, Alcock achieved his breakthrough, typologically speaking, with his Altolar housing built in 1965 on Bello Monte [416] overlooking the valley of Caracas: a curved six-storey block of apartments of brick-faced, reinforced-concrete construction accessed from a galleria built against a gigantic retaining wall. This topographic work was distantly inspired by Le Corbusier's Plan Obus for Algiers of 1930 and Affonso Reidy's Pedregulho housing complex, built in Rio de Janeiro in 1951. A key trope in Alcock's civic work was his use of galleria, such as we find this type in his Hotel Jirahara in Barquisimeto of 1972, designed in association with Manuel Fuentes.

**416** Alcock, Bello Monte housing, Caracas, 1965. Detail of elevation.

## Argentina

The beginning of the Modern Movement in Argentina dates from 1929, not only because it was the year in which Le Corbusier came to Buenos Aires to begin his Latin American lectures, but also because it is the moment when certain Argentinian modernists, notably Alejandro Virasoro and Alberto Prebisch, made their own early forays into reinforced-concrete construction. This was particularly evident in Prebisch's Casa Romanelli of 1936, which was almost a replica of one of Le Corbusier's so-called mass-

produced houses as these were featured in the penultimate chapter of *Vers une architecture* of 1923.

The first émigré modern architect of calibre to arrive in Argentina was the Catalan Antoni Bonet. Having worked for José Luis Sert and Josep Torres Clavé in Barcelona, Bonet left for Paris after the outbreak of the Spanish Civil War in 1936, where, apart from assisting Sert on his design of the Pavilion of the Spanish Republic for the Paris World Exhibition of 1937, he worked in the office of Le Corbusier. In 1938 he migrated to Buenos Aires in the company of two young Argentines whom he had met in Le Corbusier's studio, Juan Kurchan and Jorge Ferrari Hardoy. Together they formed the partnership of BKF, which, within a year of its foundation, realized a small mixed-use studio building in downtown Buenos Aires. Later this practice became the nexus of the Grupo Austral, which, inspired by Le Corbusier's program of agrarian reform as set forth in his 1937 Pavillon des Temps Nouveaux, was preoccupied with the design of rural housing. BKF was also engaged in furniture design, including its famous Sling Chair, which, fabricated out of canvas and steel rod, was based on the traditional Italian Tripolina campaign chair. In the interim Bonet emerged as an architect of stature with a number of vacation houses on the sand dunes of Punta Ballena at the mouth of the Río de la Plata in the 1940s. Bonet's penchant for vaulted space came into its own with his Berlingieri House [417, 418] of 1947, wherein the shell vaults were designed by the young Uruguayan engineer Eladio Dieste. Bonet's feeling for the integration of his work into the dune landscape was particularly evident in his three-storey Hosteria La Solana del Mar of 1947.

**417, 418** Bonet, Berlingieri House, Maldonado, Uruguay, 1947. View and detail of vault to wall connection.

It is significant with regard to the continuity of the modern tradition that the young architect Clorindo Testa worked as an assistant in the office of BKF before going on to design his reinforced-concrete *tour de force*, the Bank of London and South America [419, 420], produced in association with the well-established SEPRA practice and realized on a tight site in downtown Buenos Aires in 1966. Apart from serving as the headquarters of a major bank, this building evokes the idea of a city-in-miniature in which the internal transactions are seen as being of virtually the same order as the hustle and bustle of the adjacent street. The free-floating concrete decks of the multistorey banking hall, set back from the structural façade, are either cantilevered from cylindrical columns descending into the basement or cable-suspended from the structural ceiling of the hall. Although Testa continued to practise both as an architect and an artist throughout his life, he would never equal the tectonic *tour de force* of the Bank of London and South America, except for the National Library in Buenos Aires, designed in association with Francisco Bullrich and Alicia Cazzaniga in 1962 but not completed until 1992.

**419, 420** Testa, Bank of London and South America, Buenos Aires, 1966.  
Section and sketch of section.

Testa had first come to the fore in 1955 with his winning entry for the civic centre for Santa Rosa de la Pampa, designed with three other architects. The covered walkway leading into this Corbusian building was made out of cantilevered reinforced-concrete parasols like those structures for shelter projected by Amancio Williams in an audacious proposal for a hospital in Corrientes dating from 1953. Similar concrete parasols appeared as a repetitive canopy element in an aborted megastructural project for the

University of Tucumán designed by a team of architects under the leadership of Horacio Caminos.

Williams was an exceptionally innovative designer, who, after studying both engineering and architecture, began his career in 1945 by designing a bridge house for his father, the composer Alberto Williams. His unbuilt projects were just as unorthodox and brilliant as his built work, including his design for an airport suspended in the middle of the ocean, close to Buenos Aires, and a twenty-eight-storey, high-rise structure, the floors of which were suspended from a giant Vierendeel truss at the top of the building [424]. This project seems to have been the model for Norman Foster's HSBC bank headquarters, completed in Hong Kong in 1986.

Testa's masterly bank building was not only as dynamic as the architecture of the Brazilian Paulista School but also seems to have been a seminal influence on the Argentine practice of Manteola, Sánchez Gómez, Santos, Solsona and Viñoly (MSGSSV). This group designed a remarkable series of buildings for the Banco Ciudad Casa Matriz [422], beginning with the bank's headquarters of 1969, a work which may be seen as synthesizing the spatial paradigm of Testa's monumental bank with the constructional discourse of Stirling and Gowan's Engineering Faculty built for Leicester University in 1959. This capacity for combining dynamic spatial effects with audacious structural expression reappeared in two exceptional housing complexes, both of which were won in open competition. The first, comprising a neighbourhood of ten towers, each of eighteen storeys and linked to others by cable-tied, steel-framed aerial walkways, was built in the Rioja area of Buenos Aires in 1973 [421], while the second was built for an Argentine aluminium company in Puerto Madryn on the windswept Atlantic coast of Patagonia. The latter consisted of a low-rise, high-density terrace complex which was cranked in plan against the prevailing wind and stepped in section to follow the slope of the site. Among the achievements of the MSGSSV office in

its prime must be the ingeniously elegant, grass-covered courtyard of the Oks house of 1979 [423] and the four Colored TV Studios realized as an integral part of a small park in 1978.

**421** MSGSSV, Conjunto Rioja, Buenos Aires, 1973.

**422** MSGSSV, Ritero branch, Banco Ciudad Casa Matriz, 1969. Elevation and section.

**423** MSGSSV, Casa Oks, La Luchila, Buenos Aires, 1979.

**424** Williams, project for suspended office building, Buenos Aires, 1946.

Argentine modern architecture from the 1950s to the 1970s was as vital as that of any other Latin American nation, including among its canonical works the San Martín Cultural Centre, Buenos Aires, built to the designs of Mario Roberto Alvarez and Associates between 1953 and 1970. This structure, occupying an entire city block, houses an auditorium, a cinema and an art gallery, the common foyer of which is enhanced by polychromatic murals and freestanding sculptures. Strangely enough this practice built only one other structure of consequence, the twelve-storey SOMISA corner building in Buenos Aires, of exposed steel-frame construction inside and out.

The pioneering period of Argentine modernity was brought to a fitting conclusion with Testa's dramatically cantilevered, top-heavy, reinforced-concrete National Library in Buenos Aires, designed in association with Francisco Bullrich and Alicia Cazzaniga in 1962, a work

which due to the unending political and economic upheavals took some thirty years to complete.

## Uruguay

The modern architectural tradition of Uruguay originates partly in the Escuela del Sur, the so-called ‘School of the South’, established in Montevideo in 1934 by the cosmopolitan Uruguayan architect-artist Joaquín Torres-García, who first drew the map of South America upside down as a cartographic symbol of a newly resurgent Latin American identity [425]. This enigmatic icon would later be adopted by Alberto Cruz and Godofredo Iommi as the key symbol of their new school of design founded at Viña del Mar in Chile in 1948.

**425** Torres-García, inverted map of South America, 1944.

Two figures played seminal roles in the emergence of Uruguayan modern architecture in the early 1930s: Julio Vilamajó, who designed the Faculty of Engineering completed in Montevideo in 1938, and Mauricio Cravotto, who built a Neo-Purist villa for his own occupation in the same city in 1933. Cravotto was also active as a theorist contributing regularly with Leopoldo Artucio to the magazine *Arquitectura*, which was founded in 1914 and published monthly by the Sociedad de Arquitectos del Uruguay between 1922 and 1931.

One of the most gifted Uruguayan architects in the second half of the 20th century was Mario Payssé Reyes, whose most important works were his own house in

Montevideo, of 1956 [427], and his church for the Archdiocesan Seminary of Montevideo [426], realized in Toledo in the same year. Payssé Reyes was profoundly influenced by Torres-García, as is evident from the typographic, iconic low reliefs in cement designed by the latter's studio and incorporated separately into both the house and the church. Apart from this striking decorative element, the church was an extremely refined, reinforced framed concrete basilica covered by a thin shell concrete roof. The late works of Payssé Reyes's career, the Uruguayan Embassy in Brasília of 1976 [428] and the Uruguayan Chancellery in Buenos Aires of 1978, make an equally disciplined use of *in-situ* reinforced concrete construction.

**426** Payssé Reyes, Church of the Arquidiocesano de Montevideo, Toledo, 1956.

**427** Payssé Reyes, architect's own house, Montevideo, 1956. Section.

**428** Payssé Reyes, Uruguayan Embassy, Brasília, Brazil, 1976. Site plan.

An architect of equal stature in Montevideo was Nelson Bayardo, who designed a reinforced concrete columbarium for the north cemetery of the city in 1960. This work, with its eight concrete blades carrying the four concrete walls of the columbarium slightly above the ground, would exercise a decisive influence on the work of the Brazilian architect João Vilanova Artigas, above all on his design of the architectural school constructed on the campus of the University of São Paulo in 1968. The interior face of Bayardo's columbarium was again treated as an abstract relief in concrete, designed in the spirit of Torres-García.

As in a number of other Latin American societies, the rising middle classes in Uruguay seems to have accepted the Modern Movement as a bourgeois *lingua franca* in which they could invest and with which they could identify. They therefore became a secular clientele more than willing to adopt the socially progressive, tectonic language of the so-called International Style as a new norm. This explains the prevalence in Montevideo of exemplary mid-rise modern buildings, such as Luis García Pardo's diminutive El Pilar apartment building of 1957 [429, 430]. Here a large proportion of the available plan is taken up by a spiral staircase with a cylindrical elevator rising for nine floors in order to serve one two-bedroom unit: a modern folly of exceptional elegance. Of equal elegance was Rafael Lorente Escudero's Edificio Berro of 1952, although here a three-storey apartment building, with four apartments per floor accessed in pairs, is a more rational proposition. A less convincing aspect of the Uruguayan Modern Movement is regrettably the large cooperative housing complex known as Bulevar Artigas, designed by Ramiro Bascans, Thomas Sprechmann, Héctor Vigliecca and Arturo Villaamil, which fell way short of the sophisticated, rigorously structured Puerto Madryn housing designed by the Argentinian practice of Manteola, Sánchez Gómez, Santos, Solsona, Viñoly around the same time.

**429, 430** García Pardo, Pilar Apartments, Montevideo, 1957. View and typical floor plan.

A tectonic and expressive trope of consequence in Uruguay was the *bóveda tabicada* vault, which arrived in Latin America via the Catalan émigré architect Antonio Bonet, who asked the newly graduated Uruguayan engineer Eladio Dieste to design such vaults for his Berlingieri House, erected at Punta Ballena in 1947. Like José Luis Sert and Le

Corbusier, Bonet would have been familiar with the *bóveda tabicada* through the work of Antoni Gaudí. For his part, Dieste's training in graphical statics in the Montevideo Faculty of Engineering made him aware of the potential of reinforced brick shell structures designed and calculated in accordance with this method. This realization led him to the design of doubly curved shells in brick having a similar form to the reinforced-concrete shell structures built in Mexico by the Spanish émigré engineer Félix Candela. The latter had, in turn, been strongly influenced by the distinguished Spanish engineer Eduardo Torroja, whose masterwork was the Madrid hippodrome of 1941. These two exemplary figures prompted Dieste to design wide-span, doubly curved brick warehouses and factories, and above all the dynamic monumental form of the Church of Christ the Worker [431, 432], built at Atlántida in 1960. Rendering both the continuous sidewalls and roof in undulating reinforced brickwork, Dieste created a non-hierarchical space in this church, bringing the priest closer to the people. This anticipated the changes in the liturgical form of the Roman Catholic Church that followed the Second Vatican Council of 1963, which effectively orientated the priest towards the congregation rather than the altar.

**431, 432** Dieste, Church of Christ the Worker, Atlántida, 1960. Interior and section.

What is truly remarkable about Dieste's work is the way in which his most civic structures came to be realized quite early in his career, not only the church at Atlántida, but also the church of San Pedro at Durazno (1974). However, his reputation as a master builder depends in the final analysis on the numerous industrial structures [433] that he designed as a series of reinforced brick, curved and doubly curved vaulted forms, beginning with a market hall in Porto

Alegre, Brazil, of 1972 and continuing with a bus depot at Salto in 1974, warehouses in Montevideo and Juanicó built between 1976 and 1994, and maintenance sheds for the Brazilian railways at Rio de Janeiro in 1979. Dieste built a remarkable house for himself in 1968 out of the same brick and reinforced-concrete technique that he had already applied to his larger structures. One of the most significant works of his late career is the parish centre of San Juan de Ávila built in Alcalá de Henares, Spain, in 1998, where the double-curved walls forming the sides of the ecclesiastical volume undulate more dynamically than before in relation to the vaults of the roof.

**433** Dieste, two typical shell structures: (a) Don Bosco School Gymnasium, Montevideo, 1983–84; (b) Bus Terminal, Salto, 1973–74.

It is indicative of the stature of Dieste that he published a book on his work in 1987 divided into three sections: a photographic and graphic record of his built work; a detailed presentation of the calculations involved in the design of the brick vaults; and a political manifesto testifying to the economic, ecological and human advantages in an underdeveloped country such as Uruguay of building in brick, rather than with the more advanced and expensive modes of building in steel and reinforced concrete.

## Peru

Like many other Latin American countries, Peru had no modern architectural culture before 1910, when an émigré Polish architect, Ricardo de Jaxa Malachowski, who had been

trained at the Ecole des Beaux-Arts in Paris, was invited to establish a department of architecture in the National University of Engineering. The modernization of Peruvian society was a relatively slow process, for only after the end of the Second World War was a centre-left government voted into power under the presidency of José Bustamante y Rivero. The liberal policies of the Bustamante presidency came to an abrupt end in 1948 with a right-wing military coup led by General Manuel Odría, although subsequently it was a left-wing military government under the leadership of Juan Velasco Alvarado (president from 1968 to 1975) that finally brought about land reform in Peru.

In 1936 Fernando Belaúnde Terry returned to Peru, his family having been exiled since 1924 on political grounds. After attending high school in France, Belaúnde moved in 1930 with his family to the United States, where he began to study architecture, first at the University of Miami and then at the University of Texas at Austin. Back in Peru in 1937, he founded the magazine *El Arquitecto Peruano*, which focused on the specific housing and urban problems facing the country. This publication coincided with the foundation of two key institutions: the Peruvian Architectural Association and the Urban Institute of Peru. Belaúnde eventually started on a political career in 1944 by joining the National Democratic Front. In 1956 he founded the Acción Popular (Popular Action) Party, which, among other things, aimed at recapturing the Inca traditions of community and cooperation while occupying the middle ground between the traditional right-wing oligarchy and the radical left. When Belaúnde was first elected to the Peruvian Congress in 1945 he introduced legislation expanding the role of the state in the production of social housing. This eventually led to the creation of the Corporación Nacional de Vivienda (CNV), the first completed project of which was 1,200 apartments built as the Unidad Vecinal Número 3 (UV3). These units were designed by a team of young

architects comprising Alfredo Dammert, Carlos Morales, Manuel Valega, Luis Dorich, Eugenio Montagne and Juan Benites. The work was eventually integrated into Belaúnde's plan for Lima. The CNV continued to function through various periods of military rule, realizing several *unidades vecinales*, although its name was frequently changed. Apart from his salient engagement with the provision of low-cost housing, Belaúnde was also involved in the upgrading of the department of architecture in the National University of Engineering, which he conceived along the lines of the Bauhaus. This led him to hire a progressive teaching staff, which included Peruvian teachers as well as émigré European talent. Belaúnde invited Walter Gropius and José Luis Sert to lecture in the school during the 1950s.

In 1960 the British architect Peter Land came to Lima to work for two years as the field director of an inter-American, multidisciplinary graduate programme in urban and regional planning sponsored by the Peruvian government and the Organization of American States (OAS). The immediate success of this programme encouraged Belaúnde to establish a department of urban planning under Land's direction within the school. In 1966 Belaúnde took a further proactive step by inviting Land to organize an international low-rise, high-density housing exhibition, known as PREVI. Land conceived this exhibition along the lines of the Deutscher Werkbund Weissenhofsiedlung housing exhibition staged in Stuttgart of 1927. Carried out under the auspices of the United Nations, PREVI involved contributions from architects worldwide, including James Stirling (UK), Germán Samper (Colombia), Candilis, Josic & Woods (France), Oskar Hansen (Poland), Inguez/Vasquez (Spain), Aldo van Eyck (The Netherlands), Atelier 5 (Switzerland), Charles Correa (India), Toivo Korhonen (Finland), Herbert Ohl (Germany), and Fumihiko Maki, Kisho Kurokawa and Kiyonori Kikutake (Japan) [434, 435]. Among the Peruvian architects, one of the most exceptional designs was by a team comprising

José García Bryce, Frederick Cooper Llosa, Antonio Graña Acuña and Eugenio Nicolini Iglesias. This same practice later also made a major contribution to the design of medical buildings, above all their 500-bed hospital designed and built in the centre of Cusco from 1978 to 1985. In advance of its time, this work was exemplary in terms of both sustainability and its sensitivity to the local context. The architects were able to reduce energy consumption by minimizing the use of lifts in a complex restricted to four storeys in height, and by maximizing the provision of natural ventilation by patios at frequent intervals within the built form. Moreover, the four-storey form also harmonized with the low-rise fabric of the city, a compatibility that was further enhanced by roofing the building in traditional local tiles.

**434** Kikutake, Kurokawa and Maki, PREVI Housing, Lima, 1969–74.

**435** de Ozoño and de Castro, PREVI Housing, Lima, 1969–74.

Apart from PREVI, there was a considerable amount of housing built in Lima over the 1960s and 1970s, as is evident from the four-storey Palomino housing complex (1964), designed by the architects Luis Miró Quesada, Santiago Agurto, Fernando Correa and Fernando Sánchez Griñán [436]. Equally striking was a four-storey terrace, executed in concrete and built in Callao in 1974 to the designs of Miguel Rodrigo Mazuré with Emilio Soyer Nash and Miguel Cruchaga Belaúnde [437].

**436** Garland, Correa, Griñan and Agurto, Palomino Housing, Lima, 1964.

**437** Mazuré, Nash and Miguel Cruchaga Belaúnde, social housing, Callao, 1974.

Since the millennium two sophisticated practices, producing work of exceptional quality, have come to the fore in Peru. One is the partnership of Sandra Barclay and Jean Pierre Crousse, who began their practice with the Casa Equis [438], built on a precipitous site overlooking Escondida Beach at Cañete in 2003. This was the first in a series of luxurious vacation houses that the architects built along this stretch of the Peruvian coast influenced by the work of the Mexican architect Luis Barragán. These houses, through their stepped terracing and framing of ocean views, embody a sense of proportion and spatial displacement derived from a cultivated feeling for the Pre-Columbian Andean tradition. These architects have since applied this sensibility at a monumental scale with their *béton brut* UDEP campus [439, 440], completed in 2018 in an equatorial dry forest of carob trees close to the city of Piura, some 1,000 kilometres (621 miles) north of Lima. Here a 70 x 70-metre (230 x 230-foot) mat building comprising six lecture halls and five ancillary academic structures, all of the same height, is accessed by an interstitial labyrinth of shaded, cross-ventilated green walkways partially covered with concrete canopies. This academic caravanserai bodes well for the future of Peru in as much as it is a publically funded facility, expressly intended for low-income students from rural areas.

**438** Barclay & Crousse, Casa Equis, Cañete, 2003.

**439, 440** Barclay & Crousse, UDEP, Piura, 2018. Plan of lecture halls at upper level, and aerial view.

The second exceptionally productive Peruvian practice is that of Oscar Borasino and Ruth Alvarado. This studio – known by the acronym OB+RA, which wittily combines their initials into the word for ‘work’ in Spanish (*obra*). Over the last decade they have worked on a wide range of commissions that are invariably brought to an exceptionally high level of detailed resolution. This quality is surely present in what is perhaps their most important civic work to date, namely a four-storey regional headquarters for the International Labour Organization in Lima, completed in 2004 [441]. This building presents two distinctly different elevations: a monumental stone-faced street façade with horizontal ‘hooded’ windows and a lighter, steel-framed, curtain-walled rear façade overlooking a garden. What is truly remarkable about this practice is the variety of expression, which passes from the urbanity of Alvarado’s seven-storey apartment block in *béton brut*, her Edificio Blas of 1998 [442], to the rusticity of Borasino’s single-storey visitor centre for the Moray archaeological complex, focused on a patio and integrated into the tile-roofed context of Cusco in 2010. What is remarkable about the work of OB+RA is the fact that they are equally skilled as urban designers, as is evident from their transformation of a small, leftover, triangular infill site in San Isidro into a rich three-dimensional landscape [443].

**441** OB+RA, International Labour Organization headquarters, Lima, 2004.

**442** Alvarado (OB+RA), Edificio Blas, Lima, 1998.

**443** OB+RA, Jardín de Senderos, Lima, 2006.

# Chile

Chile's turbulent political history is inseparable from the vicissitudes of its economy, particularly after 1900, when new smelting techniques gave rise to its dynamic copper industry. This led in turn to the emergence of the working class as a contentious faction in contentious Chilean politics, alongside the traditional landowning élite and an urban middle class. This volatile mixture often entailed frequent confrontations between liberals and conservatives and at times political stalemates that would be invariably broken by military intervention. Despite this struggle between right and left, measures to encourage the building of socially progressive housing were progressively implemented in Chile, as the Argentine critic Jorge Francisco Liernur explains:

*Since passing the Ley de Habitaciones Obreras [Workers' Housing Law] in 1906 Chile had been one of the most active countries in the Americas increasing government supported housing. The institutions created during the 1950's and the 1960's such as the Caja de Habitación Popular (Popular Housing Fund) the Corporación de la Vivienda, in particular the Ministerio de Vivienda were critical to this effort. Operación Sitio, born during the presidency of Eduardo Frei, encouraged self-construction with economic assistance from the United States backed Alliance for Progress.<sup>1</sup>*

As elsewhere in Latin America, the Modern Movement arrived in Chile via the ubiquitous influence of Le Corbusier, whose radical vision of a new architecture first appeared with his book *Vers une architecture* of 1923. Thereafter, as Fernando Pérez Oyarzún has observed, Chilean architects

were active in Europe, the first example of their work there being the Chilean Pavilion designed by Juan Martínez for the Ibero-American Exposition staged in Seville in 1929. At the same time Roberto Dávila Carson studied in the Academy of Fine Arts in Vienna prior to entering Le Corbusier's studio in Paris. There he worked on the Plan Obus for Algiers in 1930, before returning to Chile in 1936 to design and build his Corbusian Cap Ducal Restaurant [444] overlooking the harbour in Viña del Mar. That year also saw the emergence of the Popular Front in Chile, consolidated by the election of Pedro Aguirre Cerda to the presidency in 1938. In the following year the country suffered a tremendous earthquake, which devastated the city of Chillán and resulted in a death toll of 30,000, a traumatic event that had the longer-term effect of boosting the production of state-subsidized housing.

**444** Carson, Cap Ducal Restaurant, Viña del Mar, 1936.

In 1949 the architectural students of the Pontifical Catholic University in Santiago, encouraged by their teacher Alberto Cruz, rebelled against the classical curriculum of the school. In his attempt to restructure the curriculum Cruz went to Europe in the early 1950s, where he met the Swiss architect and designer Max Bill and the Argentine concrete painter Tomás Maldonado. In 1952, following an invitation from the Catholic University of Valparaíso, Cruz – together with the Argentinean poet Godofredo Iommi, the architects Arturo Baeza and Jaime Bellalta and the painter Francisco Méndez – established a new school of architecture in Viña del Mar, where they lived and worked together in the Cerro Castillo. Their Institute for Architecture, which passed through two phases of development, initially from 1952 to 1970, was professional in its orientation. This phase began with major works by Cruz himself, above all his Los Pajaritos

Chapel project [445] for Maipú, Santiago, in 1953 and his 1954 study for the urbanization of the Achupallas coastline near Viña del Mar. Where the former posited a new form of liturgical space, the latter suggested an infrastructure that would establish a link between the coastal topography and the sea. This impulse was reflected in the Institute's 1956 competition entry for a new naval academy collectively designed under the leadership of Francisco Méndez. The unusually curved, medium-rise slab blocks were of an 'aerodynamic' design which was profiled in such a way as to deflect and break the force of the wind, while, at the same time, being integrated into the undulating coastal landscape.

**445** Cruz, Los Pajaritos Chapel, Maipú, Santiago, 1953.

Low-rise, high-density residential development first appeared in Chile in 1959 with Mario Pérez de Arce and Jaime Besa's Salar del Carmen housing [447], built on the outskirts of Antofagasta at the point where the Atacama Desert meets the Pacific Ocean. This scheme was built under the auspices of CORVI (Corporación de la Vivienda), a government housing organization that was eclipsed by the dictatorship (1973–90) of Augusto Pinochet. The Salar del Carmen settlement comprised two-storey, low-cost houses built on a terraced landscape directly above a former salt deposit. In each house the living spaces were distributed around a patio with a switchback stair rising up to a bedroom floor poised above the open court. Unfortunately it was not possible to plant shade trees due to the salty nature of the ground. Nevertheless, the stepped form of the terraces imparted the feeling of a time-honoured urbanity that was rarely achieved in mass housing.

The traumatic effects of the earthquakes that habitually punctuate the history of Chile were never more evident than

in the destruction in 1960 of the city of Valdivia in the south of the country, which was accompanied by extensive damage in both Concepción and Puerto Montt. A significant consequence of this particular disaster was the commissioning of the Institute for Architecture with the design of six new churches, of which the Church of La Florida in Santiago (1960–65) [446], was the most original.

**446** Valparaíso School, Church of La Florida, Santiago, 1960–65. Plan.

**447** Pérez de Arce and Besa, Salar del Carmen housing, Antofagasta, 1959. Section.

In 1965, inspired by an inverted map of South America first drawn by the Uruguayan-Catalan artist Joaquín Torres-García, Godofredo Iommi organized the first of his *educational* journeys across the South American continent from Punta Arenas in the south to Santa Cruz de la Sierra in Bolivia in the north. Iommi regarded Santa Cruz de la Sierra as the capital of the continent by virtue of his alchemical superimposition of a figure of the Southern Cross on a map of the continent. The first of Iommi's so-called *traversías* had to be cut short owing to the guerrilla activities of Che Guevara, which had also been one of the reasons for Cruz's decision to move his architectural institute to the fishing village of Ritoque. There in the midst of a vast expanse of sand dunes the Valparaíso School proclaimed their so-called 'Open City'. Over time, they would assemble a fragmentary collection of timber-clad structures, housing either studios or faculties, which had to be constantly reconstructed owing to the shifting movement of the dunes impelled by the wind coming off the sea. Among the mythical monuments constructed on the high ground overlooking the 'city' was a cenotaph composed of abstract concrete sculptures

designed by the artist Claudio Girola, a cemetery (1976) built to the designs of Juan Ignacio Baixas, Juan Purcell and Jorge Sánchez, and the so-called Palace of Dawn and Dusk of 1982 [448], which consisted of a ‘maze’ of low brick walls. Simultaneously an experimental school and a commune, the Open City, despite its later concentration on industrial design, was largely conceived as a poetic project removed from any larger modernizing goal. Such an approach was intent on creating a new subjectivity while remaining relatively detached from historical reality. After 1984 the study trips designed to familiarize students with the grandeur of the South American continent became a key part of the basic design course. These *travesías* sought to encourage an awareness of the potential destiny of Latin America.

**448** Cruz, with the Valparaíso School, Palace of Dawn and Dusk, Ritoque, Quintero, 1982.

In 1960 the French-educated Chilean architect Emilio Duhart established himself in Santiago by winning the competition for the prestigious CEPAL (Comisión Económica para América Latina) building [451], which he designed in association with Christian de Groote, Roberto Goycoolea and Oscar Santelices. Influenced by Le Corbusier’s monastery of La Tourette and his Assembly Building in Chandigarh, the CEPAL building consisted of a rectangular perimeter of offices elevated on *pilotis* with a conical assembly hall in the middle of its central courtyard. In 1965 de Groote, who had been trained in the US at IIT, started his practice with a series of industrial commissions, along with the design of the headquarters of the leading Chilean newspaper *E/ Mercurio* [449], located amid the foothills of the Santiago Valley. Apart from the editorial offices and printing works this complex would be under continuous development for

the next twenty years and would eventually include a number of complementary elements such as a library, an exhibition space and various sports facilities. During the rest of his career de Groote was largely occupied with designing and building luxurious residences for the élite. Inspired by the work of the Mexican architect Luis Barragán, de Groote's houses were invariably organized around a single central axis, beginning with his canonical Fuenzalida House of 1984 [450]. This two-storey residence built on a sloping site north of Santiago comprised two parallel brick walls interrupted by a transverse living space extending onto terraces on either side. A more diffuse, stepped horizontal arrangement influenced by the Kahnian distinction between servant and served spaces occurs with de Groote's Eliodoro Matte House built in Zapallar in 1988.

**449** de Groote, El Mercurio headquarters, Santiago Valley, 1967. Section.

**450** de Groote, Fuenzalida House, Santiago, 1984.

**451** Duhart, de Groote, Goycoolea, Santelices, CEPAL Building, Santiago, 1960.

The reputation of Enrique Browne, a decade younger than de Groote, stems from his commitment to sustainable design, not only ecologically but also culturally. This concern is already evident in one of his early houses built in Las Condes, Santiago, as a single-storey brick and timber Wrightian villa covered with vines. It will be echoed at a larger scale with his Consorcio Building of 1990 [452], designed with Borja Huidobro, and built on the edge of downtown Santiago; this building has a double-skin curtain wall, which is covered with climbing vegetation.

**452** Browne, Consorcio Building, Santiago, 1990. Section.

The most important building testifying to the short-lived, democratically elected, left-wing government of Salvador Allende (1970–73) was the corten-steel framed complex [453] erected on La Alameda, the main avenue in the centre of Santiago, in 1972 in time for the United Nations Conference on Trade and Development (UNCTAD), for which it had been expressly designed by a team of architects led by José Medina. It consisted of two interconnected parts – a twenty-two-storey office tower and a four-storey conference building – housing a 2,300-seat assembly hall and two dining halls with a seating capacity of 600 and 200 people, plus delegates' offices and public services in the low-rise structure. This congress building was designed as a flexible space under an all-encompassing 'table-top' space frame, poised on hinged joints between widely spaced concrete columns. From the outset the intention was for this structure to be transformed into a community centre at the end of the conference, which eventually happened. With Augusto Pinochet's *coup d'état* of 1973 the socialist connotations of the complex were entirely eradicated by its appropriation as the centre of dictatorial power, the traditional governmental palace La Moneda having been destroyed in the *coup*. After the return of democracy in Chile in 1990, the building became the defence ministry, a change that only emphasized its ambiguous political history.

**453** Medina and others, UNCTAD Complex, Santiago, 1972. Section.

Mathias Klotz belongs to the post-Allende generation of Chilean architects whose practice would be largely devoted again to the design of vacation houses for the élite, initiated in part by his own modest example built on Playa Grande,

Tongoy, in 1991. Of the luxurious homes that Klotz built on spectacular sites over the next decade, one of the most elegantly expressive is his Reutter House of 1998 [454], on a site descending to the sea at Cantagua. As in the work of the Brazilian practice MMBB this house is approached from above via a light-weight steel passerelle. Apart from the dynamic spatial organization, the plastic qualities of this house derives from a dramatic interplay between the different forms of revetment, ranging from horizontal timber cladding to ribbed metal sheets, timber louvres, steel windows and thin steel balustrading. Klotz eventually complemented his domestic work with a number of Neo-Rationalist public buildings, including the Altamira School, Santiago (2000), and the Economics Faculty and the Library of the Diego Portales University, dating from 2006 and 2012 respectively.

**454** Klotz, Reutter House, Cantagua, 1998.

A distinguished Chilean architect and landscape architect of a slightly earlier generation is Teodoro Fernández Larrañaga, who, after graduating from the department of architecture of the Catholic University in Santiago in 1972, left Chile for Madrid following the military coup. Fernández Larrañaga remained in Spain until 1980, when he returned to enter the Santiago office of Mario Pérez de Arce, for whom he worked for the next nine years. At the beginning of the 1990s he began to give courses at his alma mater in both architecture and landscape design. He also competed successfully in a series of competitions for the design of a number of important buildings and parks within the city. As a result he opened his own office in 1997, when he collaborated with Cecilia Puga and Smiljan Radic on the design of a semi-subterranean addition to the university library in the Lo Contador campus of the Pontifical Catholic

University [457]. In addition to occasional domestic work and landscape design, Fernández Larrañaga received a series of university commissions, beginning with an elegant chapel designed in 1997 for the San Joaquín campus of the Catholic University, Santiago [455]. He followed this at the millennium with a new communications faculty and a library for the same campus. The exceptional range of this architect may be judged from the constant dialectic in his work between tectonic and topographic form.

**455** Fernández, chapel for the San Joaquín campus of the Catholic University, Santiago, 1997.

An eccentrically subtle brand of Post-Modernism emerged in Chile with the Chilean Pavilion designed for the Seville Expo of 1992 by José Cruz Ovalle and Germán del Sol. The organic form of this building, lined in wood and covered with copper, was designed to house the totally improbable exhibit of an 85-ton artificial Antarctic iceberg, which the critic Jorge Francisco Liernur would associate with the countrywide campaign of 1988 that voted Pinochet out of the presidency, if not exactly out of power. Thereafter the two architects each developed their topographical approach somewhat independently, with del Sol designing in 2007 a ramped timber causeway linking a sequence of bathing huts within the hot springs complex of the Villarrica National Park. He followed this with the randomly timber-framed ‘retaining walls’ of his Hotel Remota [456], built in Puerto Natales in 2008. At virtually the same time Ovalle completed his graduate centre for the Adolfo Ibáñez University [458] in Peñalolén, which is set dramatically amid the Andean foothills just outside Santiago. The multi-ramped interior, which is intestinal in character, affords access to the innumerable lecture halls and offices that make up the serpentine sequence of this labyrinthine structure.

**456** del Sol, Hotel Remota, Puerto Natales, 2008.

**457** Fernández, Radic, Puga and Mardones, Library at Lo Contador, Santiago, 1997.

**458** Ovalle, Adolfo Ibáñez University Graduate Centre, Santiago, 2007.

Smiljan Radic is among the most talented of his generation of Chilean architects, as can be judged from the copper-clad Cobre House built at Talca in 2004 followed by the monumentally topographic Casa Pite [459] completed at Papudo in the Quinta region of Chile in 2005. The latter is surely one of the most elegant domestic works of his career to date, a work that was enriched by the careful disposition of sculptural pieces created by his wife, Marcela Correa, along the esplanade formed by the roof of the house, which asserts itself as a horizontal plane before the line of the sea. One of Radic's later works of consequence is a music facility [460] built close to Concepción, some 500 kilometres (310 miles) south of Santiago. It consists of two concert halls of 1,200 and 250 seats respectively, cradled within a concrete skeleton made up of 3.9-metre (12-foot) cubic modules. This building, dating from 2017, is faced in a synthetic translucent membrane, which gives it a somewhat oneiric character.

**459** Radic, Casa Pite, Papudo, Chile, 2005.

**460** Radic, Teatro Regional del Bío Bío, Concepción, Chile, 2017. Transverse section.

## Chapter 2

# Africa and the Middle East

It is not possible to broach the development of modern architecture in Africa and the Middle East without acknowledging a debt to Udo Kultermann, whose pioneering study *New Architecture in Africa* was first published in 1963. While noting the extraordinary variations obtaining across the continent with regard to topography, climate, vegetation and inflected native traditions, Kultermann nonetheless noted how architecture in the formal sense in Africa was mainly being designed by European architects, with the exception of such sophisticated practices as that of the distinguished Nigerian architect Oluwole Olumuyiwa, who in 1960 designed a particularly elegant cultural centre for Lagos. Like Latin America, Africa is a Eurocentric construct that has never been able to characterize adequately the ethnic and geopolitical complexity of a vast and diverse continent. This is even more the case today in the post-colonial epoch, when many ostensibly democratic nation states are still unable to achieve a more equitable society. As this chapter suggests through its conventional distinctions between South, East, West and North Africa, this continent has remained somewhat inimical to the cultivation of a modern sensibility in architecture, despite the fact that modernization continues unabated. All of this may go some way towards explaining the *ad hoc*, somewhat disconnected character of this account, for unlike in my comparable treatment of Latin America, the evolution of modern architecture in Africa cannot even be provisionally assembled as a panorama of distinct national architectural

cultures dating back to the foundation of independent states, as has seemingly transpired in South America. In this respect it is perhaps significant that some of the more convincing architectural solutions documented in this sector have been achieved in smaller states – namely, Burkina Faso, Guinea and Senegal – that make up the mosaic of West Africa. Apart from the brilliant school buildings designed by Francis Kéré for Burkina Faso and built by its people, who not only cast the handmade bricks and laid them in place, but also handwelded the steel trusses supporting corrugated metal roofs, there have been equally sensitive works designed by foreign architects in West Africa, above all, surprisingly, Finnish architects.

Among the German refugees from the Third Reich who came to East Africa during the Second World War was the distinguished city architect of Frankfurt-am-Main, Ernst May, who would then play a seminal role in cultivating a modern architecture in Kenya and Uganda. Elsewhere Mussolini's colonial ambitions also affected building in East Africa, most notably in Ethiopia and Eritrea. One should also emphasize in this regard the much later extraordinary creative role played by the Dutch Foreign Service in East Africa, above all in the diplomatic compounds built by Claus en Kaan in Ethiopia and by De Architectengroep in Mozambique.

One has to acknowledge that modern architectural culture is possibly more deeply embedded in the north and the south of the African continent rather than in either West or East Africa, due largely to the socio-cultural institutions installed by British, Dutch and French colonizers. Moreover, North Africa, beyond the Atlas Mountains, is a distinct region separated from the rest of the continent by the Sahara Desert and by the fact that since time immemorial this has been profoundly influenced by Mediterranean culture. Paradoxically, the one exception is Egypt, which, across time, has been focused on the River Nile rather than the sea. For centuries Islam has also played a fundamental role

in the formation of North African architecture extending as far south as the three great mosques of Timbuktu, Mali.

Of all the sections in Part IV of this book, the one treating the Middle East is possibly the most inadequate, for so much has transpired in the region since the dissolution of the Ottoman Empire in 1917 that it is difficult to cover the full impact of modernization in the space of a short essay. The first figure to unequivocally embrace the modern project in the Middle East was surely the soldier-statesman Mustafa Kemal Atatürk. He created modern Turkey, first by resisting the dismemberment of the country by Britain and France after the collapse of the Ottoman Empire, and then by establishing the state as a secular republic in 1923 and adopting the Latin alphabet for the inscription of the language. There followed, in short order, the emancipation of women, the adoption of occidental dress, the development of industry and the substitution of a new nationalism in place of the obsolete allegiances of transnational Islam.

Elsewhere the Middle East has been such an exceptionally complex and turbulent part of the world as to make it a difficult environment in which to develop a modern architectural culture. A modernizing cultural impulse first appeared in the Middle East indirectly by virtue of the Zionist movement founded in 1897 and the subsequent migration of Jews to Palestine, particularly after the foundation of the Jewish city of Tel Aviv in 1909 and the Balfour Declaration of 1917, which announced the British government's support for the establishment of a 'national home for the Jewish people' in Palestine. This led to the contradictory fusion of Zionism with socialism during the foundation of Jewish agricultural settlements throughout the first part of the 20th century. The first vehicle for modern architecture in this area were Jewish housing settlements built during the interwar period, prior to the British departure from Palestine and the ensuing conflict with the

Arab League leading to Israel's declaration of independence in 1948. It is clear that prior to the foundation of the state German-Jewish architects played a fundamental role in the development of modern architecture in Palestine.

My coverage of Saudi Arabia, Iraq, Iran and the Gulf States largely disregards the ideological and religious differences and disagreements that have continually plagued the region, except for references to Gamal Abdel Nasser's Pan-Arab movement of the 1950s. Twenty-five years later this secular revolt was echoed by the Islamic fundamentalist revolution in Iran of 1979, led by Ruhollah Khomeini. While these fundamental political shifts are noted in passing, this account does not emphasize the 'global flows' that, fed by unprecedented oil wealth, led to the construction of large megalopoli overnight in the Arabian Peninsula, along with the phantasmagoric cities of Abu Dhabi, Dubai and Doha, often replete with spectacular, ostentatious, quasi-oriental institutional buildings, designed by a wide array of international star architects.

## **South Africa**

The Union of South Africa came into being in 1910 after the protracted Boer War, between the British and the Dutch, finally ended. This was the occasion for the realization of Herbert Baker's monumental Union Building, constructed in Pretoria in the space of a single year (1909–10). Baker's triumphant Beaux-Arts manner echoed that of his Cecil Rhodes Memorial, completed on an equally spectacular site in Cape Town two years before. This monumental set piece

was followed a decade later by James Solomon's Cape Town University Campus of 1918.

The Modern Movement first emerged in the African continent in the work of South African architect Rex Martienssen, whose Transvaal Group of architects was brought to international attention in Le Corbusier's introduction to the first volume of his *Œuvre complète* (1910–29). Martienssen's initial prowess as an architect is evident from his masterly Corbusian Stern House [461], built in Johannesburg in 1933. This building was matched for its unequivocal modernity of expression by the work of a number of other equally talented architects who had been educated at the Witwatersrand University, among them John Fassler, who became Martienssen's partner in designing the Peterhouse Flats built in Johannesburg in 1938. This had been preceded by Norman Hanson's equally modernist Hotpoint House, realized in the same city in 1936. This generation exercised an influence on such post-war South African architects as Gabriel Fagan in Cape Town and Adèle Naudé Santos, whose dynamically plastic modern manner is best exemplified by her low-rise, high-density Rowan Lane housing [462, 463] built in Cape Town in 1972.

**461** Martienssen, Stern House, Johannesburg, 1933.

**462, 463** Naudé Santos, Rowan Lane Housing, Cape Town, 1972. Entry forecourt and axonometric of four row houses.

Among South African architectural practices of the post-apartheid period, none has been more aware of the dire poverty that continues to prevail everywhere in South Africa than the partnership of Jo Noero and Heinrich Wolff, who have consistently striven for a socially accessible architecture capable of mediating between civic institutions

sponsored by the state and the shanty towns in which they happen to be situated. One of their first prominent attempts in this regard was their Museum of the Struggle Against Apartheid, the so-called Red Location Building [464] erected in Port Elizabeth in 2005, the sawtooth roof of which alluded to the buildings of the car industry that was once the economic backbone of the city. This also happens to have been the site of the first black township and the unusual name of the building refers to the rusty corrugated iron roofs of the shanty town, which are virtually identical to the roofs of the first concentration camp built by the British during the Boer War. Many of the prominent anti-apartheid leaders hailed from here, including Nelson Mandela and Govan Mbeki, and accordingly the Red Location Building houses their archives along with those of others who were active in the same movement. Although the building received the RIBA Lubetkin Prize in 2006, its commemorative purpose has since been thwarted due to its closure from 2013. This was the result of daily protests by the local population who were unwilling to accept such extravagant expenditures on representational structures while they themselves continued to be ill-housed.

**464** Noero Wolff Architects, Red Location Building, Port Elizabeth, 2005.

Heinrich Wolff, now practising on his own, has since applied a similar sawtooth profile to the design of two new secondary schools: the Usasazo School in Khayelitsha Township (2003) and the Inkwenkwezi School in Du Noon Township (2007) [465]. Both works were built by the Western Cape government as part of a programme that aims to combine general education with vocational training, thereby enabling students to earn their livelihood immediately on graduation. The Inkwenkwezi School is cranked in plan not only to secure the playground but also

to break up the inevitable monotony of the long classroom corridors. As with the Red Location building, the sawtooth roof gives the school a strong sculptural presence that distinguishes it as a public structure in contrast to the surrounding shanty town. Enriched by bands of colour derived from African textiles, this unpretentious work consists of a light-weight steel structure clad with corrugated metal and filled in, here and there, by concrete blocks, thereby through the use of *ad hoc*, relatively inexpensive modes of construction making the work more socially acceptable to the population at large. From 2010 Wolff practised with his wife, Ilze Wolff, and the range of their work has expanded to include private houses, such as their Phillips beach house of 2011, a work that vaguely recalls the domestic work of Fagan and Pancho Guedes. Otherwise, they continue to use their signature sawtooth roof profile for public works, as their project for the Cheré Botha School in the Western Cape of 2017 amply indicates.

**465** Wolff Architects, Inkwenkwezi School, Cape Town, 2007.

An equally dramatic roof profile, but closer to the form of indigenous housing, may be found in the Interpretation Centre, built to the designs of Peter Rich in the Mapungubwe National Park, close to the border between South Africa, Botswana and Zimbabwe. This World Heritage Site, first excavated in 1933, contains the remains of an ancient trading settlement, which it preserves and documents, along with an exhibit featuring the local flora and fauna. The pleated vaults that crown this semi-subterranean work are built of handmade bricks, which are enriched by the application of local multicoloured stones.

## West Africa

In the decade between 1957 and 1966, 32 countries within the African continent became independent. First among these, in 1957, was the West African state of Ghana, with the electoral triumph of Kwame Nkrumah's Trotskyite Convention People's Party, which sought to transform the traditional Ghanaian way of life into a technologically modernized socialist state. In this aspiration he was momentarily aided by the British architects Maxwell Fry and Jane Drew, who had worked with Le Corbusier in Chandigarh, and by two other London-based practices: that of Drake and Lasdun, who would design the National Museum in Accra, and that of James Cubitt and Partners, whose laboratories, built for the School of Engineering in Kumasi, remain one of the most sophisticated works of the period. From the mid-1960s onwards newly independent African states began to build a wide range of public institutions on a large scale, ranging from conference centres to trade fairs, tourist resorts and university campuses.

An important West African architect who has recently emerged in this country is the German-trained Diébédo Francis Kéré. Born in Burkina Faso and having studied in the Technical University of Berlin, Kéré first came to public attention with his single-storey, three-classroom primary school that he designed and realized in Gando, Burkina Faso, in 2001 [466]. Built of hand-pressed mud bricks, with a corrugated iron shade roof fixed to hand-welded steel trusswork, this structure was built by the local community. Significantly enough for the architect and the people of Burkina Faso, it was awarded an Aga Khan Prize in 2004. The use of light-weight shade roofs on top of masonry construction became common practice in Burkina Faso and elsewhere in West Africa, as seen in the Women's Health Centre built in Ouagadougou at the millennium to the designs of Riccardo Vannucci. Meanwhile, since the completion of a primary school in Gando, Kéré's practice has

greatly expanded, as is evident from a succession of welfare facilities, such as schools, libraries, clinics and teachers' housing, that he has realized in Burkina Faso, Mali, Mozambique and Kenya.

**466** Kéré, school in Gando, Burkina Faso, 2001.

Equally sensitive interventions, by foreign architects, may also be found in West Africa, particularly in a number of small works designed by Finnish architects. One such is a single-storey house [467-69] and a poultry farming school [470-71], both built to the designs of the Helsinki practice of Heikkinen and Komonen for their Finnish patron, Eila Kivekäs. The house was built for Kivekäs's own occupation during her visits to Guinea and the school was erected to the memory of her friend, the native-born agronomist Alpha Diallo, who had spent a great deal of time in Finland working on a translation of the Finnish folk epic the *Kalevala* into his native language of Fula. Diallo was convinced that the only way to improve the standard of living in Guinea would be through an increase in the intake of protein by the general population, and he insisted that poultry farming was the fastest and cheapest means to achieve this. As a result, Heikkinen and Komonen were commissioned by Kivekäs to design a poultry farming school assembled around a square forecourt and a central lecture hall. One finds an equally simple and direct tectonic approach in the Women's Centre [472-74], built in Rufisque, Senegal, in 2001 to the designs of the young Finnish practice of Hollmén, Reuter and Sandman. Like the poultry farming school, this single-storey courtyard structure was executed in concrete block, which in this instance was enlivened by being painted a luminous red throughout.

**467, 468, 469** Heikkinen and Komonen, Villa Eila, Guinea, 1995. Section and plan and interior detail.

**470, 471** Heikkinen and Komonen, School for Chicken Farmers, Guinea, 1999. View and plan.

**472** Hollmén, Reuter and Sandman, Women's Centre, Senegal, 2001. Plan.

**473** Hollmén, Reuter and Sandman, Women's Centre, Senegal, 2001.

**474** Hollmén, Reuter and Sandman, Women's Centre, Senegal, 2001.

## North Africa

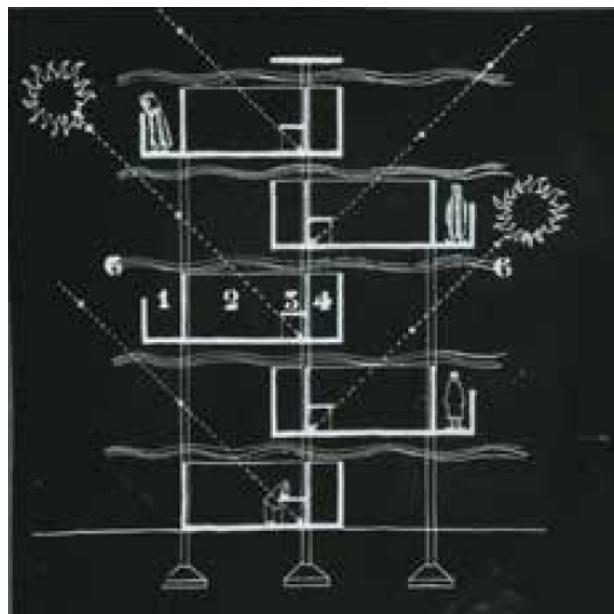
The modernization of Algeria and Morocco was already underway by the second half of the 19th century, due to the intensity of French investment in North Africa. Over time Algeria became France's most prosperous colony, accommodating thousands of *pied-noirs*: people who, over the years, migrated from the French Republic to Algeria. This process continued right up to the declaration of independence in 1962, although by that date the *pied-noirs* made up only one-tenth of the total population.

The French colonization of Morocco began in 1911, but France did not take over the whole country until 1933. In both of these North African colonies there was a continuous migration from the Atlas Mountains to the coastal cities, respectively Algiers and Casablanca. Thus over time, in both cities, the original kasbahs and medinas were overrun by

shanty towns, or *bidonvilles*, which came into being spontaneously in a never-ending attempt to accommodate an ever-growing migrant population.

By 1907, the port city of Casablanca was already a boom town, which prompted Henri Prost's plans of 1914 and 1917; these coincided with some of the earliest proposals for low-rise, high-density patio housing expressly designed for the Arab population. The Modern Movement as such did not arrive in Casablanca until the 1950s, when it took the form of luxury apartments and villas built for the new bourgeoisie. Such luxurious development was countered by the socially committed work of Michel Écochard, who was the author of the 1947 CIAM development plan for Casablanca, a document which was accompanied by the emergence of ATBAT-Afrique (Ateliers des Bâtisseurs), an interdisciplinary office originally set up, in the first instance, by the engineer Vladimir Bodiansky in order to realize Le Corbusier's Unité d'Habitation in Marseille of 1952 (see pp. 258 & 259). Having worked on the Unité, Shadrach Woods and George Candilis joined Bodiansky in Casablanca, where they designed prototypical, multistorey courtyard houses for Arab occupation, in particular the so-called Semiramis [475] and Nid d'Abeille blocks built between 1951 and 1955. These designs constituted Bodiansky's 'housing for the greatest number', exhibited during the Team 10 meeting in Aix-en-Provence of 1953. Not part of ATBAT-Afrique but active in Morocco at the same time were the Swiss architects Jean Hentsch and André Studer, who designed an ingenious six-storey stacked courtyard housing block built for the indigenous population in Sidi Othmane in 1955 [476]. It is somewhat ironic that the mid-rise housing prototypes designed by Woods and Candilis for ATBAT-Afrique were sited in the midst of single-storey carpet housing, the Carrières Centrales, designed by the office of Écochard, as a feasible alternative for decanting the ever

growing *bidonville* population into permanent, well-organized, well-serviced settlements.



**475** Candilis, Woods and Bodiansky, Semiramis Housing, Casablanca, 1955. Section.

**476** Hentsch and Studer, housing in Sidi Othmane, 1955.

The work of ATBAT-Afrique in Morocco was paralleled in Algiers at a larger scale and with a much more conventional pattern of land settlement, of which the centrepiece was known as the *Climat de France*. It comprised 6,000 units built in 1957 to the designs of the French architect Fernand Pouillon, who had studied with Auguste Perret. Consisting of an aggregation of medium-rise apartments erected on a steeply sloping site, this settlement was centred on a six- to seven-storey perimeter block, known as *deux cents colonnes* ('200 columns'), the inner space of which was lined on all four sides by a three-storey colonnade. This space, conceived as a traditional *maidan* (public open space) measuring 233 x 33 metres (764 x 108 feet), was the apotheosis of Pouillon's career as a housing architect. Over

the same period the Algerian architect Roland Simounet assumed a much more modest approach in two low-rise, high-density housing schemes realized on the outskirts of Algiers in the early 1960s.

Many university campuses were established in North Africa at the beginning of the 21st century, including two in Morocco designed by the partnership of Saad El Kabbaj, Driss Kettani and Mohamed Amine Siana: first the Ibn Zohr University in Taroudant in 2010 [478], and second the Guelmim School of Technology of 2011 [477]. The quality of the latter was considered as meriting an Aga Khan Award in 2016. This compact, three-storey campus is located on the edge of the Sahara Desert in southern Morocco, and close to the Atlantic, which helps to mediate the desert climate. The interior spaces are organized to maximize cross ventilation, while the exterior of the *in situ* concrete structure is finished in red ochre cement, which affords a pleasing contrast to the central greenway, replete with native plants. The whole complex is arranged around a series of courts and shaded walkways, while the cubic mass forms are broken up by sun screening pergolas.

**477** Kabbaj, Kettani & Siana, School of Technology, Guelmim, Morocco, 2011.

**478** Kabbaj, Kettani & Siana, Taroudant University Campus, Morocco, 2010.

Possibly the most important civic monument completed in North Africa during this period is the Bibliotheca Alexandrina [479], built close to the harbour of Alexandria, Egypt, in 2001 as the result of the design of the Norwegian firm of Snøhetta winning the international competition. The most impressive aspect of this work is the 20,000-square-metre (215,278-square-foot), stepped, top-lit reading room, 160 metres (525 feet) in diameter and 23 metres (75 feet)

in height, which accommodates desktop space for 3,000 readers.

**479** Snøhetta, Bibliotheca Alexandrina, Egypt, 2001.

As Mercedes Volait makes clear in her revealing article of 2006, 'Mediating and Domesticating Modernity in Egypt', modernization in Egypt was largely dominated, as elsewhere in North Africa, by France, evident in the first instance by the cutting of the Saint-Simonian Suez Canal by Ferdinand de Lesseps (1859–69) followed by the Haussmannization of Cairo from 1870 onwards. The French were also influential when it came to architecture as is evident from the career of Mustafâ Fahmi, who, having graduated from the École Spéciale des Travaux Publics, Paris, in 1912, would play a salient role in the Réunions internationales des architectes (RIA). This organization, which was the forerunner of the Union internationale des architectes (UIA) had been founded in 1932 by the editors of *L'Architecture d'Aujourd'hui*, Pierre Vago and André Bloch, in order to offset the domination of the international scene by CIAM. Of greater consequence stylistically however was the Exposition Internationale des Arts Décoratifs et Industriels Modernes, Paris, of 1925, which brought equally to the fore the Art Deco manner of Rob Mallet-Stevens and the classical rationalism of Auguste Perret. These two architects greatly influenced upper-class building in Egypt between the wars, as we may judge from the élite Cairo garden suburb of Heliopolis and the luxury villas that Perret built in Egypt: the Aghion villa in Alexandria in 1926 and the Elias Awad villa in Cairo in 1935. However, as Volait notes, the Modern Movement truly showed itself in Egypt for the first time with the figure of Said Korayem, who had been trained in the ETH (Eidgenössische Technische Hochschule) Zürich under the Swiss master architect Otto Salvisberg and who, on graduating, continued to work for

him for a number of years. In 1939 Korayem founded the first periodical proselytizing modern architecture in Arabic. The appearance of this magazine, simply entitled *al-'Imâra* (*Architecture*), coincided with the high point of a particularly liberal spirit in Egypt, presaged by the subsidized housing built by the Suez Canal Co. and Heliopolis Oasis Co. in the early 1920s. Along similar lines the Misr textile group started to build large company towns in the 1940s at Mahalla al-Kubra, designed by Ali Labib Gabr; these developments included restaurants, markets, welfare centres, cinemas and sports facilities in addition to housing. By 1950 well over twenty companies in Egypt had built similar housing for their employees. Needless to say, these company towns did little to improve the living conditions of the larger part of the Egyptian rural population and it is only with the model villages built under the auspices of the Ministry of Social Affairs, in 1939, that any kind of amelioration of rural conditions would emerge.

Apart from the finest works of Said Korayem, such as his Ouzounian Building erected in downtown Cairo in 1950, and Ali Labib Gabr's headquarters for the Misr textile company of virtually the same date, the Modern Movement in Egypt appears to have had a particularly chequered history, most particularly after the Free Officers' *coup d'état* of 1952 that overthrew the monarchical regime of King Farouk. The fact that *al-'Imâra* frequently published works by Le Corbusier and Frank Lloyd Wright, in addition to more general articles on housing and planning, caused it to be viewed with suspicion by the new military government, which subjected it to increased censorship and eventually brought about its closure in 1959. The 1956 appropriation of the Suez Canal by the then president of the republic, Gamal Abdel Nasser, led immediately to an abortive military intervention on the part of Britain and France, which possibly accounts for Nasser's anti-colonial gesture of supporting the realization of Conrad Hilton's hotel, featuring Neo-Pharaonic kitsch

interiors, erected on a fine site on the banks of the Nile in the centre of Cairo in 1957.

Notwithstanding such prejudiced gestures, the modernization process continued to encounter sporadic resistance in Egypt, to which the career of the distinguished Egyptian architect Hassan Fathy bears testament, given his lifelong anti-modern stance. After graduating as an architect in 1926, Fathy served as a municipal architect and teacher until 1937, when he designed his first mud-brick dwelling. A decade later, in 1946, he was commissioned by the Egyptian Department of Antiquities to design the village of New Gourna [480] wherein he employed traditional sun-dried bricks for a set of self-centring vaults and domes made by local craftsmen. The purpose of this new village was to move the existing population out of the Antiquities Zone so as to enable tourists to gain access to the archaeological sites without being harassed by the local population. Despite the ostensible aspirations to revive the pride of the same local residents, and to regenerate the surrounding countryside, the Gourni refused to move into their new homes and two years later New Gourna was abandoned.

**480** Fathy, New Gourna, Egypt, 1947. Elevation and plan.

With the 1952 overthrow of the monarchy and the 1956 nationalization of the Suez Canal, Fathy felt increasingly ostracized by the secular/socialist non-aligned Pan Arab government and, in consequence, he moved to Athens, where he joined the Ekistics research practice of Constantinos Doxiadis. There he became engaged in a futile attempt to reconcile his preference for vernacular building with the rationalized design interests of a large-scale international practice. After his return to Egypt in 1962 he came to be recognized as an international cultural diplomat and in 1976 he became a member of the steering

committee that conferred the first Aga Khan Award for Architecture in 1980. Over time his approach went beyond traditional Arab building to favour a form of generic vernacular wherever it may occur, as is suggested by the title of his last book, *Natural Energy and Vernacular Architecture*, of 1986.

## East Africa

East Africa comprises twelve independent states, plus the three island nations of Mauritius, the Comoros and the Seychelles. As these countries achieved independence in the early 1960s, they became aligned with the various ideologies of the rival Cold War factions; thus, while Tanzania and Zambia aspired to democratic ideals, Kenya, Malawi and Uganda became right-wing dictatorships, and Ethiopia and Mozambique established themselves as socialist states.

The first evidence of modern architecture in East Africa was buildings designed by the German émigré architect Ernst May who, having fled the Third Reich in the 1930s, first went to the Soviet Union and then to Africa. There he designed two major works during the first half of the 1950s: a cultural centre in Moshi, Tanzania, in 1952 and the Oceanic Hotel, Mombasa, Kenya, completed in 1956 [482]. Where the form of the hotel is inflected towards the ocean, the cultural centre was built around a traditional courtyard.

Among the major post-colonial works in East Africa were the Kenyatta International Conference Centre, Nairobi, Kenya (1969–73); the University of Zambia, Lusaka, Zambia (1966–73); and the so-called African Riviera on the Ivory Coast (1970–73), which, while initially planned for 120,000 people, topped out at a population of 5,000 before being

totally abandoned. Many of these ambitious mega-projects would be brought to a similar end by the worldwide oil crisis of 1973.

One of the most radically creative figures in Mozambique was the Luso-African architect Pancho Guedes who, aware of the vast gap between the ideals of the Modern Movement and the harsh realities of African life, attempted to combine his own oneiric formal preferences with vernacular elements [481]. However, despite his close association with the Mozambique Surrealist painter Malangatana Ngwenya, the left-wing triumph in the post-colonial civil war compelled Guedes to leave the country and for the rest of his career he taught in the architecture department of Witwatersrand University. Irrespective of this, Portuguese modernists were particularly active as architects in Mozambique throughout the 1960s by virtue of the Portuguese leader António Salazar investing heavily in the colonies during the waning years of his regime. Something of this Rationalist legacy is still echoed in Mozambique, particularly in the work of the local architect José Forjaz, who has created exceptionally dynamic structures in welded tubular steel, as is found in the Institute of International Relations [483], built in Zimpeto in 2004.

**481** Guedes, House of Three Giraffes, Mozambique, 1953.

**482** May, Oceanic Hotel, Mombasa, Kenya, 1956.

**483** Forjaz, Institute of International Relations, Zimpeto, Mozambique, 2004.

Of the many embassies built in post-independence Africa was the remarkable Dutch Embassy [484] at Addis Ababa, built to the designs of Bjarne Mastenbroek and Dick van

Gameren in 2005. Set within a forested compound, of which the only traditionally representative element was an existing gateway, it comprises several residences for the staff and the ambassador, plus a large, long bunker of a two-storey building, containing offices and various reception spaces. This structure is of *in situ* concrete dyed the same colour as the surrounding earth. This exceptionally topographic form bridges an internal roadway and features a monumental stair rising to the belvedere roof inlaid with runnels, which, when flooded in the rainy season, constitute a micro-landscape echoing the form of a larger domain on every side.

**484** Mastenbroek and Van Gameren, Dutch Embassy, Ethiopia, 2005.

## Turkey

Turkey's defeat as an ally of Germany at the end of the First World War led to the final disintegration of the Ottoman Empire followed by the French and British occupation of Istanbul and a wholesale invasion of the country by Greece. The military genius of Mustafa Kemal, later known as Atatürk, would become immediately evident during Turkey's so called War of Independence, which concluded with the liberation of Istanbul and the total repulsion of the Greek invasion, culminating in Atatürk's proclamation of Turkey as a secular republic in 1923.

The affinity between Germany and Turkey no doubt arose in part from the Prussian influence on the modernization of the Turkish military. As a consequence of this one of the first German architects to enter the service of the Kemalist republic was Carl Lörcher, who issued his plan for a new

government centre in Ankara, Anatolia, in 1924. Lörcher was followed by Hermann Jansen, who developed a master plan for Ankara as an ideal garden city from 1928 to 1932 [486]. After these German urbanists came Austrian architects of calibre: Ernst Egli and Clemens Holzmeister. Holzmeister designed the National Assembly in Ankara as the result of winning the competition entry in 1937, a work which, due to various upheavals, would not be completed until 1961. Various other Germanic architects followed, including the illustrious Bruno Taut, who went to Ankara in 1935 after spending three years in Japan. Taut was immediately called on by the state to design and realize his subtly monumental Faculty of the Humanities in Ankara University, which was completed in 1937, one year before his death. This building was surely an influence on the Faculty of Sciences and Literature building at Istanbul University [485] designed by Sedad Hakkı Eldem and Emin Onat in 1924, but not completed until 1948. The Neo-Classical deportment of the Istanbul University building, with its shallow-pitched Turkish roofs and deep, overhanging eaves was simultaneously both modern and traditional.

**485** Eldem and Onat, Faculty of Sciences and Literature, Istanbul University, 1924-48.

**486** Jansen, master plan for Ankara, 1932.

Although Eldem and Onat's building has a hybrid character touching on the vernacular, Atatürk in his prime was an unabashed patron of the Modern Movement in all its pristine functional purity, as evidenced by the work of his favourite architect Seyfi Arkan. Apart from his Zeilenbau workers' housing proposed for the industrial city of Zonguldak in 1935, Arkan designed one luxury residence

after another for the Kemalist elite, including Atatürk's own vacation house of 1935, at Florya, situated on the sea near Istanbul. As in other countries at this time, Atatürk's modernization of Turkey involved the state's promotion of sports and athletics, and irrigation of previously infertile arid areas such as the territory surrounding Ankara. In the first instance this led to the construction of stadia and in the second to the building of the Çubuk Dam near Ankara (1930–36).

Atatürk's untimely death in 1938 virtually coincided with the arrival of another German architect of exceptional stature, namely Paul Bonatz, who first visited Turkey in 1942 as a juror on the competition for Atatürk's mausoleum, won by Emin Onat and Ahmet Orhan Arda. In 1943 Bonatz came to Turkey and remained on the occasion of opening an exhibition on the architecture of the Third Reich. German involvement in Turkish architecture came to an end with the German defeat at the end of the Second World War and with the beginning of the Pax Americana. A decade later, the Istanbul Hilton Hotel was built on a prime site overlooking the Bosphorus, designed by Gordon Bunshaft of SOM in collaboration with Sedad Hakki Eldem. As Suha Ozkan has noted, 'Here Eldem's regionalism was confined to the entrance canopy, ballroom and various decorative elements. The building became a model to be repeated at various scales all over Turkey.'

Despite Le Corbusier's attachment to the Turkish vernacular, as seen in his *Voyage d'orient* of 1912, he seems to have had little influence on the development of 20th-century Turkish architecture. Eldem offered a partial explanation for this at an Aga Khan Award seminar in Istanbul (1978):

*One might ask why it is necessary to look into the past. Why can we not simply look forward? The answer is that Islam's only way into the future is through the past. The greatest*

*achievements of Islam are those of the past; since then we have merely been marking time. It is a regrettable fact that we must first journey into our past and seek our inspiration there. Only then we can venture onto new ground. Our first requirement is a solid foundation.*

On the occasion of the first Venice Biennale of 1980, which, under the curatorship of Paolo Portoghesi had a decidedly Post-Modern cast, Eldem argued that the Modern Movement was now in crisis. He contended that the only way forward would be through a self-conscious regionalism such as he himself practised, thereby evoking that which some have since called 'vernacular modernism', Le Corbusier having already shifted in this direction with his Maison Errazuriz projected for Chile of 1931. When it came to his civic work Eldem opted early for a Perretesque neo-monumental manner as found in his very first building for the Kemalist state, the State Monopolies General Directorate built in Ankara (1934–37). It is interesting that thirty years later Eldem again had recourse to Perret's structural rationalism in his remarkable Social Security Complex [487] built in the Zeyrek district of Istanbul in 1968.

**487** Eldem, Social Security Complex, Istanbul, 1963–68.

Nearly forty years separate this masterwork by Eldem from the earliest work of the most prominent 21st-century Turkish architect, namely Emre Arolat, whose prolific practice totally dwarfs the achievements of Eldem. Arolat is one of the leading architects of a globalized Turkey, whose reputation was assured by the 2010 Aga Khan Award for his high-tech Ipekyol Textile Factory at Edirne in 2009. However, some trace of Eldem's tectonic sensibility may also be detected in the vernacular modernism of the luxury

residential settlement that Arolat designed for Bodrum in 2010 [488].

**488** Arolat, Vicem Bodrum Residences, Bodrum, 2010.

## Lebanon

The French would remain in control of Lebanon until the country finally gained its independence in 1943. However, French cultural influence lasted well into the 1950s, as is clear from the presence of the ubiquitous Michel Écochard in Beirut. There he worked on a series of Corbusian buildings, mostly schools, in collaboration with Amin Bizri, of which the Collège Protestant Français is the best known. In 1955 he also realized a Corbusian office building in collaboration with George Rayes and Theo Kannan. A decade later the French architect André Wogenscky and the Lebanese practice of Maurice Hindeh worked together on the design of the Ministry of National Defence, built in Beirut from 1962 to 1968.

From 1975 to 1990 Lebanon was ravaged by a sectarian civil war that totally eclipsed any form of cultural development. In the uneasy respite that has followed, two works promise a renewal of Lebanese architecture: Hashim Sarkis's Housing for the Fishermen of Tyre of 2008 [489] and Nabil Gholam's colony of holiday chalets at Faqra of 2010. The latter were built of load-bearing stone walls at grade with timber cladding above, a syntax that Gholam further refined in a three-storey villa that he built at Rabieh in 2003 [490]. This divide between heavy-weight local stonework below and light-weight timber modernity above was echoed in the stone-faced buildings that Gholam

designed for Beirut's historic district, as opposed to the high-tech curtain-wall fenestration that he later deployed for luxurious high-rise buildings overlooking the sea.

**489** Sarkis, Housing for the Fishermen of Tyre, Tyre, 2008.

**490** Gholam, D House, Rabieh, 2003.

In 2010 the architects Makram El-Kadi and Ziad Jamaleddine were commissioned by the Lebanese state-backed development company Solidaire to design a temporary art gallery on a large site in downtown Beirut, with the aim of enlivening a derelict area awaiting further development. Given the task of incorporating the gallery within an existing steel-framed hangar they elected to cover its exterior in a syncopated, anodized and polished aluminium screen, designed to reflect the surrounding environment as a series of vertical planes [491]. This work entailed a collaboration with the distinguished Lebanese landscape architect Vladimir Djurovic, who was the designer of the bamboo garden situated immediately to the north of the gallery.

**491** L.E.FT Architects, Beirut Exhibition Center, Beirut, 2010.

Zaha Hadid's Issam Fares Institute of 2014 [492], crowning the upper campus of the American University of Beirut, was a dramatic sculptural exercise in which a canted five-storey building in fair-faced concrete hovered above its site in such a way as to facilitate current pedestrian movement and preserve the existing trees. This structure, which was a recipient of the Aga Khan Award for 2016, was

surely one of most plastically resolved works of Hadid's prolific career.

**492** Hadid, Issam Fares Institute, Beirut, 2014. Section.

## Israel/Palestine

During the British Mandate for Palestine (1918-48) – under which the British occupied and administered territories previously ruled by the Ottoman Empire – this area was one of the first in the Middle East to adopt the white architecture of the Modern Movement, above all in the so-called 'White City' of Tel Aviv. The fabric of the city was essentially composed of four-storey, walk-up apartment blocks, mostly designed in the 1930s and 1940s by German-Jewish émigré architects in the so called International Style. Migration of accomplished architects to Palestine greatly increased after the 1933 Nazi seizure of power in Germany, and among them was Arieh Sharon, who had been a pupil of Hannes Meyer in the Bauhaus and had previously worked for him on the design of the Federal School of the General German Trade Union Confederation (ADGB) in Bernau, Germany, of 1930. On his arrival in Palestine, Sharon became immediately involved with the design and development of workers' housing, comparable to Ze'ev Rechter's five-storey middle-class Engel apartment building, completed in Tel Aviv in 1933 [494]. Both Sharon and Rechter were members of the Tel Aviv Chug group, who were committed to a rigorous modern architecture capable of combining the values of Zionism with socialism. After the foundation of the Israeli

state in 1948 this generation completed a number of significant public buildings in Tel Aviv, most notably Rechter's Mann Auditorium of 1951 and Helena Rubinstein Gallery of 1957, both buildings combining with Oscar Kaufmann's Habima Theatre of 1937 to form a new cultural core in the city. Dov Karmi also belonged to this generation of architects, designing the administrative headquarters of the Histadrut, the country's all-powerful trades union organization. After 1948 immigration to Israel greatly increased the population – from 650,000 to nearly 5 million in the space of five years – which meant that the next generation of architects were largely involved in the design of low-cost housing.

The German-Jewish architect who had the most incisive cultural impact on Palestine was Erich Mendelsohn, whose finest works were realized in Jerusalem: the Schocken Library, built in the centre of the city in 1936, and the Hadassah hospital, completed on Mount Scopus in 1939 [493]. Mendelsohn's production in the region also included a bank in Jerusalem, a hospital in Haifa and a house for the scientist and politician (and later first President of Israel) Chaim Weizmann in Rehovot, where he also designed the Weizmann Institute before migrating to the United States in 1941.

**493** Mendelsohn, Hassan University Medical Center, Mount Scopus, Jerusalem, 1939.

**494** Rechter, Engel Apartment House, Tel Aviv, 1933.

Brutalism arrived in Israel in the 1950s with Ram Karmi, the son of Dov Karmi, who had been trained at the Architectural Association School in London and who produced two seminal works in Tel Aviv during his early

career: the offices of the ZIM Shipping Company on Rothschild Boulevard and the ORT School built just outside the city in 1956. Continually engaged in the design of housing as the population of the country continued to grow, Ram Karmi employed a mode of expression that became increasingly monumental and nationalistic, particularly after the Six Day War (5–10 June 1967). This tendency is suggested by the somewhat Post-Modern character of the Israeli Supreme Court in Jerusalem, dating from 1992, on the design of which he collaborated with his sister Ada Karmi-Melamede.

One of the most gifted architects to migrate to Israel was the Czech Alfred Neumann. He had been trained by Peter Behrens in Vienna in the 1920s, and first worked in Algiers and then in Paris, before moving to Israel in 1949 as a consequence of the Communist takeover in Prague in the previous year. When the young Israeli architects Zvi Hecker and Eldar Sharon won the competition for the town hall in Bat Yam in 1956, they invited Neumann, who had been their teacher in the Technion (Israel Institute of Technology), to join them in the development of the design. Neumann effectively transformed their initial proposal through the superimposition of a 262-centimetre wide tetrahedral modular unit, which was derived from his patent proportional system. Each upper tier of the three-storey town hall, with its square plan, was cantilevered out beyond the tier below it, thereby yielding an inverted pyramid that stepped out externally and stepped in internally to produce a three-storey internal courtyard, which was lit and ventilated from above via polyhedral ‘cowls’ built on the roof. This part *in situ*, part pre-cast concrete structure was left exposed with certain interstitial areas coloured blue, gold and red. Built from 1959 to 1963, it was originally conceived as the central symbolic structure set within a larger orthogonal piazza, which unfortunately was not executed in the ultimate development of the city.

Neumann's 'space-packing geometry' perfected for the Bat Yam Town Hall [495, 496] was continued throughout his career, with the exception of the single-storey, narrow-fronted housing that he designed for the Arab village of Ein Rafa in Israel in 1962. It is incredible from today's standpoint that this diminutive housing scheme was sponsored in the 1960s by the Israeli Ministry of Housing as part of a nationwide initiative to upgrade Palestinian housing. It was applied in some forty villages throughout the country [497]. Neumann proposed a standard type of dwelling with load-bearing stone cross walls and with a corrugated iron sheet to be used as permanent formwork to vault over the spaces between the walls. The economy of this system depended on the labour of the tenants themselves to reduce the overall building costs.

**495** Neumann, Bat Yam Town Hall, 1963.

**496** Neumann, Bat Yam Town Hall, 1963. Plan and section.

**497** Neumann, low-cost housing, 1963.

Like the Bat Yam Town Hall, Ein Rafa was conceived as a place that would transcend the historic divisions between Arabs and Jews. At the same time Neumann's obsession with tetrahedral geometry was not well received in Israel and after further controversy over a mechanical engineering faculty building that he designed for the Technion, Neumann became disenchanted with the country. He began increasingly to divide his time between Israel and Canada, serving as a visiting professor at the Ecole d'Architecture of the Université Laval, Quebec City, where he died prematurely at the age of sixty-eight.

A much larger work conceived as if it were a ‘city in miniature’ devoted to the exhibition of art would be realized in Jerusalem over the next five decades as the Israel Museum [498]. Designed by Alfred Mansfeld and Dora Gad, it was built on a continuous ridge just outside the old city. This building, predicated on a 6 x 6-metre (20 x 20-foot) gallery module, was expanded tenfold during the next decades on the same grid from an initial 4,500 square metres (48,437 square feet) in 1959 to 45,000 square metres (484,376 square feet) by the millennium. It was conceived as the ultimate ‘mat building’, and each of its stone-faced gallery modules was lit on at least two contiguous sides by clerestory fenestration. The refined detailing displays a distinctly Scandinavian character throughout.

**498** Mansfeld and Gad, Israel Museum, Jerusalem, 1959–92.

The 1967 Six Day War, which greatly increased the area of Palestine under Israeli control, had the effect of rendering the contradictory Zionist/socialist ethos of the state that prevailed during the waves of Jewish migration from 1920 to 1960 suddenly as outdated. With the so-called subsequent ‘civilian occupation’ of the West Bank, the Israeli state became an occupying power and a divided nation. As a paradoxical result, Israeli architects became preoccupied with the vernacular architecture of the region, and this has had the effect of tipping the received architectural taste of the country into a Post-Modern stylistic confusion. Nothing could be more removed from this fate than Rafi Segal and Zvi Hecker’s Palmach Museum of History [499] in Ramat Aviv of 1993–98, which, while ostensibly representing the past military prowess of the country, nonetheless evokes – through its countervailing massive forms and deliberately

brutal detailing in brick and concrete – the deeply tragic ethical quandary that continues to haunt the Israeli state.

**499** Hecker, with Segal, Palmach Museum of History, Tel Aviv, 1993–98.

## Iraq

As elsewhere in the Middle East, modern architecture was introduced into Iraq by European architects, first by Le Corbusier, who designed a sports complex for Baghdad in 1956, and then by José Luis Sert. Sert designed the U.S. Embassy in Baghdad [500] as a landscaped, medium-rise diplomatic oasis articulated by his tropical syntax of vaulted and folded-plate roofs, elevated above the main mass of the various structures so as to shield their internal volumes from intense exposure to the sun.

**500** Sert, United States Embassy, Baghdad, 1960.

A locally mediated modern architecture first made itself manifest in Iraq with Rifat Chadirji's Tobacco Monopoly Building [501], completed in Baghdad in 1967 as a reinforced-concrete form animated by cylindrical shafts of precision brickwork jutting out from the main body of the structure, along with a modern version of the traditional *mashrabiya* (a projecting oriel window with wooden latticework). Despite Chadirji's ingenious, discreet, yet arresting translations of traditional syntax in a modern idiom, one of the most sophisticated buildings to be completed in Baghdad in the 1980s was the Central Bank of Iraq, designed by the Danish architects Dissing and Weitling.

**501** Chadirji, Tobacco Monopoly Headquarters, Baghdad, 1967.

## Saudi Arabia

The dissolution of the Ottoman Empire in 1918 led to the progressive fragmentation of the Arabian Peninsula into a number of territories of varying size and sovereignty, including Saudi Arabia and the smaller Gulf states of what eventually became Kuwait, Qatar, Oman, Bahrain, Yemen and the United Arab Emirates. No one has perhaps summed up the impact that oil exploitation has had on this region more succinctly than Hasan-Uddin Khan, who wrote: In Saudi Arabia, the largest country of the Arabian Peninsula, the notion of architecture that expresses an Arab or Islamic identity assumed great importance and became the centre of its architectural agenda. The exploitation of oil made the country extremely rich and allowed for the rebuilding of old settlements and the establishment of new ones through five-year plans from the 1970's onwards. The unprecedented architectural activity of those decades attracted architects and construction companies from all over the world. At first modern international architecture took hold as being new, shiny and progressive. This was modernization was soon tempered by a nod towards religious building traditions by foreign and Arab architects alike. The country's architecture attempted to reflect a sense of national pride and identity by referring to the Nadji building tradition with its massive crenelated walls and deep narrow openings.<sup>1</sup>

It is symptomatic of this new oil wealth that the capital of Saudi Arabia, Riyadh, which in 1940 was a small fortress

town of 25,000 people, should grow to a metropolis of 3 million by the end of the 20th century. One of the first works of quality to be built in the emerging capital was designed by the distinguished Danish architect Henning Larsen, who in 1980 won a competition for the design of the new Saudi Arabian Ministry of Foreign Affairs. This fortress-like, virtually windowless, stone-faced monument occupied an entire city block. Even more fortified, to the point of having simulated battlements, was the Al-Kindi Plaza, completed in Riyadh as a new diplomatic quarter in 1986 to the designs of Ali Shuaibas. This was an urban megaform built around a large central plaza with a mosque capable of housing a congregation of 7,000 people. There followed in the same vein the Justice Palace and Mosque [502] completed in Riyadh in 1992 to the designs of the Jordanian architect Rasem Badran. Although of reinforced-concrete construction, the multi-block continuity of this megaform was clad throughout in local yellow stonework in such a manner as to evoke the castellated Nadji fortress tradition. Like the Al-Kindi Plaza this development, this complex was conceived as a 'city-in-miniature', including a public square and a vast mosque capable of accommodating 17,000 worshippers.

**502** Badran, Justice Palace and Mosque, Riyadh, 1985–92.

Two of the more prominent structures realized in Saudi Arabia during this period were designed by the American practice of SOM: first, the twenty-seven-storey National Commercial Bank, built in Jeddah to the designs of Gordon Bunshaft in 1983, and, second, the Hajj Terminal [503] of 1981, designed by the engineer Fazlur Khan of SOM's Chicago office. Located 70 kilometres (43 miles) west of Mecca and 60 kilometres (37 miles) north-west of Jeddah, this terminal was designed to receive over one million

pilgrims to Mecca each year, a figure that has since expanded exponentially as a result of the introduction of the wide-bodied jet airliners in 1970. This terminal comprises two pavilions; each one consists of five modules, with each module being covered by twenty-one tents made out of Teflon-coated fibreglass fabric. Each tent is 45 metres square (484 feet square) and rises from a height of 20 metres (65 feet) to top out at 33 metres (108 feet) above the ground. These elegant white cones are cable-suspended from 45-metre (148-foot) high, cylindrical steel pylons, while the fabric itself was designed to reflect 75 per cent of the sun's radiation and thus to maintain an internal temperature of 85°F (29.4°C) when the mean temperature outside was over 100°F (37.8°C).

**503** Khan (SOM), Hajj Terminal, Jeddah, 1974-81.

The most significant early 21st-century work in Saudi Arabia is the restoration from 2005 of the Wadi Hanifa [504], a valley near Riyadh, which over time had become toxic as the result of the wholesale dumping of sewage and industrial waste. The Canadian environmental practice of Moriyama and Teshima, in collaboration with engineers Buro Happold, bioremediated the *wadi* through series of weirs, pools, aerating pumps, benthic substrates (at the lowest level of the water) and riparian planting, so as to assimilate contaminants and purify the water. In course of this large-scale operation, ultimately covering 120 square km (46 square miles), they planted 4,500 palms and 35,000 shade trees, thereby converting large parts of the *wadi* into an elaborate park system for the benefit of the city.

**504** Moriyama and Teshima, restoration of the Wadi Hanifa, Riyadh, 2005 onwards.

# Iran

The Modern Movement first appeared in Iran with the Armenian architect Vartan Avanessian, who in 1935, after having been educated in France, returned to Iran to win a competition for the so-called Orphan School in Tehran. It was built as a half-Art Deco, half-modern symmetrical composition clad in precision brickwork and equipped with horizontal steel windows. However, a quarter of a century elapsed before a comparable modern work was realized in Tehran, namely the Bank Melli [505] built to the designs of the Danish architect Jørn Utzon in 1959. This was Utzon's first use of folded plates spaced out so as to admit natural light and ventilation to the banking hall beneath. Of equal tectonic consequence are the monumental steps that lead up to the elevated level of the bank, the podium of the banking hall, which is given a particularly local character through the ingeniously geometrical patterning of its stone floor.

**505** Utzon, Bank Melli, Tehran, 1959. Plan and sectional model.

However, paradoxically enough, modernity as such did not emerge more generally in Iran until after the overthrow of Mohammad Mosaddegh's democratically elected socialist government in 1953, through a coup orchestrated by the US Central Intelligence Agency (CIA). This typical Cold War intervention on the part of the US entailed the appointment of a member of the Pahlavi dynasty as the new Shah of Iran, a move that escalated the process of modernization under

the auspices of a monarchic government. Twenty years later, in 1973, on the occasion of a contrived celebration of the twenty-fifth centennial of the founding of the Persian Empire, two young architect-scholars, Nader Ardalan and Laleh Bakhtiar, published their summation of the Sufi tradition in Islamic architecture, entitled *The Sense of Unity*. This book, focusing on the cosmological and geometrical unity of the Islamic tradition, was a source of inspiration for many modernizing Middle Eastern architects, including the exceptionally talented Iranian Kamran Diba, who was also active as a landscape architect. This moment of state-backed revitalization gave rise to the Museum of Contemporary Art [506] in Tehran (1967), which was designed by Diba in collaboration with Ardalan. Influenced by José Luis Sert, Diba organized the museum as a layered concatenation of galleries lit by shell-concrete skylights mixed with single-light towers of virtually the same section, the latter alluding to the traditional ‘wind-catching’ towers of the Middle East.

**506** Diba, Museum of Contemporary Art, Tehran, 1967.

Given his connections to the Pahlavi dynasty – he was a cousin of Farah Pahlavi, then Empress of Iran – Diba was compelled to leave the country with the Islamic Revolution of 1979, although he was able to design and supervise the construction of the first phase of Shushtar New Town [507], built in the Khuzestan Province of Iran between 1974 and 1980. Erected as a company town for the workers of a local sugarcane plant, Shushtar was made up of low-rise, high-density housing blocks, except for a number of public buildings. Built of local brick throughout with shallow brick vaults supported by steel joists, these two-storey houses were provided with roof terraces, where residents could sleep in the open air in high summer. The orthogonal street

system, from which cars were excluded, served schools and shops, with the town as a whole aggregated around a 100 x 100-metre (328 x 328-foot) plaza in the centre of the plan. Despite its unfinished state, this was in many respects the most successful new town built anywhere in the second half of the 20th century, particularly for the way in which it combined a rational mode of assembly and construction with a traditional way of life.

**507** Diba, Sushtar New Town, Khuzestan Province, 1974-80.

The recent practice of Iranian architects seems to have been largely restricted to express themselves through the design of middle-class residential apartment buildings, such as the speculative development known as the Dollar II apartments, built in Tehran to the designs of the Arsh Design Group in 2010. This work, clad throughout in horizontal timber battens, shields its fenestration behind a screen of louvres. An equally expressive materiality is evident in an apartment block built at around the same time in Mahallat [508] to the designs of Ramin Mehdizadeh and faced in a mixture of recycled stone waste and vertical timber panelling. Apart from these occasional achievements, the country has been largely incapable of cultivating a significant architecture over the past four decades. As Farrokh Derakhshani, Director of the Aga Khan Award for Architecture, has written:

**508** Mehdizadeh, apartment building, Mahallat, 2010.

*Since the mid-1980s the practice of architecture in the world has somehow become transnational, and more and more architectural projects are being developed and implemented by non-local architects ... There are exceptions like Iran,*

*however, where foreign firms do not practice and all professionals are local. The resultant lack of firsthand exchange and the regime's inability to present the 'imagined' alternative has pushed the majority of young architecture students and architects to copy what they encounter on the Internet, without really achieving an understanding of the context underlying the projects that they are copying. Because of this, the bulk of new construction in Iran consists of bad copies of foreign models by mediocre architects.<sup>1</sup>*

## Gulf States

Among the Gulf States none has been more receptive to the best that Scandinavia can offer than Kuwait, which has commissioned one distinguished Nordic practice after another. The first project was the Kuwait Towers [509] realized in 1969 by the Danish-Swedish architect Malene Bjørn of the engineering firm VBB. Then in 1972 Jørn Utzon won the international competition for the Kuwait National Assembly. After this brilliant prestigious achievement, the Finnish architects Reima and Raili Pietilä were commissioned to extend the Seif Palace in Kuwait City in order to accommodate miscellaneous ministries and at the same time consciously evolve a possible strategy for creating a new Islamic architecture.

**509** Malene Bjørn (VBB), Kuwait Towers, Kuwait City, 1969.

In effect, these three commissions dealt with much the same issue, as may be seen in the Kuwait Towers, which were completed by VBB in 1976. This striking composition of

three towers of differing heights, sited on a promontory jutting out onto the bay of Kuwait, echoed the utopian phantasmagoria of Bruno Taut's *Alpinearchitektur* of 1919. Two of the three towers carry spheres of different diameters; the two spheres that constitute the highest forms accommodate a restaurant and a viewing platform, while the single sphere of the second-highest tower simply functions as a water reservoir. The third tower is without a sphere and accommodates devices to illuminate the other two towers at night. These towers have become a singular image of Kuwait in much the same way as the Eiffel Tower is associated with Paris.

Utzon's Kuwait National Assembly [510, 511] would prove to be outstanding from both an engineering and an architectural standpoint, since the two pre-cast concrete roofs covering the ceremonial hall and the assembly are both examples of ingenious post-tensioned, folded-plate, catenary construction. As such, they proved to be as difficult to hold in place during construction as the pre-cast shell concrete roofs of the same architect's Sydney Opera House. The rest of this complex is essentially a two-storey mat building, pierced by courtyards at regular intervals, a format that loosely echoes the top-lit, interstitial form of the typically labyrinthic pre-industrial Arab city. Although this structure was damaged during the Iraqi invasion of Kuwait in 1990-91, it has since been repaired and refurbished.

**510** Utzon, Kuwait National Assembly, Kuwait City, 1982.

**511** Utzon, Kuwait National Assembly under construction, Kuwait City, 1982.

One of the most extraordinary complexes realized in the Middle East in the second half of the 20th century was Qatar University [512], located 10 kilometres (6 miles) north of

Doha city and built to the competition designs of the Egyptian but Paris-based architect Kamal El-Kafrawi. This geometrically consistent, two-storey mat building is made up of repetitive, pre-cast concrete elements designed in association with Ove Arup and Partners. These units are based on two forms – an octagon 8.4 metres (27½ feet) wide and a square 3.5 metres (11 feet) wide – the two being occasionally set adjacent to one another and connected by two squares to form larger units. Each octagon is capped by a cubic windcatcher with louvred openings. The speed and efficiency of the construction system enabled the first phase, covering a wide area, to be built and equipped in five years (1980–85). Although the lower floors of the octagons are of diagrid construction, the upper rooms are capped by inclined planes beneath the windcatchers over each chamber. The elevations of these elements, opening to the courts, are covered by louvred timber screens.

**512** El-Kafrawi, Qatar University, Doha, Qatar, 1980–85.

Masdar City in Abu Dhabi, designed by Norman Foster, is a mixed-use, low-rise, high-density development connected to the capital city and the international airport by the existing road and rail infrastructure. Within the city all movement (apart from walking) will be by a rapid transit system, since fossil-fuel vehicles will be prohibited. Surrounding this densely inhabited square grid in the desert will be photovoltaic farms and irrigated plantations, intended to make Masdar self-sufficient in energy. Covering 600 hectares (2.3 square miles) and theoretically capable of accommodating 90,000 people, Masdar is predicated on the time-honoured design principles of Arab settlements, namely a compact, dense urban fabric with narrow streets that serve to shield the interstitial spaces from the sun.

# Chapter 3

## Asia and the Pacific

The vast span of this geographical domain can perhaps only be fully appreciated if one recognizes that it takes up three volumes within the ten-volume survey entitled *World Architecture 1900–2000: A Critical Mosaic*, which was published by the China Architecture and Building Press at the millennium. The territory covered in this account begins with the development of modern architecture in South Asia after the declaration of Indian independence in 1947, together with the partitioning of the former colony into India, with its largely Hindu population, and the predominantly Muslim societies of East Pakistan and West Pakistan, later to become Bangladesh. Modern architecture in India was largely championed by the charismatic first prime minister of the country, Jawaharlal Nehru, who, having received an elite British education, returned to India in 1912 to become the leader of the left wing of the Indian National Congress. Thereafter, Nehru remained committed to the development of India as a secular, multi-faith, independent nation state. The implementation of this vision caused him to become a patron of modern architecture, which he saw as being capable of both embodying and representing the Indian modern project. At the same time he was interested in a modern manner of building that was not only appropriate to the monsoon climate, but was also enriched by the cultural legacies of the Hindu and Mughal traditions. This led to his unequivocal support for the new Punjabi capital of Chandigarh, designed and realized by Le Corbusier, along with his patronage of a rising generation of

Indian architects who are prominently featured here, namely Achyut Kanvinde, Charles Correa, Balkrishna Doshi and Raj Rewal. These talented professionals were followed by the equally gifted representatives of the post-Nehru generation, such as Bijoy Jain, Sanjay Mohe and Rahul Mehrotra.

The more varied developments in the other nations that make up the South Asia subcontinent –Pakistan, Bangladesh and Sri Lanka – are in part due to the absence of a comparable modernizing vision of the same power and conviction as that of Nehru. Nevertheless, in the case of Bangladesh, we have to nevertheless acknowledge the equally exceptional leadership of the master architect Muzharul Islam, who was not only a sensitive architect in his own right, but also the primary inspiration for the successive generation of Bengali architects, such as Kashef Chowdhury, Marina Tabassum and Rafiq Azam. Similarly, the leading Sinhalese architects who emerged in the 1950s, Minnette de Silva and Geoffrey Bawa, would make seminal contributions to the architectural culture and identity of Ceylon prior to its declaration of independence in 1972 and its transformation into the independent state of Sri Lanka.

The development of a similarly inflected modern architectural culture came into being much later in China, partly because of its relatively undeveloped state prior to the Second World War and then the subsequent civil war, culminating in the triumph of the Communist Revolution in 1949. Despite the pioneering efforts of the architect and scholar Liang Sicheng in the late 1930s and 1940s to survey and document traditional Chinese architecture, and his subsequent attempts to dissuade Mao Zedong from following the Socialist Realism of the Soviet line in architecture, it proved impossible to overcome the cultural hard line of the party. Given the reductive nature of capitalist development, it is ironic that the cultivation of a modern architecture in China ultimately stems from Deng Xiaoping's opening up of the country to trade with the West

in 1983. Immediately after this Western corporate practices arrived in China *en masse* to design and build one spectacular building after another, while the central committee of the Chinese government pursued a policy of rapid large-scale urbanization, ultimately leading to an environmentally unsustainable, maximizing pattern of urban development virtually bereft of any redeeming features. This policy has since been drastically changed as much more attention is now being paid to the resuscitation of rural China, with the restoration and economic expansion of traditional settlements and villages. One of the consequences of this has been the emergence of a new generation of Chinese architects who have come to the fore by designing and building exceptionally sensitive and appropriate works in remote parts of the country.

A generalizable modern architectural culture has yet to emerge in South East Asia. For most of the countries making up the labyrinthic complexity of this region, including even the authoritarian welfare state of Singapore, the cultivation of a sophisticated culture of architecture has proven elusive. Part of the reason for this has been the war-torn nature of the region, as the Singaporean master architect William Lim has written:

*In the decades after World War II, the states of South Asia became independent after the departure of colonial powers – some like Malaysia and Philippines, in a relatively peaceful manner, while others only after tragic and brutal struggles. Vietnam, Laos and Cambodia were the unfortunate victims of the cold war. These countries were to witness half a century of great turmoil and ideological divisions. They have been engulfed by an extremely bloody form of warfare and destruction.<sup>1</sup>*

This traumatic experience, along with the fact that large parts of South East Asia have since time immemorial been

water-based societies, has made it extremely difficult for South East Asia to evolve and sustain a truly compelling culture of modern architecture.

Within this context Japan stands out as a civilization that was able to transform itself in the space of half a century from a feudal society into a modernized, quasi-industrialized nation state, capable, as it happened, of overwhelming the Russian imperial fleet in a single encounter during the Russo-Japanese War of 1905, thereby paving the way for its emergence as an East Asian colonizing power. After occupying Manchuria in northeast Asia in 1931, Japan launched the idea of its so-called Greater East Asia Co-Prosperity Sphere, a concept created and promulgated for Asian territories that it occupied, which would further amplify its imperial ambitions and bring it into bitter conflict not only with China but also more problematically, after Pearl Harbor, with the United States. In 1945 Japanese expansionism ended with the country being the involuntary testing ground for the first use of the atomic bomb. The post-war reconstruction of Japan enabled it to play a leading role in the development of modern architecture, which accounts for its inclusion in Part III of this history. However, this section features the work of two Japanese architects who belong to quite different generations: Fumihiko Maki and the much younger Kengo Kuma. The first is celebrated in this overview for the vitality and refinement of his practice while the second is acknowledged for the particular way in which he integrates traditional Japanese crafts into his architecture.

Korea has had a time-honoured role of acting as a conduit for the introduction of Chinese civilization into Japan, but was also the first Asian country to be annexed by Japan as early as 1910. Half a century later Korea became the site of a bitter conflict lasting from 1950 to 1953 between the Communist government of North Korea, under Soviet influence, and the American-aligned South Korea.

This war culminated in an uneasy peace, with the stalemate of a demilitarized zone separating North and South Korea along the 38th parallel north.

This continental trajectory concludes with two independent nations that throughout the first half of the 19th century represented the most remote extent of the British Empire, namely Australia and New Zealand. The first significant architectural intervention in the largely barren expanse of the former was the foundation of the Australian capital of Canberra in 1912, designed by the American architects Marion Mahony and Walter Burley Griffin. While these same architects came up with a proto-modern architecture for Australia as early as 1917, a general culture of modernism did not begin to evolve there until the 1950s, when it emerged out of the domestic work of such architects as Peter Muller, Ken Woolley, Robin Boyd and Harry Seidler. A similar delayed effect also occurred in New Zealand; a rigorous modern architecture appeared for the first time in 1940 with the work of the émigré Austrian architect Ernst Plischke.

## India

*The India of today faces a growing phenomenon perpetuating the reappearance of ancient practices in numerous temples and an entire range of institutional buildings being constructed across the country ... Many religious buildings are powered by capital from the Indian Diaspora which frequently places nationalism at the center of its agenda, blurring the lines between religion, politics and ungrounded or misplaced nostalgia. Furthermore with globalization, communities, especially marginalized ones, have become increasingly concerned about threats to their*

*identities as well as to their autonomy. This phenomenon questions the very foundation of the nation state and its time-tested capacity to absorb influences from the wider world in constructing, enriching and perpetuating its own identity.*

Raoul Mehrotra, *Architecture in India since 1900* (2011)<sup>1</sup>

We may date the beginning of modern architecture in India with the return of Achyut Kanvinde to Delhi after his graduation from Harvard, where he had been sent by Jawaharlal Nehru (the first Prime Minister of India) to study with Marcel Breuer and Walter Gropius. After he opened his office in New Delhi in 1955, Kanvinde's practice began to expand around 1960 with the design of the Indian Institute of Technology in Kanpur [513]. The design of this campus may be seen as a synthesis of Le Corbusier's 1950 master plan for Chandigarh and Louis Kahn's monumental brick syntax of 'servant' and 'served' spaces, as first elaborated in his Richards Laboratories, completed in Philadelphia in 1961. Thereafter Kanvinde's Kahnian approach would be developed in a number of major megastructural works commissioned by the Indian state: the National Dairy Plant at Mehsana in the state of Gujarat (1970–73), the Nehru Science Centre at Mumbai (1978–82) and the National Science Centre, New Delhi (1986–90). All of these works were predicated on distinguishing between servant and served elements, both functionally and expressively, at various scales, with Kanvinde giving the servant units a distinctive turreted format reminiscent of the *howdahs* found in Mughal architecture, such as the Agra Fort and Emperor Akbar the Great's 16th-century ideal city of Fatehpur Sikri.

**513** Kanvinde, Indian Institute of Technology, Kanpur, 1966. Section.

The New Delhi architect Raj Rewal elaborated a similar New Brutalist format comprising a reinforced-concrete frame with brick infill over the course of his extensive work as a public architect from the late 1960s onwards. Despite his distinguished career in this field, Rewal was to make his initial contribution to the modern Indian tradition as a housing architect, most particularly as a designer of low-rise, high-density schemes. In this domain, he has been exemplary, achieving works that were certainly as distinguished as Atelier 5's Siedlung Halen in Switzerland of 1960, or Roland Rainer's Puchenau housing complex, under construction throughout the 1960s near Linz, Austria. Rewal's first notable residential schemes were his Sheikh Sarai housing (1970–82), Zakir Hussain housing (1979–84) and his magisterial Asian Games Village housing [514, 515] built in New Delhi (1980–82). With this work, Rewal was able to achieve a low-rise, high-density pattern with more extensive urban connotations than had hitherto been achieved elsewhere. In his Asian Games housing Rewal designed 500 units on a 35-acre (14-hectare) site, engendering a labyrinth of narrow, shaded pedestrian streets combined with judiciously placed courtyards. Borrowing vernacular tropes from Rajasthani villages, Rewal's Asian Games housing was punctuated by units bridging over gateways so as to mark the transitions from one neighbourhood to the next.

**514** Rewal, Asian Games Village, New Delhi, 1980–82.

**515** Rewal, Asian Games Village, New Delhi, 1980–82.

After graduating from MIT Charles Correa returned to India to establish his practice in Mumbai in 1958. Despite his long-standing regard for Le Corbusier, Correa, like

Kanvinde and Rewal, looked to Kahn as his point of departure, as is evident from his first major commission, the Gandhi Smarak Sangrahalaya memorial (1958–63) [517], derived from Kahn's Trenton Bath House complex, built outside Trenton, New Jersey, USA, in 1959. Correa's subsequent contribution to housing in India throughout the 1960s ranged from the design of one-off middle-class houses, to the building of a series of modest, low-rise, high-density housing schemes. The one exception to Correa's low-cost, low-rise housing practice was his twenty-seven-storey Kanchanjunga high-rise, completed on the Cumbaila Hill in Mumbai in 1983 [516]. This unique tower block comprised thirty-two large luxury apartments stacked in pairs, with the duplex units stepped down or up in section so as to provide two-storey external terraces at the corners of the tower.

**516** Correa, Kanchanjunga Tower, Mumbai, 1983.

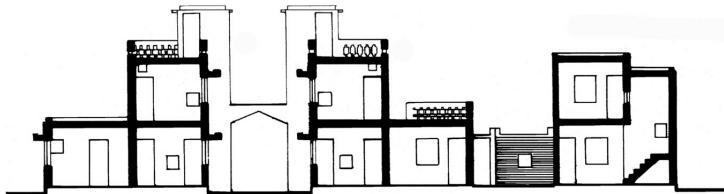
**517** Correa, Gandhi Memorial, Ahmedabad, 1963.

Of virtually the same generation, Balkrishna Doshi worked in Le Corbusier's Paris studio in the early 1950s, first on the plan for Chandigarh and then on the three buildings that Le Corbusier designed for Ahmedabad, the construction of which Doshi would supervise after his return to India in 1955. Seven years later he began his own practice with a commission for the Institute of Indology in Ahmedabad, completed in 1962. Doshi finally transcended his long apprenticeship with Le Corbusier in 1981, with the design of his Sangath studio compound [519], comprising eleven semicircular, shell concrete vaults partially locked one over the other, accommodating his Vastu Shilpa office, where he continues to practise. Doshi's most successful attempt to

provide low-rise housing for the poor in India was his two-storey Aranya residential quarter built in Indore, Madhya Pradesh, in 1986 [518, 520]. Each dwelling in this dense, two-storey urban complex, built of concrete block, rendered with cement and painted red, was equipped with two essential installations – a toilet and a kitchen sink – both linked to the basic infrastructure, water supply and the sewer system.

**518** Doshi, Aranya Community Housing, Indore, 1986.

**519** Doshi, Sangath Studio Compound, Ahmedabad, 1981.



**520** Doshi, Aranya Community Housing, Indore, 1986. Section.

Rahul Mehrotra is perhaps the most prominent Indian architect of the post-Nehru generation, which has had to confront the political transformation of India from an enlightened, underdeveloped welfare state to a neo-liberal, digital economy, inseparable from the rapid, but nonetheless uneven development of the continent today. This techno-economic shift has been accompanied by the emergence of an exceptionally sophisticated Indian modern architecture, evident in such works as Sanjay Mohe's NSR-GIV Center at the Indian Institute of Management, Bangalore, of 2003 [521] and in Mehrotra's Tata Institute of Social Sciences (TISS) University Campus in Tuljapur, Maharashtra [522, 523], of the same date. Both of these works are sensitively integrated with their respective landscapes, either by syncopated monopitch roofs or the

rhythmic pattern of wind towers. The articulation of bonded masonry also plays a major role in the expressive character of these works, concrete block in the case of the Bangalore research centre and the local stone in the case of the Tuljapur campus.

**521** Mohe, NSR-GIV Center at Indian Institute of Management, Bangalore, 2003.

**522** Mehrotra, Tata Institute of Social Sciences Rural Campus, Tuljapur, 2004.

**523** Mehrotra, Tata Institute of Social Sciences Rural Campus, Tuljapur, 2004. Section.

Three later works by Mehrotra further testify to the diversity and refinement of his socio-tectonic vision: the ongoing project of the so-called Hathigaon [524], or ‘elephant village’, built on an arid plain close to the Amber Palace near Jaipur; the six-storey, free-standing KMC office building [525, 526], erected outside of Hyderabad in 2012; and a monumental cantilevered metal roof, built in 2003 on a rocky outcrop overlooking a tea plantation in Coonoor.

**524** Mehrotra, Hathigaon, Jaipur, 2010.

**525** Mehrotra, KMC Corporate Office, Hyderabad, 2012.

**526** Mehrotra, KMC Corporate Office, Hyderabad, 2012.

The Hathigaon is an improbable low-rise settlement built to house 100 elephants with their *mahouts* (caretakers),

along with their families, within a relatively large compound of two-storey houses, where each house is equipped with an adjoining stable for the elephant. The entire complex is built of local rubble stone. A key ecological feature of this project is the harvesting of rainwater essential for the bathing and cooling of the elephants, which also enables the irrigation of an arid site so that it provides enough water to satisfy the community, including animals' outsized thirst. The flat roofs of the patio houses are shielded from the sun by a layer of light-weight, corrugated-iron roofing, which doubles as a system of racks for storing hay. This not only provides an additional layer of insulation, but is also a convenient hayloft from which, with the aid of their trunks, the elephants may help themselves.

Mehrotra's high-tech, curtain-walled KMC office building is surrounded on all four sides by an equally high-tech green buffer zone that shields the building from the full force of the sun. This is, in effect, an all-round conservatory accommodating a rich variety of plants suspended within an aluminium trellis and fed by hydroponic irrigation. This space is equipped with an automatic misting system, which not only sustains the plants but also cools the building through an artificial microclimate. The presence of gardeners, employed to look after the plants, has the effect of juxtaposing different classes of workers on either side of the curtain wall. This not only enlivens the building but also serves, in some sense, to mitigate the caste and class differences that still prevail in India.

Mehrotra's comprehensive and wide ranging survey *Architecture in India since 1990* (2011) appropriately ends with a stone temple [527] built to the designs of Sameep Padura Architects near Wadeshwar village on the outskirts of Pune in (2010). Largely built by village labour (*shiram dan*), this temple was constructed of precisely dressed local stone. The architects played a crucial role in determining the scale of the *stupa* (shrine) and in detailing the

orthogonal timber portico that allows priests to enter into the holiest part of the *stupa*. A stepped seating area in front of the temple transforms a communal greensward into a sacred space.

**527** Padora, Shiv Temple, Wadeshwar, near Pune, 2010. Section.

The other major talent to emerge in India in the late 1990s was Bijoy Jain, and his firm, Studio Mumbai, adopted a unique ‘hands-on’ approach to design and construction, thereby returning to the William Morris ideal of overcoming the division of labour separating architects from craftsmen. Having been trained as an architect in the United States, where he worked for some time in the model shop of the Los Angeles office of Richard Meier, Jain returned to India to establish himself as a latter-day master builder. In this role he worked not only as a designer but also as the coordinator of a team of highly versatile Rajasthani carpenters, who were to prove to be as capable of precise fabrication in steel and ceramics as they were of executing traditional components in wood, such as doors, windows and detailed cabinetwork of all kinds. Through this uniquely integrated approach, Studio Mumbai would not only demonstrate mastery over the aforementioned crafts, but also equal skill in the handling of masonry and milled stonework in conjunction, if needs be, with paint and coloured plaster. As Peter Wilson has written: Studio Mumbai’s locus is in fact not even a building, more a tin-roof held aloft by scaffolding poles—A palm tree nonchalantly grows through the middle. From the roofs hang fans and fluorescent tubes (working through the night is not unknown, product continues seven days a week). In May the roof gets an extra plastic layer in preparation for the monsoon. Below the canopy is the production stage, open on three sides, with a backdrop wall, lined warehouse-like with materials—chairs wrapped for

shipping, flasks of pigment looking like an arsenal of colour awaiting the Indian Holy festival, a tray of hand-made brass switches, logs, slabs of dark uncut wood, ceramic basins, etc. Studio Mumbai is a one-stop shop. They deliver everything, the entire project, worldwide when necessary ... Many of the craftsmen are traditional Rajasthani carpenters, sitting on the pressed-earth floor, holding a piece of wood between their toes, chiselling a precise dovetail joint ... Few drawings are produced. Details often evolved on site and in dialogue with the craftsmen entrusted with the realization. Bijoy Jain has issued notebooks not only to carpenters but also to electricians and other studio collaborators ... the architect's role is to select —a surprising reversal of the more familiar hierarchies of invention, description and implementation.<sup>2</sup>

At the same time, one has to recognize that, like Morris before them, the output of Studio Mumbai has largely been in the service of the élite in as much as they have built a number of exquisitely detailed luxurious houses in the state of Maharashtra, particularly the Tara and Palmyria Houses of 2005 and 2007 [530, 531] respectively. The Tara House is a rather traditional, low-pitched roof structure on a grand scale, built around an underground water tank and surrounded by lush vegetation. In contrast, the Palmyria compound consists of two long and elegantly planned flat-roofed, timber-framed villas, their sides covered with timber louvres so as to expose their subdivided interiors to cooling breezes coming off the nearby beach and ocean.

**528** Mehrotra, Lilavati Lalbhai Library, CEPT, Ahmedabad, 2017.

**529** Mehrotra, Lilavati Lalbhai Library, CEPT, Ahmedabad, 2017.

**530** Studio Mumbai, Palmyria House, Nandgaon, 2007. Site plan.

**531** Studio Mumbai, Palmyria House, Nandgaon, 2007.

## Pakistan

After the departure of the British in 1947, India had the fortune of being inspired by Nehru's modernizing, democratic vision, in which modern architecture was destined to play a seminal role. Pakistan, however, had its latent modernizing drive tempered by a military government that until the early 21st century kept itself in power from one generation to the next. A decade after partition, in 1958, the military leader of the time, Ayub Khan, decided to shift the capital from Karachi to Rawalpindi, where the state would create adjacent to it the totally new city of Islamabad on a gridiron plan prepared by the international planning consultancy Doxiadis Associates, based in Athens. A number of other foreign architects were involved in the design of Islamabad, most notably the American architect Edward Durell Stone, whose pyramidal presidential complex in the centre of the plan is the most successful monumental work of his career. Stone's presidential residence dominates the principal axis of the main square with the Assembly and Foreign Office set at either end of the cross-axis. In the development of this work Stone persuaded Ayub Khan to avoid any literal evocation of Mughal architecture, and a similar, somewhat secular interpretation seems to have led to the selection of the Turkish architect Vedat Dalokay for

his entry to the 1970 international competition for the design of the Shah Faisal national mosque in Islamabad [532]. This highly refined, largely abstract work features four inclined concrete roof plates covering the large space of the mosque, attended by four equally abstract minarets.

**532** Dalokay, Shah Faisal Mosque, Islamabad, 1970-86.

Until the establishment of a department of architecture in West Pakistan University of Engineering and Technology, Lahore, in 1965, Pakistan's architects were mostly trained outside the country, either in the United Kingdom or United States. Among these foreign-trained architects were Habib Fida Ali and Yasmeen Lari. One of the finest works of Fida Ali's initial career was the Burmah-Shell oil company headquarters in Karachi, won in competition in 1973 and subsequently carefully developed and detailed, although not finally completed until 1978 [532]. Removed from the dramatic character of Fida Ali's early work, Yasmeen Lari's architecture was equally finely detailed as is evident from the houses that she built in the 1970s, including the Commodore Haq house and her own house, both in Karachi. Perhaps her most sensitive work to date has been the Anguri Bagh housing in Lahore, which, save for its underlying concrete superstructure, is faced entirely in brick in much the same spirit as Ray Rewal's Asian Games Village housing, New Delhi (1980-82).

**533** Fida Ali, Pakistan Burmah-Shell Headquarters, Karachi, 1973-78.

Four other architects played key roles in the initial development of Pakistan's modern architecture: the locally trained Nayyar Ali Dada, who began his career by designing and realizing the monumental Shakir Ali Auditorium in the

National College of Art in Lahore; the American William Perry, who designed the precisely detailed Business Administration Institute in Karachi; the ubiquitous French architect Michel Écochard, who designed a Neo-Corbusian complex for Karachi University; and finally the American practice of Payette Associates, which designed the 700-bed Aga Khan University Hospital in Karachi, under construction from the mid-1970s to 1985. This treatment centre and medical school has since been greatly expanded.

## Bangladesh

The leading architect of the post-independence generation in Bangladesh was Muzharul Islam, who, after the 1971 war of liberation, played a major role in devising a modern architecture that would be appropriate to the heavy monsoon climate of Bengal [534]. Throughout his life Islam served intermittently as an architectural adviser to the government, and this eventually led to the appointment of Louis Kahn as the architect of the national assembly building, the Sher-e-Bangla Nagar [535], finally completed in Dhaka in 1963. Through his Chetana research group, Islam combined architectural discourse with the cultural aspirations of the 19th-century Bengal Renaissance, as personified by the writer, musician and artist Rabindranath Tagore, to which Islam added a left-wing critical sensibility appropriate to his epoch.

**534** Islam, architect's residence, Dhaka, 1969. Section.

**535** Kahn, National Assembly Building, Sher-e-Bangla Nagar, Dhaka, 1963.

Among the current generation of Bengali architects to inherit this legacy was the partnership of Kashef Mahboob Chowdhury and Marina Tabassum, who began their joint career by winning the 1997 national competition for the Independence Monument and the Liberation War Museum, a work which, after many delays, was finally completed to their designs in the Suhrawardy Udyana in Dhaka in 2013. Following the dissolution of this husband-and-wife partnership at the millennium, Chowdhury designed and built two outstanding works: the Chandgaon Mosque in Chittagong (2005) and a training facility known as the Friendship Centre [536, 537], built on a flood plain at Gaibandha some 250 kilometres north of Dhaka. The mosque, built amid rice paddies, consists of a single-storey concrete structure with a double square plan divided between an open-air forecourt and a domed prayer hall. In contrast, the Friendship Centre is a single-storey, grass-covered, load-bearing brick matrix, constructed as a labyrinth of rooms interspersed with courts and rain-harvesting tanks. Everywhere in the Bengal Delta, water is both a precious resource and a threat. Thus, in addition to the flood protection – an earthen berm surrounding the orthogonal complex – it was necessary to implement an elaborate network of water mains, service runs and septic tanks in order to ensure that floodwater would not mix with sewage during the monsoon season.

**536** Chowdhury, Friendship Centre, Gaibandha, 2011.

**537** Chowdhury, Friendship Centre, Gaibandha, 2011. Section.

Tabassum's Bait Ur Rouf Mosque [538, 539], completed in 2013 at Faidabad Uttara, in the northern extension of Dhaka, is equally Kahnian both in its intrinsic geometry and the load-bearing brickwork out of which it is largely built. The form of this diminutive mosque - 75 feet (22.8 metres) long on each side of its square plan and 25 feet (7.6 metres) in height - is predicated on the rotation of a square within a square, so that the prayer hall faces towards Mecca. The prayer hall itself is of reinforced-concrete construction set within a brick enclosure and surrounded by a two-storey interstitial promenade also rendered in brick. Sunlight enters the prayer hall from the sides through this space and also from a proliferation of small apertures in the roof. Of virtually the same date, Tabassum's Eco Resort at Jessore comprises a cluster of small, motel-like pavilions with thatched roofs, on top of a system of raised platforms made out of compacted earth. This tourist settlement embodies in every respect the floodplain culture of the delta by which it is surrounded on every side.

**538** Tabassum, Bait Ur Rouf Mosque, Dhaka, 2013. Plan.

**539** Tabassum, Bait Ur Rouf Mosque, Dhaka, 2013.

The other Bengali architect of distinction of approximately the same generation as Chowdhury and Tabassum is the architect-painter Rafiq Azam, who began his career by expanding his childhood family home in Dhaka while he was still a student in 1986. This was a traditional brick courtyard house that had to be rearranged and amplified so as to accommodate an enlarged family, a task that he partially achieved by providing a terrace, opening directly off the living space, on the first floor of the new structure. As much Chowdhury, Azam has a particular

feeling for the vast floodplain of Bangladesh which finds expression in the extraordinarily emotive watercolours through which he expresses the constantly changing seasons of the delta. Following his modifications to the family home, and a period of apprenticeship, Azam's early practice led to a series of five- to six-storey, Kahnian apartment buildings combining vertical shafts of precision brickwork, cantilevered corner fenestration and oversailing roofs at the crown of each apartment tower. He has since adapted this format to a number of single family 'tower' houses. Influenced as much by Tadao Ando as by the work of Kahn, Azam, in his maturity, has emerged as a monumental architect and landscapist of calibre, first with a family cemetery at Botkhil, Noakhali, of 2012 and then with his sublime project of 2015 for the Bangladeshi Chancery [540] in Islamabad, Pakistan.

**540** Azam, project for the Bangladesh Chancery complex, Islamabad, 2015.  
Rendering.

## Sri Lanka

In Sri Lanka, formerly known as Ceylon, the most talented exponent of what is now known as *vernacular modernism* was the native-born, British-educated Geoffrey Bawa, who first came to public notice with his wood-framed, pitched-roof Bentota Beach Hotel of 1969. In the evolution of his idiosyncratic regional manner Bawa would be influenced by two seminal figures: first, the Sri Lankan architect Minnette de Silva, who had studied at the Architectural Association School in London and who in 1948 became the first Asian

female member of the RIBA; and, second, by the émigré Danish architect Ulrik Plesner, who would work closely with Bawa during the first half of the 1960s. As much esteemed for his landscape design as for his architecture, Bawa would begin work in 1948 on his country estate of Lunuganga, his landscape masterwork, which occupied much of the rest of his life.

Bawa's luxurious tropical manner was elevated to monumental status with his Sri Lankan Parliament complex [541], built on a small island in the middle of an artificial lake at Sri Jayawardenepura, Kotte, in 1982. He followed this government commission with a plan for a new university at Matara, under continuous development from 1980 to 1988. The green wall of vegetation covering the exposed frame of the Kandalama Hotel at Dambulla is one of his most significant later works. Completed towards the end of his life, it not only embodies the sense of tropical luxus for which he was renowned but is also a kind of ecological *tour de force* deceptively presenting the hotel as a quasi-ruin about to be consumed by the exuberant tropical jungle of its hilltop site.

**541** Bawa, Parliament Complex, Colombo, 1982.

A more recent regionally sensitive work in Sri Lanka is the British High Commission [542] built in Colombo to the designs of the Edinburgh-based architect Richard Murphy. This work is not only passively responsive to the climate, but also sensitively contextual by virtue of its use of native *kaluga*/stone, local terracotta tiles and coconut timber panels. Equally local in character is its orthogonal organization around water courts and fountain pools, which contribute to the building's natural ventilation and cooling. This process is augmented by glass skylights set over the

central access corridors, which act as thermal chimneys, venting hot air out of the offices they serve.

**542** Murphy, British High Commission, Colombo, 2008.

Among a rising generation of young Sri Lankan architects working within the distinctly local modern tradition initiated by Geoffrey Bawa are such figures as Hirante Welandawe, Channa Daswatte, Amila de Mel, Palinda Kannangara and above all, perhaps, the practice of Team Architrave. Team Architrave's elegant, steel-framed, six-storey office building, designed and realized in 2017 in the midst of Colombo's chaotic downtown, is a welcome realistic 'green' oasis.

## China

*Maybe Team X and Archigram were, in the sixties, the last real 'movements' in urbanism, the last to propose with conviction new ideas and concepts for the organization of urban life. In the long interval since their time, there has been a huge increase in our understanding of the traditional city; there has been the usual ad hoc intelligence and improvisation, and the development of a kind of plastic urbanism, increasingly capable of creating an urban condition free of urbanity. At the same time, Asia has been in the grip of a relentless process of building, on a scale that has probably never been seen before. A maelstrom of modernization is destroying everywhere the existing conditions in Asia and everywhere creating a completely new urban substance. The absence, on the other hand, of plausible, universal doctrines and the presence, on the*

*other, of an unprecedented intensity of production have created a unique, wrenching condition: the urban seems to be least understood at the very moment of its apotheosis.*

*The result is a theoretical, critical, and operation impasse, which forces both academia and practice into postures of either confidence or indifference. In fact, the entire discipline possesses no adequate terminology to discuss the most pertinent, most crucial phenomena within its domain nor any conceptual framework to describe, interpret, and understand exactly those forces that could redefine and revitalize it. The field is abandoned to 'events' considered indescribable or the creation of a synthetic idyll in memory of the city. There is nothing left between chaos and celebration.*

Rem Koolhaas

*Project on the City I: Great Leap Forward (2001)*<sup>1</sup>

The continuous turmoil that befell China with the foundation of the Republic in 1911, followed in short order by a civil war (1927-49) and by the Japanese occupation (1931-45), was hardly conducive to the cultivation of modern architecture. Moreover, twice in the 20th century the Chinese state opted to represent itself in Western Classical terms: first, in the mausoleum of the founder of the Republic of China, Sun Yat Sen, built at Nanjing in 1929 to the designs of Lu Yanzhi; and second, with the Ten Great Buildings erected in Beijing in 1959 in celebration of the tenth anniversary of the Communist Revolution, testifying to Mao Zedong's affinity for Soviet Socialist Realism that made any creative discourse on architecture in China virtually impossible until well after his death in 1976. The one figure who attempted to evolve an appropriate modern architectural culture in China under Mao was the American-trained architect-scholar Liang Sicheng, and it would be another seven years after Mao's death before Deng Xiaoping, who succeeded

Mao as leader of the People's Republic of China, was able to overcome the ideological impasse and open up China to international trade and cultural exchange in 1983.

One of the first foreign architects to build in the People's Republic of China was the Chinese-American I.M. Pei, who completed his Fragrant Hill Hotel on the outskirts of Beijing in 1982. One year later the American corporate practice of Ellerbe Becket built a mediocre multi-storey hotel next to the time-honoured Great Wall. It would be another decade before China's new-found 'open-door' policy was able to expand exponentially, beginning with the government of Shanghai, which opted to transform the former horticultural area of Pudong into a new business centre. This decision led in short order to the building of multiple skyscrapers there, including the eighty-eight-storey, pagoda-like skyscraper known as the Jin Mao Tower to the designs of SOM in 1998, which was followed by the audacious 'sci-fi' form of the spectacular 492-metre high World Financial Center, designed by the New York corporate practice of Kohn Pedersen Fox in 2007. By this date Deng Xiaoping's 'open-door' policy was in full swing, with one Western architectural practice after another establishing itself in China. They included the French architect Paul Andreu, who was commissioned to design the prestigious National Grand Theatre of China, just off the main axis of the capital, linking the Forbidden City to Tiananmen Square. Completed in 2002, this 144-metre span, titanium-clad ellipsoid shell housed three separate performance spaces under a single roof: a 2,416-seat opera house, a 2,017-seat concert hall and a 1,040-seat theatre. This architectural extravaganza, poised in the middle of a large reflecting pool, was accessible only by car via a subterranean tunnel. It was typical of a number of equally prestigious gargantuan structures to be built by foreign architects over the next decade, including Norman Foster's Beijing International Airport of 2007, with its dynamic chevron, aerodynamic

layout in plan. The rapacity of China's development at this time may be judged from the fact that a decade after the millennium, the country was consuming 54 per cent of the world's concrete and 36 per cent of the world's steel. This frenetic production, with building sites kept active day and night, entailed an enormous amount of wilful destruction and demolition that affected the countryside as much as the city. According to research carried out in Tianjin University, between 2000 and 2010, the number of villages in China dropped from 3.7 million to 2.6 million, with rural areas losing villages at the rate of 300 a day.

Between 2000 and 2002 a number of young Chinese and Asian architects were invited to design exhibition houses on a site close to the capital. This showpiece settlement, commissioned by the developer couple Zhang Xin and Pan Shiysi, was given the name Commune-by-the Wall. Among the architects who built houses there was Yung Ho Chang [543], whose Split House, constructed of adobe walls and timber framing, was one of the most original and elegant pieces on the site. The only other house on this site to display a similar level of tectonic expressiveness was the Bamboo House designed by the Japanese architect Kengo Kuma [544]. Of the same period, an exceptionally original and authentic house with respect to its structural clarity and material richness was Qingyun Ma's Father's House of 2002 [545], built in the Jade Valley in the rural enclave of Lantian. This was a reinforced-concrete-framed, two-storey structure, fleshed out with masonry and full-height timber shutters, and with flanking walls finished with smooth pebbles gleaned from a nearby river.

**543** Yung Ho Chang, Split House, Beijing, 2002. Ground-floor plan.

**544** Kuma, Bamboo House, Commune at the Great Wall, Beijing, 2002.

**545** Qingyun Ma, Father's House, Lantian, Xian, 2002.

In many respects Hong Kong has been fertile ground for the development of a compelling culture of late modern architecture in China, not only for the established practice of Hong Kong-born Rocco Yim, who works as much in the Chinese mainland as in Hong Kong, but also the research and design collaborative practice Rural Urban Framework (RUF), based in the University of Hong Kong and founded by Joshua Bolchover and John Lin. To date RUF have achieved two remarkable works: the Angdong Hospital, built in Xiangxi in Hunan Province in 2011, and the House for All Seasons, built in Shija village in the north-western province of Shaanxi in 2012. Angdong Hospital's main innovation is its organization around a continuous concrete ramp, which facilitates pedestrian circulation throughout its five-storey form without the use of an elevator. Like the hospital the two-storey courtyard house in Shija is clad in perforated brickwork. Its stepped, multi-functional flat roof serves as both a space for drying agricultural produce and as a means of collecting rainwater.

The Taiwanese architect Wang Weijen, who is also based in Hong Kong, has had to confront extremely dense urban conditions, particularly when designing college campuses on exceptionally congested sites in the city such as the Lingnan University in Tuen Mun (2005) or the Hong Kong Polytechnic University (2008). In both instances, he met the spatial requirements by piling modular units into tower-like forms overlaid by syncopated fenestration, which imparted a dynamic plasticity to the final mass-form. A similar counterpoint of skin versus structure is evident in the twelve-storey dormitory block that Wang designed and built in Shenzhen, Guangdong Province, in 2016 for the Chinese University of Hong Kong. Wang has also been responsive to demanding topographical conditions, for example in the

Baishawan Beach facility in Taipei, Taiwan, of 2002 [546], where a syncopated pattern of monopitched, grass-covered roofs fuse with the landscape, or in the Xixi Wetlands Artist Village in Hangzhou (2012). There, inspired by a local tradition of 12th-century landscape painting, clusters of two- to three-storey-high studios with large picture windows jointly afford framed views over the surrounding wetlands that are conceived as a linked sequence of kinetic landscape images.

**546** Wang Weijen, Baishawan Beach Visitor Centre, Taipei, 2002.

The Amateur Architecture Studio of Wang Shu and Lu Wenyu has adopted an equally topographic approach towards the environmental devastation wrought by the Chinese building boom around the millennium. Wang Shu and Lu Wenyu are preoccupied with recovering something of traditional Chinese building culture in their work, as is partially evident from their Ningbo Historical Museum [547], built in Yinzhou on the outskirts of Ningbo in 2008. Conceived as if it were a medieval fortification surrounded by moat, this museum has 24-metre high concrete walls faced with the traditional *wa pan* technique. In this method, the surface is covered by a mosaic of grey, red and brown bricks and tiles, integrally cast into the concrete walls, the ceramic and terracotta material having been salvaged from demolished farmers' houses that previously existed on the site and elsewhere in the immediate vicinity.

**547** Wang Shu, Ningbo Historical Museum, Yinzhou, 2008.

Following this achievement, the Amateur Architecture Studio designed and built the largest single work carried out by any architect of their generation, namely the Xiangshan

Campus of the China Academy of Art. This was constructed as a continuously unfolding assembly of faculties close to the centre of Hangzhou from 2008 onwards. Arranged around a shallow hill known as the Elephant Mountain and inspired by traditional Chinese scroll painting, this campus unfolds as a concatenation of somewhat disjunctive mass-forms that have boldly undulating roofs and are accessed by an elaborate system of staircases hung off the sides of the buildings. Despite this scenographic *tour de force*, the most sophisticated work to be designed and completed by the studio to date is a guest house-cum-conference centre conceived by Wang Shu as the social heart of the campus. One of the most arresting features of this complex is its continuously folded timber roof, which is in effect a space frame made up of innumerable timber trusses, stacked side by side and stabilized transversely by wire cables. This floating roof is carried on steel frames that rest, in turn, on cross walls comprised of yellow and red rammed earth, quarried locally and braced at intervals by a reinforced-concrete frame. Apart from its vernacular connotations, this large oversailing roof seems to have been distantly inspired by Carlo Scarpa's Castelvecchio Museum, built in Verona in 1965. The other conscious Italian reference, according to the architects, was Giovanni Battista Piranesi's etchings of imaginary prisons (*Le Carceri d'Invenzione*) of 1760, the influence of which is evoked by the transverse internal staircases that intertwine with one another before climbing up into the cavernous expanse of the roof and finally ending, in some instances, on the very top of the roof itself.

The other remarkable work by the Amateur Architecture Studio is its ongoing reconstruction of Wencun Village [[549](#), [550](#)], situated some 1½ hours from Hangzhou by car. This work, begun in 2013, comprises a linear sequence of cubic houses standing on their original sites and loosely following the course of a nearby river. These houses are now in the process of being restored and/or rebuilt according to the

designs of Wang Shu and Lu Wenyu. What is remarkable is the way in which the repair and rebuilding of these houses has been handled as a *répétition différente*, in which new structures maintain the continuity and rhythm of the original linear form of the village.

Endorsing Wang Shu's reaction against the wanton destruction of China's traditional urban and architectural culture, a new generation of Chinese architects have opted to work in relatively remote rural communities in search of another kind of modernity. Thus, as the architect Li Xiangning has written:

*From villages to cities, from cultural architecture to residential architecture, in the wake of two decades of destructive construction, China's contemporary architectural practice wishes to consolidate a new tradition of architecture. It is a careful borrowing rather than a literal, direct, shallow appropriation of traditional building culture; a cultural renaissance after the apogee of modern western architecture rather than a conservative subjective construction; a coexistence of diverse solutions rather than a mere duplication of mainstream experience. Sooner or later, the practices of these independent architects will generate an effect similar to acupuncture: individual cases will make China's building industry, and even the public at large, recognize their own traditions in a critical and innovative way.*

By far the most radical urban work to be realized in China of recent date is Liu Jiakun's West Village Basis Yard complex, completed in Chengdu in 2016 [548]. This is a six-storey, 237- by 178-metre perimeter block comprising institutional and commercial accommodation on all three sides, linked together in terms of circulation by an open-air intersecting bicycle ramp on the fourth side, connecting to all six floors of the building. This medium-rise complex is

enriched by carefully landscaped vegetation that also serves to subdivide and articulate the various sports facilities – *for* basketball, tennis and so on – occupying the overall interior of the block at grade. These play courts are both separated and served by staircases and elevated passerelles. In retrospect, this work may be seen as a 21st-century reincarnation of the Soviet ideal of both the workers' club and the collective dwelling (*dom-kommuna*), both being conceived in the 1920s as a new institutional form capable of providing points of social condensation, i.e. societal cohesion.

**548** Jiakun, West Village Basis Yard, Chendu, 2016. Section.

**549** Wang Shu, Wencun Village, Zhejiang, 2013.

**550** Wang Shu, Wencun Village, Zhejiang, 2013. Site plan.

This entire complex is posited as a critical stratagem, mediating between the universality of market capitalism and the still-viable attributes of socialism that continue to provide a certain security within the relatively ruthless neo-liberal economy of the Chinese People's Republic. Under the slogan 'People Mountain, People Sea – A Celebration of Everyday Life', Jiakun has written:

*The city grows madly; memories are vanishing; public space has been slowly eroded; so does the genius loci and conventional lifestyles. The so-called architectural tradition has become merely a symbolic existence. Daily life, especially people's leisure activities, is no more than a normative by-product of consumer culture. ... The hierarchy of spatial configuration downgrades public spaces and*

*severely undermines the local spirit. It seems that creativity, imagination and passion for life can only thrive in leftover spaces. ... Is it possible to transfer the all-consuming nature of capitalism into a win-win case of sharing? Thrive on the gathering of the often overlooked daily life contents? To regain the initiative of today's vulnerable public spaces? To keep up the traditional cultural genes in contemporary cities? To turn the marketplace into art? This is our challenge.*

In effect, the West Village complex is an unspecified mixture of retail, 'start-up' spaces and hotel accommodation, while such public facilities as a cinema or a gymnasium are unfortunately relegated into the basement along with the prerequisite parking one floor below. At the same time this complex indulges in a tough use of raw material, ranging from an exposed *in situ* reinforced-concrete frame to a steel-reinforced, hollow-core brick slab, seeded with grass so as to counter the 'heat island' effect on the roof.

Another recent typologically pertinent invention at the scale of a city block is the Garden School [551, 552] designed by Li Hu of the OPEN Architecture Studio and built in the Fangshan district of Beijing in 2017. Here the most radical move is the covering of half of the available site in an artificial landscape of undulating concrete roofs covered with grass so as to create a park-like setting for the main body of the school. The school itself consists of a continuous organic assembly of four-storey classroom blocks suspended over an artificial undercroft accommodating three storeys of communal facilities beneath the greensward: that is, the cafeteria and the main lecture hall, plus gymnasia, basketball courts, kitchen, storage, and parking facilities for both bicycles and cars. Here the overall sustainability strategy ranges from rainwater harvesting and geothermal

heating to design of the green roofs of the classroom blocks in order to accommodate urban agriculture.

**551** OPEN Architecture, Garden School, Beijing, 2017.

**552** OPEN Architecture, Garden School, Beijing, 2017.

Some of the more sensitive and innovative examples of recent architecture in China may be found in the area of housing, particularly in the form of low-rise estates, which have revived the Chinese tradition of combining residential fabric with waterscape. We encounter this trope in the Evian New Town, built outside Suzhou in 2006 to the designs of the RMJM office, or in their 2005 extension of the famous historic camel-town of Zhujiajiao, near Shanghai, the so-called Oriental Garden [553], comprising two- to three-storey houses, divided by waterways, pedestrian alleys and parking. However, such estates are by no means the only recent middle-class residential paradigm, as is evident from the twenty-storey slab blocks built on the outskirts of Shanghai in 2003 to the designs of Qingyun Ma's MADA studio. A more traditionally collective form was realized in 2008 at Guangzhou with the Tulou Collective Housing, built to the designs of Lin Xiaodu and Meng Yen of the URBANUS practice. This work, inspired by the traditional circular fortified *tulou* houses of Fujian Province, received the 2010 Aga Khan Award. Its 287 two-bedroom units were, in effect, a modernized middle-class version of ancient peasant housing.

**553** RMJM, Oriental Garden, Shanghai, 2005.

The devastating 2008 Wenchuan earthquake in Sichuan Province mobilized architects from all over China, including the Rural Architecture Studio led by the Taiwanese architect Hsieh Ying-Chun, who was able to construct virtually overnight some two million dwelling units through the expeditious use of a prefabricated, light-steel frame construction. These seismic-resistant skeletons were subsequently developed by the people themselves with a wide variety of building materials drawing on the local vernacular, from rammed earth to stone, brick and bamboo.

It should also be noted that some of the emerging Chinese practices have assimilated the European Constructivist syntax of the 1930s, as is the case in the Dashawan Beach complex [554] completed in 2009 on Lian Island in Lianyungang to the designs of Scenic Architecture. Here three reinforced-concrete, single-storey slabs, Y-shaped in plan, step down one partially top of another as the structure descends towards the beach: in effect a continuous sequence of ramped prisms, the uppermost of which houses a seventeen-bed hotel while a second level provides a restaurant and club facilities. This spatial invention is based on a series of wooden decks, cascading down towards the sea.

**554** Scenic Architecture Office, Dashawan Beach Complex, Lian Island, 2009.

An equally powerful and exceptionally sensitive reworking of the received language of the European Modern Movement is evident in the recent work of Vector Architects, headed by Gong Dong, even in their Courtyard Hybrid project of 2015 in which they achieved a significant and sensitive restoration of a traditional courtyard house (*hutong*). Here the house, with a double-pitched tiled roof, has been restored as an art gallery. Its open courtyard contains two light-weight timber pavilions, one used for a

small café and the other for a multi-purpose facility. They followed this achievement with a ‘rationalist’ *béton brut* Seashore Library built on the beach of Hebei (2015) [557] and, in the following year, two works in which an assumed rationalist language of *in situ* reinforced concrete is broken up and manipulated so as to become integrated with the topographic context: first, the Suzhou Intangible Heritage Museum (2016) [555, 556] and, second, the Chongqing Taoyuanju Community Centre (2015). This centre creates many alternative itineraries in, around and over the landscape. Of this last building they have written:

**555** Vector Architects, Suzhou Intangible Heritage Museum, Suzhou, 2016.  
Section.

**556** Vector Architects, Suzhou Intangible Heritage Museum, Suzhou, 2016.

**557** Vector Architects, Seashore Library, Qinhuangdao, 2015.

*The public nature of the community centre brings various types of people including regular citizens ... they have different behavioral patterns in the building, such as strolling, gathering, reading, tutoring, training, exercising, health counselling etc. People have designated space for each such behaviors, which are also able to interact actively with each other in open fluid space.*

Zhang Ke of the practice ZAO/standardarchitecture is equally committed to *hutong* restoration and reuse and to the revitalization of remote regional culture, as seen in his numerous works in the Tibet region. Two of his works dating from 2008 are typical in this regard: the Namcha Barwa Visitor Center and the Yarlung Tsangpo Boat Terminal [560,

**561**]. The latter is typical of his work in this region in that here, as elsewhere, three characteristics come to the fore: (1) the topographic sensitivity with which the work is integrated into the landscape; (2) the use of reinforced concrete as the underlying substructure; and (3) the use of both local materials and native craftsmanship; i.e. rubble-stone cladding, gathered on site and assembled by local masons.

Of all the figures who have recently engaged in the recovery of Chinese environmental culture, traditional or otherwise, none has been more outspoken and critically influential than the distinguished Chinese landscape architect Kongjian Yu. Perhaps the most compelling aspect of his wide-ranging topographic approach is the importance he attaches to the development of an ecological infrastructure, by which term he refers not only to transport but also to something closer to the time-honoured Chinese agrarian traditions of crop rotation and flood control, which he deems to be of greater importance than the venerable traditions in China of gardening and landscape painting. In this regard, Yu has developed the strategy of 'sponge cities' as a means for combating the current drop in the water table - at the rate of 1.5 to 2 metres (5 to 6½ feet) every year - throughout urbanized China. Yu's 'sponge city' principle involves harvesting rainwater and filtering it through a wetland system. Typical of Yu's approach is his Yongning River Park in Taizhou City, a city that like many others on the Chinese mainland has been subject to the combined ecologically destructive forces of industrialization and urbanization, leading to the simultaneous maximization of both profit and pollution. In Taizhou City, Kongjian Yu reinstated the riverbed by removing the concrete channel and replacing it with a partially inundated landscape of native plants, combined with a graded river bank to afford people access to the water as a continuous riverfront park. Something similar obtains in his Rice Campus [559], built

for Shenyang Jianzhu University, where rice paddies are interspersed with gridded pedestrian pathways across the campus. In this way the students participate collectively in the planting and harvesting of rice in spring and autumn respectively. In his book *The Art of Survival*, Kongjian Yu evokes the idea of a ‘non-imperial’ Chinese identity and in so doing returns the reader to the ideals of the democratic revolution that grew out of student protests in China on 4 May 1919.

**558** DnA\_Design and Architecture, Brown Sugar Factory, Songyang Province, 2016.

**559** Yu, Rice Campus of Shenyang Jianzhu University, Shenyang, 2004.

**560** ZAO/standardarchitecture, Yarlung Tsangpo Boat Terminal, Tibet, 2008.

**561** ZAO/standardarchitecture, Yarlung Tsangpo Boat Terminal, Tibet, 2008. Plan.

## Japan

The Modern Movement arrived in Japan over the years 1921–31 through the activity of the Japanese Secession, the so-called *Bunriha* faction of which Sutemi Horiguchi and Mamoru Yamada were the most prominent figures. After graduating as architects, both men designed reinforced-concrete, earthquake-proof structures: the Perretesque Kikkakan House (1925–30) in the case of Horiguchi and the

Tsurumi House (1931) by Yamada. The other key figure active in Tokyo at this time was the émigré Czech-American architect Antonin Raymond, who had arrived in Japan to work as job captain on the building of Frank Lloyd Wright's Imperial Hotel. Raymond designed and built his own exceptional reinforced-concrete building in 1923 ([fig. 265](#), p. 292) and maintained an extensive and remarkably fertile modern practice in Japan until the advent of the Second World War compelled him to return to the United States. A number of leading post-war Japanese architects, including Kunio Maekawa, gained their initial training as assistants in Raymond's office prior to the war. The other pioneering modernist of this moment was Junzo Sakakura, who, after working in the office of Le Corbusier, designed the Japanese Pavilion for the Paris World Exhibition of 1937 [[562](#)]. Aside from being a categorically modern work making extensive use of ramped circulation, it may be seen as the first attempt at the aggressively nationalist Imperial Crown Style favoured by the right-wing, imperialist regime during the early part of the reign of the Emperor Shōwa (Hirohito), who acceded in 1926.

**562** Sakakura, Japanese Pavilion, Paris World Exhibition of 1937.

After the end of the Second World War, when Allied occupation forces reestablished democracy in Japan, the Japanese government played a prominent role in commissioning new projects, a patronage which would continue throughout the rest of the 20th century, as we may judge from the construction of an international airport on a landfill site in the middle of Osaka Bay from 1988 to 1994. The funds for this protean enterprise, including the runways and a terminal building designed by Renzo Piano, were partially paid for by the state, with the rest coming from the Kansai airport authority. It is difficult to imagine something

more Promethean than the building of an international airport in the middle of the sea and it is a joint tribute to Japan's engineering genius and the prowess of its building industry that this project was completed within a relatively short time. Moreover, it is a testament to post-war Japanese democracy that the motivation behind this audacious undertaking was pressure from the local population, which rejected a land-based international airport on acoustic grounds.

A similar political commitment to a large-scale building operation, although this time land-based, is the Makuhari Exhibition Centre, built in Chiba Prefecture in 1989 to the designs of Fumihiko Maki, along with in an equally ambitious megastructure of virtually the same date, the Tokyo International Forum [563], which contains five auditoria under one roof. This design was the result of an international competition, won by the New York-based Argentinian architect Rafael Viñoly, with the Tokyo regional government being the major funding partner for both of these developments.

**563** Viñoly, Tokyo International Forum, Tokyo, 1996. Plan.

A predisposing factor affecting the quality of Japanese architectural production has been the unique capacity of the country's building industry to synthesize craft methods with rationalized industrial production, combined with research dedicated to the evolution of new materials and methods and supported by high levels of public and private funding. The corporate *zaibatsu* structure of the building industry, whereby large contractors have their own architectural and engineering offices, is complemented at an ideological level by a set of influential architectural magazines, such as *Shinkenchiku*, *Kenchiku Bunka*, *A+U*, *Telescope*, *GA* and *SD*. While spectacular Post-Modern architectural fashion is as

prevalent here as in any other advanced, industrialized nation, the country is still able to produce a considerable number of works that are conceived and executed to the highest standards, while still being subtly imbued with a discernible Japanese character.

Nothing could be further from these large-scale, publicly funded megaprojects than the small-scale, independent works of Kazuo Shinohara, who has always maintained an aloof attitude towards conventional practice. He distanced himself not only from the Corbusian state architecture pioneered by Kenzō Tange and Kunio Maekawa, but also from the post-war revival of the Japanese domestic timber tradition. He was involved with the reinterpretation of this tradition during the early 1960s, but in the private houses that he has built since then Shinohara has subtly alluded, like the Japanese writer Kōbō Abe, to the chaos and violence lying beneath the surface of an all too homogeneous and seemingly tranquil technological society. His most public work to date, the metal-clad Centennial Hall erected in 1988 opposite the main entrance of the Tokyo Institute of Technology, epitomizes Shinohara's typical juxtaposition of dissonant form with advanced technology.

A similar critical impulse can be detected beneath the high-tech aestheticism of Shinohara's most distinguished followers: Kazunari Sakamoto, Itsuko Hasegawa and Toyo Ito. Ito's own house in Nakano, a space-frame covered courtyard house known as the Silver Hut (built in 1984 but later demolished and rebuilt on another site), combines 'high technology' with a reference to nomadic tented architecture. This individualistic expression is foreign to the work of Fumihiko Maki, who, aside from his aesthetic concerns, has always been occupied with the urban potential of what he came to define as 'group form', as articulated in his 1964 essay 'Some Thoughts on Collective Forms': We had long deplored the separation of architecture and planning. Perhaps the static compositional methods of

the past have been completely outmoded now by the rapid demands of a new technology and a new social organization ... One makes static compositions of individual buildings, and only subsequently can they become aspects of the grain of the City. The vital images of group form, on the other hand, derives from the dynamic equilibrium of generative elements and not a composition of stylized and finished objects.<sup>1</sup>

While Maki's concept was as much indebted to Team X as to Japanese Metabolism, his distinctive approach towards the aggregation of urban form came from his formative experience in the Graduate School of Design (GSD) at Harvard University. Between 1954 and 1968 he was influenced by José Luis Sert, as is evident from the slowly aggregated civic form of Maki's Hillside Terrace apartments, Tokyo, on which he worked for over two decades with the same developer, from 1969 to 1992. Predicated on Tange's National Olympic Stadium of 1964, Maki's smaller Fujisawa Municipal Gymnasium, Tokyo [564], of 1986 was, in effect, a confirmation of the same heroic engineering tradition, only executed this time as a light-weight steel structure with stainless-steel cladding in order to achieve an economic shell form. As Serge Lalat informs us:

**564** Maki, Fujisawa Municipal Gymnasium, Tokyo, 1986. Section.

*The great vault of the roof has an unsupported span of 80 meters (262 feet). It is made up of a network of steel H-girders which support a stainless steel envelope 0.4 millimetres (1/64 inch) thick. Inside the large arena ... creates a dilated interior space in which the wall surfaces recede from the centre of the building. Four swaths of light, taut and dynamic, divide the membranes of the main hall*

*into self-contained curved surfaces whose imaginary continuations enlarge and stretch the space.*<sup>2</sup>

Maki's highly refined tectonic approach moved him in two different but complementary directions: first, towards taut orthogonal volumes, clad with thin metal skins that dematerialize at their extremities into paper-thin louvres and perforated translucent screens, as in his Tepia Pavilion, Tokyo, of 1990; and, second, towards light-weight engineering forms that display an affinity for the European Gothic tradition. An architect with an equally dematerializing approach at a monumental scale is Yoshio Taniguchi, most particularly in his Tokyo Kasai Rinkai Park Visitors' Centre [565] and his exceptionally monumental Toyota Municipal Museum of Art, both of 1995.

**565** Taniguchi, Tokyo Kasai Rinkai Park Visitors' Centre, Tokyo, 1995.

**566** Maki, Republic Polytechnic Campus, Singapore, 2007.

The most prominent Japanese architect of virtually the same generation has unquestionably been Tadao Ando, whose excursion into landscaped pieces in the 1980s was evidently among some of the finest civic works built anywhere in the decade, above all his Chapel-on-the-Water at Tomamu, Hokkaido [567]. Opening on to an artificial lake, the surface of which is kept moving by a gravitational feed descending over a series of weirs, this chapel evokes the traditional Japanese concept of *oku*, by virtue of which a series of auspicious sites may be metaphysically linked over great distances. A number of features in this work, above all the large sliding wall and the free-standing cross, serve to integrate the form into the surrounding natural environment. As Ando put it in 1989, 'My goal has not been

to commune with nature as it is, but rather to change the meaning of nature through architecture. I believe when that happens, man will discover a new relationship with nature.'

**567** Ando, Chapel-on-the-Water, Tomamu, 1985-88.

It would be hard to find a contemporary Japanese architect who is more concerned with integrating Japanese traditional crafts into his work than Kengo Kuma. In this regard Ando, who is only thirteen years older, seems to belong to a different generation, a division that is reinforced by Kuma's antipathy for reinforced concrete. Kuma's aversion dates back to Ando's Row House in Sumiyoshi of 1976, for which Ando was awarded the much-coveted Japan Architectural Prize.

In contrast, Kuma's *parti pris* – his so-called Water/Glass project of 1995, an addition to a villa overlooking Atami Bay – depended on a paradoxical illusory combination of glass and water. Kuma's Hiroshige Ando Museum, completed at the millennium in Nasu-gun in Tochigi Prefecture, was built of wood in such a way as to exemplify the traditional tectonic propensity of timber construction through an obsessive reiteration of wooden louvres. This aesthetic assembly not only depends upon a rain-proof membrane of plate glass but also on the support of a structural steel frame throughout, in effect a technological subterfuge by which Kuma was able to evoke in built form Hiroshige's *ukiyo-e* vision of the world wherein rain is rendered as 'particized' phenomena.

For successive generations of Japanese architects the reinterpretation of tradition has been an integral part of the modernization process and in this regard Kuma is no exception, as we may judge from his Noh Stage of 1995, built at Tomoya in Miyagi Prefecture or his Takayanagi Community Centre of 1998 in Niigata Prefecture. The latter,

situated in the midst of an unspoiled traditional village, emulates the form of a traditional farmhouse (*minka*), with its heavy timber frame covered with *washi* rice paper, a traditional craft of the region. In spring the surrounding rice paddies afford a bright green background in contrast to the grey of the thatch and the luminosity of the rice paper.

Kuma's involvement with tradition as a *répétition différente* would come to the fore with his Yusuhara Town Hall of 2006 [568], built for the village of Takaoka in Kochi Prefecture. This structure, built out of local cedar, afforded the architect a unique opportunity in which to employ double-laminated timber beams spanning 18 metres (59 feet) and supported by laminated, 'quadripartite' composite timber columns. This two-storey building, evocative of the ancient Juomon tradition of timber construction, accommodates a bank, a farmers' cooperative and a local chamber of commerce. It is clad in 60-millimetre (2 $\frac{3}{8}$ -inch) thick wooden panels. Kuma has since completed two other civic pieces for the same community, dating from 2010: the Yusuhara Wooden Bridge Museum and the Yusuhara Marche, the latter combining a market hall with a small hotel. The Wooden Bridge Museum is a highly ingenious construction, designed in collaboration with the engineer Katsao Nakata, with a 40-metre (131-foot) timber span supported at its ends by piers and in the centre by a free-standing timber construction. Built of Japanese cedar, this feature involves a concatenation of cantilevering timber brackets of increasing span, similar to the traditional Japanese *masugumi* block and bracket system. He has since completed a third civic work, namely a library, for the same community.

**568** Kuma, Yusuhara Town Hall, Takaoka, 2006.

# South Korea

The arrival of modern architectural culture in Korea was delayed by many factors, including in the first half of the 20th century Russian and Sino-Japanese rivalry over the country's colonization, dating back to the Russo-Japanese War of 1905, which resulted in Japan annexing the country five years later. The Korean War between the Russian-dominated North and the American-sponsored South, from 1950 to 1953, ended in an uneasy truce that split the country in two just north of Seoul on the 38th parallel.

Owing to the war, the Korean post-war master Swoo-Geun Kim went to Tokyo in 1951 to study at the Tokyo University of the Arts and then to Tokyo University, from which he graduated as an architect in 1960. In the same year he won the competition for the design of the Korean National Assembly, which in the event was never realized.

Nevertheless, on the strength of this success he returned to Seoul in 1961 to open his own office and establish his Space Design research group. His first work of consequence in Korea was his concrete Freedom Centre of 1963, which was evidently influenced by Le Corbusier's Assembly Building in Chandigarh. Equally 'baroque' was his Buyeo National Museum built in Seoul in 1967. However, the work that established his ultimate leadership in the field of architecture was his 1971 concrete-framed Space Group building in Seoul [570, 571], clad in fair-faced brickwork inside and out. This building not only housed his professional office but also the editorial offices of *Space Design (SD)* magazine, a journal of art and architecture that Kim had founded in 1966. This publication was dedicated to cultivating a modern Korean cultural identity in part through scholarly research and in part through evaluating the native

tradition in relation to international developments. The *SD* building also housed an art gallery and an experimental theatre and in its prime was one of the city's most important cultural centres.

In retrospect it becomes clear that the Space Group building was only the beginning of Kim's mastery over a medium-rise built form, invariably composed of rhythmically arranged and articulated brick masses set on a concrete frame, as is found in the School of Fine Arts complex for the Seoul National University (1973) and in similar works designed to accommodate large institutions, for example his Korean Culture and Arts Foundation building of 1979. Such syncopated brick masses also appear in his domestic work, including the large houses that he built north of Seoul in a forested landscape as an early gated community. Typical of such work is his Chang Am Jang House of 1974 [569, 572], which, although influenced by Dutch Neo-Plasticism, was given a Korean character through the use of local timber boarding and grey brick. Kim's last major accomplishments in Korea were his brick-faced Seoul Teachers' College of 1975 and three projects dating from 1977: the Seoul Sports Complex, the Dae Woo Arcade and the Korean National Museum Tea House. Much like Kenzo Tange after Osaka 1970, he was destined to end his career with large built works outside the country, mostly in Iran.

**569** Swoo-Geun Kim, Chang Am Jang Residence, Seoul, 1974.

**570** Swoo-Geun Kim, Space Group Building, Seoul, 1971. Section.

**571** Swoo-Geun Kim, Space Group Building, Seoul, 1971.

**572** Swoo-Geun Kim, Chang Am Jang Residence, Seoul, 1974.

The next architect of stature to emerge on the South Korean scene was Byoung Cho, who graduated from the Graduate School of Design at Harvard in 1991, working briefly afterwards with Mario Campi in Lugano and studying as a postgraduate student under Elia Zenghelis at the ETH in Zurich, before returning to Korea in 1993. There he would meet Seung Hyo-Sang and Min Hyun Sik, members of the avant-garde 4.3 Group, who, after Kim's untimely death in 1986, came to the fore as the next generation of modernists. Cho's first work in Korea was his Village of the Dancing Fish [573], an aggregation of dormitories capped by oversailing timber roofs and built on a hilltop ridge in Paju, north of Seoul, in 1999. This collective was designed for mentally disabled adults. It was predicated on the therapeutic benefits to be obtained by working in agriculture.

**573** Byoung Cho, Village of the Dancing Fish, Paju, 1999.

Thereafter Cho's career was devoted to the design of modest middle-class houses, beginning with the U-Shaped House that he built at Yangpyeong in 2002. This was a single-storey courtyard house enclosed on two sides by a wooded fence. He followed this with the most important project of his early career, namely the Camerata Music Studio, built in Heyri Art Valley in Paju in 2003 [575, 576]. This *tour de force* in fair-faced reinforced concrete is situated barely 4.8 kilometres (3 miles) from the Korean Demilitarized Zone (DMZ) separating North and South Korea. Commissioned by Hwang In-Young, a retired, nationally renowned disc jockey, this work is essentially another large courtyard house, complemented by a semi-

public volume comprising a music space with a café and a suspended mezzanine that doubles as an art gallery. Following this, Cho designed a sequence of middle-class patio houses, including a weekend house [574, 577] built for his own occupation at Yangpyeong in 2004. This 14 x 14-metre (46 x 46-foot), reinforced-concrete courtyard house encloses a patio 7.4 x 7.4 metres (24 x 24 feet), which happens to be the size of a traditional Korean patio or *madang*, and exemplifies in different ways the subtle aspects of the Korean aesthetic tradition as exemplified by the terms *mak* and *bium*. This work is accompanied by Cho's Stone Wall house, also in Yangpyeong and of 2004 [578], which exemplifies his ability to mix and contrast different materials effectively: in this instance metal sheeting, wood cladding and dressed stonework. On other occasions he used similar materials in different ways expressively, as in his Hanil Visitors' Center and Guest House in Danyang-gun of 2009 [579].

**574** Byoung Cho, Concrete Box House, Yangpyeong, 2004. Site plan.

**575** Byoung Cho, Camerata Music Studio, Paju, 2003.

**576** Byoung Cho, Camerata Music Studio, Paju, 2003.

**577** Byoung Cho, Concrete Box House, Yangpyeong, 2004.

**578** Byoung Cho, Stone Wall House, Yangpyeong, 2004. Elevations.

**579** Byoung Cho, Hanil Visitors' Center and Guest House, Danyang-gun, 2009.

Soon after the millennium Cho received his first corporate commission in the form of the Kiswire company headquarters, erected in Tokyo in 2009. It was followed by a succession of works for the same company, including a Kiswire research facility, built at Johor Bahru, Malaysia, in 2012, and a museum/training centre at Busan, Korea, in 2013. Here a nine-storey building, clad with steel wire, not only represents a company which specializes in the production of steel wire but also uses wire in such a way as to suggest a dematerialized mass, rendered partially in woven wire components. Later Cho turned away from high-tech materials in favour of wood – the traditional building material with the least embodied energy – as in his design for the NHN Kindergarten [580] located in a small valley beside Bundang, south-east of Seoul. This nursery school straddles a small river lined with cottonwood trees and irrigating farmland. The overall pedagogical aim is to bring nature into the classroom.

**580** Byoung Cho, NHN Kindergarten, Bundang, 2017.

The leading architectural studio from the next generation is the practice known as Mass Studies, comprising five partners of which the leading figure is Minsuk Cho. Their Daejeon University Residential College [581, 582], built on a sloping site within an existing campus, is surely a seminal work. Finished in 2017, this complex accommodates some 600 students next to another equally compact dormitory designed by Seung Hyo-Sang. Minsuk Cho's reinforced-concrete megaform, faced in traditional Korean black brick, is an extraordinarily ingenious response responding to the intractable challenge of building a large student dormitory on a steeply sloping site. The final design solution consisted of a parallelogram, stepped in plan and section and based on a 5.4 x 5.4-metre (18 x 18-foot) module, with each

module housing four students. These modules are separated from one another by a 2.4-metre (6½-foot) wide ‘pocket’ space, the primary function of which is to light and ventilate the corridor and occasionally to serve as a ‘built-in’ balcony. The total complex comprises two segments: a four-storey lower tier that rises directly from grade and is allocated to male students and a five-storey upper tier reserved for female students. These two tiers are separated by a common student foyer, surrounded by seminar rooms and linked to a central dining hall one floor above, which is accessed by stairs directly from a campus road at the top of the site.

**581** Mass Studies, Daejeon University Residential College, Daejeon, 2017.  
Section.

**582** Mass Studies, Daejeon University Residential College, Daejeon, 2017.

## Australia

The first architecturally modern moment in the dominion of Australia came in 1912 with the prize-winning entry submitted for the new capital of Canberra by the American architects Walter Burley Griffin and Marion Mahony. Although Griffin and Mahony had both worked for Frank Lloyd Wright during the high point of Wright’s Prairie Style (1898–1910), their plans for Canberra made virtually no reference to his work. The same applied to the eclectic, crypto-Gothic character of their Newman College, built for the University of Melbourne in 1917. This reinforced-

concrete, stone-faced structure, oddly similar to the work of Antoni Gaudí, found little following in the Antipodes, where the Ecole des Beaux-Arts manner still held sway as far as public works were concerned. As the Australian critic Jennifer Taylor reminds us in her comprehensive study *Australian Architecture since 1960* the Modern Movement was slow to arrive in Australia and the work of Griffin and Mahony was too individualistic to have a following. The first glimmer of a more up-to-date modernity came with the Swiss émigré Frederick Romberg's Standhill flats, Melbourne, of 1942–50, but it was a later migrant, Harry Seidler, who would advance the modern cause in the design of a house for his parents built next to a nature reserve in Sydney in 1950. This house is virtually identical to the unbuilt house in Foxborough, Massachusetts, that Seidler designed in 1947 for Roland Thompson, who was also working for Breuer at the time. Born in Vienna and educated at the Graduate School of Design at Harvard under Gropius and Breuer, Seidler arrived in Australia in 1948 and brought with him Breuer's neo-vernacular modern manner, as is evident from the open plan of his parents' house [583] in which the living is separated from the dining via a free-standing stone chimney. Travelling to Australia via Rio de Janeiro, Seidler had also the opportunity to work briefly for Oscar Niemeyer, whose baroque Corbusian manner is echoed in the terrace mural of the Sydney house. Otherwise the light tubular-steel *piloti* and the long ramp linking the terrace to the garden are variously derived from Le Corbusier's Purist syntax and from Gropius's own house built in Lincoln, Massachusetts, in 1938.

**583** Seidler, Rose House, Sydney, New South Wales, 1950. Plan.

The Australian-born architect John Andrews, a near contemporary of Seidler, designed and built two exceptional

works in North America before moving back to Australia at the end of the 1960s. The first was Scarborough College, completed outside Toronto in 1969, and the second was Gund Hall, built opposite Memorial Hall in Cambridge, Massachusetts, and completed for the GSD in 1972. The most brilliant work of Andrews's equally fertile career in Australia was his Technical and Further Education Complex built at Woden, New South Wales, in 1981 [584]. The high-tech hexagonal module on which this work is based was surely more inspired in its realization than any of the phantasmagorical images imagined by Archigram, as Jennifer Taylor made clear in her description of the cable-suspension principle on which it was based:

**584** Andrews, Technical and Further Education Complex, Woden, New South Wales, 1981.

*The complex is arranged on three levels with one level above and one level below the public walkway. The main units are those of the general office spaces. Each hexagonal block is supported on four central columns which rise above the height of the roof and serve as masts from which the floors are suspended. Maximum strength is thus provided at the cores and this allows for heavy loading in the centres, leaving the perimeters free as work spaces.<sup>1</sup>*

Both Andrews and Seidler would go on to build structurally articulate, long-span, post-tensioned, medium-rise offices for the government complex in Canberra just before the completion in 1988 of the new Australian Parliament Building. This giant earthwork-cum-monumental roofwork, with spread-eagled ministerial wings opening out from the parliamentary chamber, was designed by the Italian-born Romaldo Giurgola and the Australian architect Richard Thorp, who jointly won the 1980 competition for the

building (restricted to Australian architects) with a design which endorsed, as it were, the topographic nexus at the centre of the Griffin-Mahony 1912 plan. However, in terms of identity the cascading shell vaults of Jørn Utzon's Sydney Opera House, designed in 1957 and completed in 1973, would prove to be a much more powerful symbol for an aspiring nation than the telluric form of the Parliament. Apart from responding to the challenging profile of Sydney Harbour Bridge, the opera house may have been responsible, in the long run, for the cult of the expressive roof as this appears in Australian domestic architecture throughout the 1970s.

It is significant in this regard that the mythical 'outback' sheep-shearing shed should first appear as a self-conscious trope in Glenn Murcutt's Marie Short House [585], built in 1974 on a 700-acre (2.8-square-kilometre) farm at Kempsey, New South Wales, some 500 kilometres (310 miles) north of Sydney. Like Mies van der Rohe's Farnsworth House of 1950, by which it was surely influenced, the timber superstructure of this house was elevated 80 centimetres (2 feet 7 inches) above grade, not only to raise the building above the surrounding floodplain, but also to prevent poisonous snakes from entering. This was Murcutt's first application of a corrugated-iron roof to a timber-framed, single-storey house, a formula that he would repeat with variations in both framing and roof form over the next two decades. The 61-centimetre (24-inch) radius of the bent, corrugated-iron sheet that Murcutt employed to cap the ridge of the Marie Short House was the tightest bend one could press into a corrugated sheet. Due to the relative remoteness of his houses, Murcutt was often obliged to employ a constructional repertoire with which rural builders were familiar – above all timber framing and corrugated-iron roofing – to which he habitually added multiple layers of protective screens, a filtering layer derived from the Japanese domestic tradition. It is interesting to observe in

this regard that the Marie Short House has three membranes: a sliding sunscreen outer layer of adjustable louvres; an intermediate sliding screen to keep out insects; and another layer of adjustable louvres in metal and glass in order to secure the house at night or during the winter months. Perhaps no one has written more appreciatively of Murcutt's use of multiple membranes combined with sheet-metal roofs than Philip Drew in his 1987 study of Murcutt's work entitled *Leaves of Iron*, with its knowing allusion to John Ruskin's *Stones of Venice* of 1851. As Drew put it:

**585** Murcutt, Marie Short / Glenn Murcutt House, Kempsey, New South Wales, 1974.

*One of the consequences of the side use of louvered screens is to enhance the continuity of the building surface since the louvers read as a change in the surface texture rather than as a break in the material. Moreover, the louvers add to the delicacy of the forms. The thinness of the iron sheets and the hard leaf-like character of the buildings is advanced by expressing the edges of the sheets and projecting the profile end sections of the break-pressed gutters.<sup>2</sup>*

Drew explains how Murcutt enhanced the ecological profile of his roofs by using skylights covered with fixed louvres, raised clear of the glass and angled at 32 degrees so as to exclude summer sun while permitting the entry of winter sunlight. Moreover, a second layer of break-pressed, corrugated iron was invariably added to the apex of the roof as a means of evacuating hot air from the house. Break pressing is a technique employed to bend metal sheet into the required profiles.

Throughout his career, Murcutt has built in wood save for the structural frame and metal roof as we find in his Marika-

Alderton House [586, 587], erected on the beach in Yirrkala in the Northern Territory in 1994. Commissioned by the aboriginal leader Banduk Marika, this single-storey house was also raised off the ground, not only to avoid flooding but also to provide a clear view of the horizon – a defensive feature that remains particularly important in aboriginal culture. Its location, 12½ degrees south of the equator, where humidity reaches eighty per cent, demanded that the house should be as open as possible in order to facilitate cross ventilation. This entailed full-height, counterbalanced, pivoting, louvred shutters, which also doubled as a means of securing the house at night or in the off season. In addition a slatted timber floor was provided throughout to filter out sand tracked in from the beach. This permeability was combined with roof vents capable of releasing the build up of air pressure when the house is exposed to winds of cyclonic force. Large timber-faced panels extended beyond the house at every structural bay, in order to provide privacy for the occupants. Reminiscent of Le Corbusier's *brise-soleil*, these of cantilevered timber fins reappear as formal devices in the dormitory block that Murcutt built for the Boyd Education Centre on a bucolic riverside site in West Cambewarra, New South Wales, in 1999. Designed in collaboration with Reg Lark and his wife, the architect Wendy Lewin, this was a dormitory block where visiting students could stay overnight. At one end of this two- to four-storey building is a portal frame in steel spanning over the dining hall and kitchen. The large scale and the frontal placement of the frame make this the first public work of Murcutt's career, and in many respects it is one of his finest achievements. The dormitory's furnishings were a *tour de force* in well-crafted cabinetwork, as Haig Beck and Jackie Cooper have remarked:

**586** Murcutt, Marika-Alderton House, Eastern Arnhem Land, Northern Territory, 1991-94.

**587** Murcutt, Marika-Alderton House, Eastern Arnhem Land, Northern Territory, 1991-94. Sketch section showing the pertinent climatological factors and orientation that influenced the design.

*The floors, bed supports and windows of the bedrooms are in natural timber. The brushwood box floors are pink. Doors, cupboards and ceilings are yellow hoop pine ply ... The deep window sills are beveled - framelike - making the edges finer, which, in addition to containing views, affects the way the timber takes the light ... Except for plywood, recycled timbers are used throughout the building. Columns are brush-box. Beams and purlins are blackbutt. The big doors of the hall are old growth Oregon, twenty recycled timbers forming the 170mm x 75mm jambs.<sup>3</sup>*

Peter Stutchbury and Richard Leplastrier, Murcutt's closest colleagues, have played key roles in the development of the 'outback' character of the modern Australian house. Upon graduating in 1963, Leplastrier went to work immediately for the Utzon office on the development of the opera house prior to going to Japan to study traditional Japanese architecture under the tutelage of Tomoya Masuda. As a result of these formative experiences and the influence of Murcutt, Leplastrier's houses are invariably modular, timber-framed structures, raised clear of the ground and covered by pitched roofs. A similar *ad hoc* programmatic approach is evident in the work of Stutchbury, although the most evident reference to Japan is his West Head House of 1991, situated on an undulating site overlooking Clareville Beach, New South Wales. However, Stutchbury's most compelling work to date is agricultural, that is to say his all-metal, Neo-Constructivist, demountable sheep-shearing shed, the so-called Deepwater Woolshed

[588], built at Bulls Run, near Wagga Wagga, New South Wales, in 2003.

**588** Stutchbury, Deepwater Woolshed, Wagga Wagga, New South Wales, 2003.

As much part of the Australian ‘bush’ tradition as Murcutt or Stutchbury, Lindsay and Kerry Clare were apprenticed to the Queensland architect Gabriel Poole before establishing their own practice on the Sunshine Coast in 1979. Although Poole had worked for Powell and Moya in London in the 1950s, on returning to Australia he assumed the paradigm of the light-weight, ‘outback’ shed as is evident from his Dobie House, built on a precipitous site at Buderim on the Sunshine Coast in 1970. The Clares followed suite with their own house at Buderim (1991), making a similar use of a bowed sheet-iron roof. They used a flat version of the same material for their ‘surf-side’ housing built on Rainbow Beach [589] in the following year, its staggered chevron layout being capped by a reiteration of monopitched corrugated-iron roofs. A larger and more complex version of a similar roof crowns their most public building, the Queensland Gallery of Modern Art (GOMA), completed in 2006.

**589** Clare Design (Lindsay + Kerry Clare), Rainbow Beach Housing, Sunshine Coast, Queensland, 1992.

Richard Francis-Jones, the founding partner and leading designer of the Sydney-based practice of Francis-Jones Morehen Thorp (FJMT), was also influenced by the ‘outback’ iron roof as this appears in his early work in the glass and timber portico that he designed for the main entrance into the John Niland Scientia Building [592] on the University of New South Wales campus in Sydney, completed at the millennium. A similar concept, only this time reiterated as

four consecutive parasols and built exclusively of laminated wood, constituted the portico of his addition to the Auckland Art Museum, New Zealand, of 2011. However, Francis-Jones has possibly been at his best in civic works where the trope of the detached monopitched roof was no longer the sculptural *parti pris* of the design, as in the Law Faculty that he added to the Gothic Revival campus of the University of Sydney in 2003. A similar emphasis on the mass form of the building rather than the roof is evident in the library-cum-community centre that he designed and built for the Surry Hills suburb of Sydney in 2009 [590, 591]. Both works were conceived as sustainable environments with full-height, adjustable vertical louvres mounted either behind a fully glazed curtain wall (in the law faculty) or in front of a similar double wall (in the Surry Hills library). In both instances the angle of the *brise soleil* is controlled automatically by servo-mechanisms reacting to the movement of the sun and to the difference between outside and inside temperatures.

**590** FJMT, Surry Hills Library, Sydney, New South Wales, 2009. Section.

**591** FJMT, Surry Hills Library, Sydney, New South Wales, 2009.

**592** FJMT, John Niland Scientia Building, UNSW, New South Wales, 2000.

More than any other contemporary practice of comparable calibre in Australia, FJMT has been consistently engaged in the design and construction of large-scale public and/or commercial buildings. Among these works the most distinguished are the Owen G. Glenn Business School, Auckland, New Zealand (2003); the School of Information Technologies for UNSW, Sydney (2011); and the Tyree Energy Technologies building, also for UNSW (2012). Many

of these works derive their plastic character from the unique, rather theatrical concept of lateral exfoliation, that is to say the folding out of *brisés soleil* so as to visually engage the surrounding landscape, thereby emphasizing a topographical affinity between the building and its context. In all of this work the issue of sustainability is given priority, as it was in the UNSW Red Centre, designed by Francis-Jones in collaboration with Romaldo Giurgola soon after he returned to Australia in 1992.

Another figure of consequence on the Sydney scene is Alex Popov, whose controlled tectonic manner is surely due to his formation in the Royal Danish Academy, from which he graduated in 1971. Popov worked for both Henning Larsen and Jørn Utzon, before finally migrating to Australia to start his own practice in 1984. Popov has perhaps been at his best in low- to medium-rise, high-density housing estates, although one of his finest private houses is his Martin-Weber residence in Mittagong, New South Wales, of 2005.

One of the most independent architects of the younger generation is Sean Godsell, who opened his office in Melbourne in 1994 and completed his first characteristically timber-louvred vacation house, the Carter Tucker House in Breamlea, Victoria [593], in 2000. One of the most distinctive features of his domestic work was the capacity of his houses to be opened or closed at will by virtue of top-hinged louvred panels that may be readily raised, or dropped down so as to appear flush with the rest of the louvred timber envelope. A more sophisticated version of the same idea was Godsell's Peninsula House of 2003, situated 60 miles (96.5 kilometres) south of Melbourne. Godsell's domestic aesthetic assumed a more monumental character in his larger institutional structures, such as his Woodleigh School science building erected at Baxter, Victoria, in 2002. Here the building is treated as a galleria housing a series of laboratories. It is faced with a reiteration

of vertical timber louvres which have a certain thickness and are placed about one foot apart. The floor of the building rises and falls with the shape of the land, while the roof is maintained as a horizontal datum against which the topography is revealed.

**593** Godsell, Carter Tucker House, Breamlea, Victoria, 2000.

One of the most distinguished Australian architects was Kerry Hill, who, with offices in Perth and Singapore, largely built outside of Australia, realizing a series of luxury hotels across the Asian continent. Born and brought up in Perth, Western Australia, Hill was surely one of the most prolific and culturally sensitive architects of his generation, although due to his residence in Singapore and the fact that most of his work is in Asia he is rarely acknowledged as an Australian architect. Profoundly influenced by Geoffrey Bawa and by his hotel client Adrian Zecha, Hill became involved with ancient Asian culture over a wide front as is evident from his luxury hotel and guest house of 1994 known as the Datai [594]. Distantly related to Wright's Imperial Hotel and subtly influenced by the local vernacular, this complex was implanted amid the tropical foothills of the Teluk Datai and elevated some 300 metres (984 feet) above the ocean; the élite clientele have to walk through a rainforest in order to gain access to the beach club. Towards the end of his life Hill returned to his native Perth after winning the 2005 competition for the State Theatre of Western Australia, which he saw realized in 2010 and seems to share an affinity with the aesthetic work of Sean Godsell.

**594** Hill, Datai, Malaysia, 1994.

# New Zealand

One of the first indications of a sophisticated architectural sensibility in New Zealand at the end of the 19th century was John Campbell's Dunedin police station of 1896, subtly influenced by Richard Norman Shaw's New Scotland Yard, London, of 1890. Susceptible to the same English Free Style, but closer to Philip Webb and C.F.A. Voysey rather than Shaw, was the architect R.K. Binney, who, after working for Edwin Lutyens in London, returned to New Zealand in 1912 to design and build in 1922 a remarkable Voyseyesque house at Remuera, near Auckland. However, the British Arts and Crafts was not the only inspiration at this time, as is evident from the University College, Auckland, of 1921, designed by the American architect R.A. Lippincott. Its forms and rhythms owed something to Walter Burley Griffin's Newman College, Melbourne, harking back in terms of tradition to Frank Lloyd Wright, for whom Griffin had worked before migrating to Australia on winning the Canberra competition in 1912. Other American architects exercised an influence on New Zealand architecture, as may be seen in the Wellington railway station, designed by William Gray Young in 1929 in a Beaux-Arts manner, patently indebted to McKim, Mead and White's Pennsylvania Station, New York, of 1911.

Modernism in the continental European sense did not begin to emerge in New Zealand until the second half of the 1930s and the early 1940s, when it came into being as part of a socio-cultural transformation inspired by the ascendancy of a socialist government in New Zealand, which came to power as a result of the worldwide stock market crash of 1929. This political shift was responsible for the sympathetic environment which welcomed the Austrian

architect Ernst Plischke when he migrated to New Zealand in 1939, just in time to witness the 1940 Art Deco Centennial Exhibition, which celebrated the foundation of the nation in 1840. As Julia Gatley informs us in her book *Long Live the Modern* (2003), Plischke was not the only German-speaking architect fleeing from the Third Reich to New Zealand, since among others was his compatriot Heinrich Kulka, close to Adolf Loos, who had supervised the construction of Loos's last works, the semi-detached houses built for the Austrian Werkbund Exhibition of 1933. (Plischke for his part had been trained by Peter Behrens in Vienna and had thereafter worked for Behrens and briefly for the Austrian architects Karl Ehn and Josef Frank.) Much of the modern initiative in New Zealand during this period was due to the newly established Department of Housing Construction (DHC), for which Plischke started to work soon after his arrival, designing multi-unit housing projects, community centres, and workers' housing sponsored by the state in connection with the construction of hydro-electric dams from 1939 to 1947. The most striking DHC housing schemes in which he was involved are the Orakei apartments (1941), the Mount Eden apartments (1942) and the Greys Avenue flats (1947), all built in Auckland, plus the Dixon Street flats [597], completed in Wellington in 1944. Plischke's beautifully proportioned, free-standing Kahn House [595], built in 1942 for a highly cultivated German client in Ngaio, Wellington, also dates from this period. That year also saw the realization of his design for the Tasman Memorial [596]: a thin orthogonal tower rising from a plaza, both built of concrete and erected on a high, forested bluff overlooking Golden Bay at Tarakohe.

**595** Plischke, Kahn House, Ngaio, Wellington, 1942.

**596** Plischke, Tasman Memorial, Tarakohe, 1942.

**597** Plischke, Dixon Street Flats, Wellington, 1944.

In 1948 Plischke left the DHC to form a partnership with the New Zealand architect Cedric Firth that endured until 1963, when he finally returned to Vienna, where he lived out the rest of his life as a professor of architecture totally removed from practice. Plischke's fifteen-year partnership with Firth led to the design of some forty houses of a delicate, timber-framed, pavilioned format. These works contributed to the evolution of a modern New Zealand domestic manner, comparable to the Southern Californian modern house of virtually the same date, as developed by Rudolf Schindler, Richard Neutra, J.R. Davidson, Gregory Ain and Raphael Soriano. Other than these modest modern houses, the high point of the Plischke-Firth practice was the eight-storey Massey House [598] built in downtown Wellington between 1951 and 1957. This work stands out not only for its urban location and height but also for the fact that it was the first application of curtain walling in New Zealand. This type of cladding was developed further in the Dunedin Hospital boiler house of 1959 designed by Stephenson and Turner and in Jack Manning's ultra-elegant AMP Building built in Auckland in 1962. Following Plischke's departure, Firth practised independently, proving his capacity as a civic architect with a beautifully proportioned, three-storey, box-framed concrete office building realized in Nelson in 1966 and known as the Monro State Building.

**598** Plischke and Firth, Massey House, Wellington, 1951-57.

The most fertile architect of the next generation was Michael Warren, who, as the design partner of Warren and Mahoney, pioneered what has been called the ‘New Zealand shed’ style, first exhibited in the monopitched timber structure that he built in Christchurch in 1962 as his combined residence and studio [599]. In his later university work Warren was greatly influenced by British New Brutalism, which he had experienced in London in the late 1950s while working for Powell & Moya. Typical of his Brutalist manner are the three-storey dormitory blocks that he built for Christchurch College in the University of Canterbury in 1964. A more refined tectonic version of Brutalism can be found in the Wellington Meteorological Office [600] built in Wellington in 1968 to the designs of William Alington while he was employed by the Ministry of Works.

**599** Warren, Warren House and Studio, Christchurch, 1962.

**600** Alington, Meteorological Office, Wellington, 1968.

A certain species of vernacular modernism is detectable in New Zealand’s residential architecture, particularly after the building of John Scott’s Patterson House in Hawke’s Bay in 1967 and in 1965 with the first phase of Ian Athfield’s own ever-changing house and studio [601] that cascades down from the hills above Wellington. This *ad hoc* approach to building can also be found in Roger Walker’s Britten House built in Wellington in 1974 and in the best work of the Queensland architect John Blair, when he had the opportunity to build largely in timber on spectacular panoramic landscapes of great natural beauty. This montage-like assembly of idiosyncratic architectural forms, inspired by a largely fictitious New Zealand vernacular,

surely also accounts for the catatonic character of the air terminal building that Roger Walker designed for Whakatane Airport in 1971.

**601** Athfield, Athfield House and Studio, Wellington, 1965.

# Chapter 4

## Europe

It is surely paradoxical to indulge in such extensive coverage here of European modern architecture, given that the main aim of expanding this history is to go beyond its former Eurocentric/transatlantic bias. However, until this edition, a number of European countries were excluded from the account, in particular all the Nordic countries except Finland. This blanket omission led to the absence of architects who, after the Second World War, made major contributions to the evolution of the Modern Movement, such as the distinguished architect Arne Jacobsen from Denmark or the Norwegian Sverre Fehn. Earlier editions also failed to acknowledge the importance of the Stockholm Exhibition of 1930, which not only transformed the scope of Swedish architecture but also inaugurated the visual and material culture of Swedish social democracy.

This section also features such eccentric achievements as P.V. Jensen-Klint's Grundtvig's Church, Copenhagen, of 1926–40 and Dimitri Pikionis's archaeologically inspired Karamanos House, built in Athens in 1925, plus such major urban interventions as Karl Ehn's Karl Marx-Hof perimeter housing block in Vienna of 1930. Also different to the dominant approach of the Modern Movement was Jože Plečnik's extraordinary transformation of Prague Castle, which he converted into a presidential residence for the newly founded Czech state. Other outstanding but somewhat atypical European works appear here, such as Erich Mendelsohn's and Serge Chermayeff's De La Warr

Pavilion at Bexhill-on-Sea in the UK and Henry van de Velde's Kröller-Müller Museum in Otterlo.

Another shortfall that this edition seeks to redress is the second modernity that came into being with the reconstruction of Italy after 1945. This saw the rise of such committed intellectuals as Bruno Zevi and Ernesto Rogers, and the architectural practices of Carlo Scarpa in Venice and of BBPR, Franco Albini, Gio Ponti, Giancarlo de Carlo and Pier Luigi Nervi in Milan. This Italian generation would be followed by equally significant figures including the historian-theorist Manfredo Tafuri, who, together with the philosopher Massimo Carriari, transformed the discourse of the Italian architectural scene in the 1960s. They and such architects as Vittorio Gregotti, Aldo Rossi and Giorgio Grassi were barely mentioned in previous editions. Although developments towards the end of the 20th century were featured in the fourth edition – notably those in Finland, France, Spain and Japan – among the mid-century European architects previously left out of this account were a number of distinguished Germans who came into their own during the famous West German economic miracle of the 1950s; they included figures such as Hans Scharoun, Egon Eiermann, Günter Behnisch, Frei Otto and Oswald Mathias Ungers.

Because much of the first edition of this work was written during the last quarter of the 20th century, I have felt it necessary to return to a particularly fertile moment in British architecture dating back to the 1930s but continuing into the 1950s. The zenith of this period remains for me the Royal Festival Hall in London of 1951, one of the finest public buildings completed in Britain since 1945. Britain has been given a particular focus in this revisit of Europe because I wanted to demonstrate the way in which there has been a continuous, though fluctuating modern tradition in the UK: from the pioneering architecture of the 1930s to the Brutalist episode of the mid-1960s, followed at the

beginning of the 1970s by the Anglo-Italian High-Tech movement pioneered by Richard Rogers, Norman Foster and Renzo Piano.

Perhaps the most prejudicial aspect of this European overview is the inclusion of Belgium and the exclusion of the Netherlands. I have given space to Belgium in this expanded history on two counts: first, because between the two world wars it played a particularly fertile role in the evolution of the Modern Movement and, second, because it has invariably been given short shrift in recent accounts of this topic. The Netherlands, on the other hand, has been omitted because much Dutch work has been covered in earlier editions and because the country's pioneering architectural tradition does not seem to have survived the neo-liberal destruction of its hitherto long-standing socialist traditions. The other evident omission from this European overview is the federation of Switzerland, which has been covered intermittently in previous editions.

## United Kingdom

Apart from houses at Silver End, Essex, of 1927, expressly designed by Sir John Burnet & Partners for the British steel window manufacturer Francis Henry Crittall, the Modern Movement in England was initially the work of talented émigrés. These architects came to the country in the late 1920s and early 1930s, either because they were political refugees or because they felt stifled by the provincialism of the British Commonwealth, as was the case with the New Zealanders Amyas Connell and Basil Ward, who arrived in the UK in 1929, and the Canadian architect-engineer Wells

Coates, who came to London in 1927. Connell began with his spread-eagled design of High and Over [602], built at Amersham, Buckinghamshire, for the archaeologist Bernard Ashmole in 1931. Connell and Ward later joined forces with Colin Lucas on the strength of a concrete house that the latter built at Platt, Kent, in 1933 [603]. Throughout the second half of the 1930s, this partnership produced a succession of steel-framed, cement-rendered houses, the elegant character of which was largely derived from their rhythmically detailed steel fenestration and balustrading.

**602** Connell, High and Over, Amersham, Buckinghamshire, 1931.

**603** Lucas, house in Kent, 1933.

First among the continental émigrés to have an impact on the British scene was the Russian-Jewish émigré Berthold Lubetkin, not least with his founding of the Tecton office upon his arrival from Paris in 1931; this led to the design and realization in 1935 of the first Highpoint apartment block in Highgate, London (fig. 260), with its structure and mode of erection devised by the young engineer Ove Arup, born in Britain of Danish-Norwegian parents. Lubetkin followed this achievement with the design of a number of equally inventive reinforced-concrete structures for the London Zoo, including the famous Penguin Pool with its arrangement of interlocking reinforced-concrete ramps calculated by the newly arrived German-Jewish engineer Felix Samuely. Lubetkin and his colleagues were followed on the British scene by Erich Mendelsohn, who, together with the Russian-born, British-educated Serge Chermayeff, designed the remarkably dynamic De La Warr Pavilion [605] built at Bexhill-on-Sea, East Sussex, in 1935.

In 1937 Samuely collaborated with the émigré German-Jewish architect Arthur Korn on the extremely radical MARS plan for London. MARS (Modern Architecture Research Society) effectively became the British wing of the CIAM through the initiative of Wells Coates, who represented Britain at the third CIAM congress, which took place on the *SS Patris* during its voyage from Marseille to Athens in 1933. At its inception MARS was totally committed to the socialist cause of public housing, as was made clear in its first exhibition of 1934 and again in its last show of 1938, just prior to its eclipse by the Second World War. A number of equally talented, native British architects were also part of MARS, including Maxwell Fry, who designed the exceptionally elegant Sun House [604] in Frognal, London, in 1935, and Joseph Emberton, who, with Samuely, designed the long-span, flood-lit Simpsons department store in Piccadilly, London, in 1936. Despite the inventiveness and rigour of the British architectural scene throughout the 1930s, the only British building to be included in Alfred Roth's anthology *The New Architecture* of 1940 was the dramatically cantilevered, reinforced-concrete Boots Factory built in Beeston in 1932 to the designs of the engineer Sir Owen Williams (fig. 258).

**604** Fry, Sun House, Frognal, Hampstead, London, 1935.

**605** Mendelsohn and Chermayeff, De La Warr Pavilion, Bexhill-on-Sea, East Sussex, 1935.

The vital spirit of the British Modern Movement did not survive the war and not even the sophisticated Lubetkin was able to resume where he left off in 1938, as is evident from the formalistic low-cost, medium-rise, brick-faced housing schemes that Tecton designed and built throughout the East

End of London during the first decade and a half after 1945. The sole exception to this loss of confidence was the Royal Festival Hall [606, 607] of 1951; it is credited to the chief architects of the London County Council (LCC), Robert Matthew and Leslie Martin, but was largely designed by Peter Moro, who significantly enough had worked for Tecton before the war. Another trace of the pre-war ethos is detectable in the Brynmawr Rubber Factory in Wales, designed by the Architects Co-Partnership in 1946, with a brilliant shell concrete top-lit roofing system designed by Arup. Equally reminiscent of the heroic period of the Modern Movement was the Dome of Discovery erected for the Festival of Britain in 1951, designed by Ralph Tubbs. Together with the Skylon, designed by Powell and Moya, this incongruously echoed the ethos of the Soviet Constructivist avant garde of the 1920s.

**606** Martin and Moro, Royal Festival Hall, London, 1951.

**607** Martin and Moro, Royal Festival Hall, London, 1951.

After the Town and Country Planning Act of 1947, the white rationalist architecture of the pre-war period was replaced by the New Empiricism, a term coined by the social democratic Swedish housing architect Sven Backström in an article that appeared in the *Architectural Review* in 1947. What the New Empiricism meant in the British context was low-rise, low-density, two-storey housing units in brick with low, double-pitched, tile-hung roofs and wood-framed picture windows - in short, a syntax partially derived from Sven Markelius's country house built outside of Stockholm in 1933. However, ten- to twelve-storey brick-faced apartment blocks had also to be included in the received domestic typology of the British post-war new towns in order to

increase population density. This pattern was present even in the LCC's Alton East estate built at Roehampton [608] on an idyllic park site in 1958, which, while not exactly a new town, nonetheless exhibited a similar typological range. This was largely influenced by the New Empiricism except for the Corbusian manner evident in the gallery-access duplex apartment blocks laid out in chevron formation; these were designed by Bill Howell and Colin St John Wilson, who were then representative of rising talent in the LCC architects' department. This mixed development, combining low- and high-rise housing stock accessed by car, was averse to any trace of traditional street space and in this regard was typical of post-war housing in Britain.

**608** London County Council, Alton West, Roehampton, 1958.

It would take another generation for any kind of low-rise, high-density, street-orientated land settlement pattern to emerge in the UK and when it finally appeared it was greatly influenced by the canonical *Siedlung Halen* housing estate completed outside Berne in Switzerland in 1960. This paradigm of stepped terrace housing, between exposed cross-walls, had a direct influence on the compact housing schemes that Neave Brown designed for the London Borough of Camden, first his Fleet Road housing of 1966 [612] and then his much larger Alexandra Road complex [611], under construction from 1967. The latter consists of stepped seven- and four-storey parallel blocks affording ample external terraces for every dwelling. However, with the exception of Michael Neylan's Bishopsfield low-rise courtyard housing [609], built in Harlow New Town in 1960, and Michael Browne, Edward Jones, Michael Gold and Paul Simpson's brilliant but unfortunately unrealized entry for the Portsdown housing competition of 1966, there were few examples of low-rise, high-density housing in Britain, either

projected or built. Nonetheless, a stepped section would be integral to the continuous terraces of the dormitories built for Gonville and Caius College, Cambridge [610], to the designs of Patrick Hodgkinson (working in the office of Leslie Martin and Colin St John Wilson), and the same section was adopted by Hodgkinson for his seminal perimeter housing block, the Brunswick Centre, finally completed in Bloomsbury, London, in 1970.

**609** Neylan, carpet courtyard housing, Harlow, Essex, 1960. Sectional perspective.

**610** Hodgkinson, dormitory for Gonville and Caius College, Cambridge, 1964.

**611** Brown, Alexandra Road Housing, London, 1967. Section.

**612** Brown, Fleet Road Housing, London, 1966.

Martin played a key role during his tenure as head of the architecture school at Cambridge University in supporting rising talent, not only that of his own office, but also through his advisory position on the University Grants Committee, which, amongst other things, commissioned James Stirling and James Gowan in 1957 to design the Engineering Building at the University of Leicester, completed in 1963 (fig. 275). During this period, Martin also recommended Alison and Peter Smithson as contenders for the design of The Economist Building in London, which, in retrospect, turned out to be their last significant work, realized in 1964. This building, much like their Hunstanton School in Norfolk (fig. 270), was a Miesian exercise in as much as its structural mullions were set back as the building rose in

height as in Mies's Promontory Apartments, Chicago, of 1949. Of equal import, however, was the facing of these concrete mullions in roach Portland stone. This use of stone revetment to protect the exposed concrete against uneven weathering was echoed in Stirling's St Andrews University dormitories [613, 614], also dating from 1964, where the facing of diagonally striated prefabricated concrete panels, cast from welded steel moulds, was intended as a metaphor for rusticated stonework. This work was effectively Stirling's last Brutalist statement before his adoption of Post-Modernism, as in his project for Derby Civic Centre of 1970, designed in association with Léon Krier.

**613** Stirling, dormitory for St Andrews University, Scotland, 1964.  
Photomontage.

**614** Stirling, dormitory for St Andrews University, Scotland, 1964. Detail of the window and striated precast concrete panels.

In retrospect it is evident that British Brutalism represented a concerted effort to arrive at a socially accessible and yet rigorous architecture in opposition to the overtly popular appeal of the New Empiricism, which possibly explains Stirling's remark, 'Let's face it, William Morris was a Swede!', with its double irony in the fact that Morris was preoccupied with the tradition of Nordic culture and the Swedish welfare state was preoccupied with the social accessibility of architecture. Even so, among the early Brutalist works that testify to a concern for social relevance are the Smithsons' SoHo House project of 1952, with its so-called 'warehouse' aesthetic, and Stirling and Gowan's social housing built in Preston, Lancashire, in 1957 [615]. These 'down-to-earth' exercises in brick and exposed concrete floor slabs are typical of this moment, as is Alan

Colquhoun and John Miller's Kahnian Forest Gate School [616], built in the East End of London in 1963, not to mention the organic Aaltoesque line generally adopted by the Martin office in Cambridge in its effort to evolve a normative modern brick manner appropriate to the English climate.

**615** Stirling and Gowan, housing, Preston, Lancashire, 1957.

**616** Colquhoun and Miller, Forest Gate School, Newham, London, 1963.

Paradoxically this heroic cultural stance was at odds with a shift to populism in British politics, first with the 1964 election victory of Harold Wilson's Labour Party, followed by the Conservative Party's victory of 1970. The latter first brought Margaret Thatcher to the fore as education secretary, in which capacity she eliminated government funding for British students aspiring to enter the Architectural Association School of Architecture, London. This was the beginning of the influence of the economist Friedrich Hayek on the British government: an anti-socialist ideology opposed to the Keynesian economics of the welfare state. This stance was reinforced by the rise of Anglo-American neo-liberalism, following the election of Ronald Reagan to the US presidency in 1981 and Thatcher's election as UK premier in 1979. The Thatcher government liquidated the British coal industry and undermined the power of local authorities throughout the country, culminating in the eclipse of the Greater London Council (GLC) and the elimination of government subsidies for affordable housing.

Although one cannot claim a direct relationship between politics and architecture, it is surely no accident that the last British New Town of Milton Keynes, dating from 1972, was

planned according to the American planner Melvin Webber's concept of the 'non-place urban realm', by which he had in mind the dispersed megalopolis of Los Angeles, the total antithesis of the unrealized new town of Hook, proposed by the LCC in 1961 [617]. In contrast to this compact urban model, Milton Keynes consisted of a 1-kilometre (0.4-mile) square grid laid over the Buckinghamshire countryside (fig. 293).

**617** London County Council, Hook New Town, 1961. Masterplan.

The 1960s saw the emergence of the Anglo-Italian High-Tech Movement in architecture. It began with Team 4's realization of the steel-framed, cable-braced factory for the Reliance Controls Company built in Swindon, Wiltshire, in 1966, an approach taken further in Richard Rogers and Renzo Piano's winning competition entry for the Centre Pompidou in Paris of 1972 (figs 291 & 292) followed in short order by Norman Foster's building for the Willis Faber & Dumas insurance company in Ipswich, Suffolk, of 1975 (figs 252 & 310).<sup>2</sup>

Significantly enough, Rogers and Foster, as leading British High-Tech architects, worked, like Piano in Italy, more outside the country than within it. This was also the case later with the distinguished British architect David Chipperfield, who, while not affiliated with High-Tech, nonetheless worked at different times for both Rogers and Foster before beginning his own practice with luxury shop interiors and with small works in concrete, built in Japan – such as his Toyota showroom in Kyoto of 1990 and his Gotoh Museum in Chiba of 1991. He returned to the British scene with his Japanese-proportioned River and Rowing Museum at Henley-on-Thames, Oxfordshire, of 1997 [618]. By virtue of Chipperfield working mostly in Europe but outside the UK, Germany became the main patron of his work [620], with

such buildings as the German Literature Museum built at Marbach am Neckar, close to Stuttgart, in 2006.

**618** Chipperfield, River and Rowing Museum, Henley-on-Thames, Oxfordshire, 1997.

**619** Fretton, Fuglsang Art Museum, Lolland, Denmark, 2008.

**620** Chipperfield, James Simon Gallery, Berlin, 2018.

Like Chipperfield, Tony Fretton has been, in practice, more of a European architect than a British one, particularly after his appointment to a professorship in the Delft University of Technology (TU Delft) in 1999, in a series of works and projects designed for the Netherlands and Scandinavia. Fretton's most significant work at an urban scale had been achieved in Amsterdam, notably in two medium-rise apartment blocks: the six-storey Solid 11 and the seven-storey Andreas Ensemble. The latter is finished in a material palette that strongly reflects Fretton's taste: Danish grey brick with aluminium windows anodized in light bronze and blue-green, combined with the penthouse of pale green pre-cast concrete. However, his well-established prowess as a designer of gallery space has perhaps never been better demonstrated than in the diminutive Fuglsang Art Museum [619], built at Lolland, Denmark, in 2008, in which the architect was able to establish an unusually strong relationship between the exhibition of sculpture and subtly framed views of the surrounding landscape. Fretton's largest and most monumental complex work to date is his British Embassy and Ambassadorial Residence built in Warsaw in two phases between 2003 and 2009. In this work the offices were seen as being just as representative of the

national ethos as the spaces devoted to public reception and diplomacy.

Perhaps the most prolific and varied London-based practice of the early 21st century has been that of Eric Parry Architects (EPA). Founded in 1986, it has managed over the past three decades to maintain a rigorously professional service over a wide front, extending from medium-rise middle-class housing in Kuala Lumpur to a range of incidental adaptations for academic and artistic clients, plus the occasional restoration-cum-conservation of a country seat in both the UK and France. Apart from this broad spectrum of work, the main focus of the practice has been its piecemeal restoration of the London street fabric, beginning with a syncopated prefabricated façade for 30 Finsbury Square, completed in 2003, and followed by a more classically tectonic front for 23 Savile Row, built at around the same time. Apart from Kuala Lumpur, all of EPA's work has been contextual. However, with a Miesian steel-framed, free-standing, eleven-storey office building at 4 Pancras Square, London [623], close to the refurbished King's Cross Station, EPA have realized a more architectonic statement; the ground floor is recessed behind a monumental long-span Vierendeel truss that sets the tone for the rest of the building, not only for the front facing onto the square, but also for the other three sides emphasizing the widely spaced monumental steel stanchions upon which the building rests.

If there is a London-based architect whose work brings to mind the elusive nature of architecture in an age that is transfixed by the spectacular, then it is the Irish architect Níall McLaughlin, who has been practising in the UK since the mid-1990s. His hyper-sensitive approach invariably alludes to the time-honoured crafted tradition of building in wood. McLaughlin unequivocally evokes this in his Bishop Edward King Chapel built in 2013 for a theological college in Cuddleson, Oxfordshire, wherein a cruck-timber frame,

supporting a carinated roof, is encompassed by a concrete shell faced with brick tiles. At the same time, a timber fishing hut that he built in Hampshire two years later pays homage to both the Japanese timber tradition and to medieval oak framing. The Sultan Nazrin Shah Centre that McLaughlin built for Worcester College, Oxford, in 2017 [621, 622] demonstrates the comprehensive range of his vision. The symmetrical front of the building, facing onto a lawn, is related at the rear to the existing dormitories asymmetrically, the two axes being reconciled through the light-weight timber framing of the foyer about the quadrant of the central auditorium.

**621** McLaughlin, The Sultan Nazrin Shah Centre, Worcester College, Oxford, 2017.

**622** McLaughlin, The Sultan Nazrin Shah Centre, Worcester College, Oxford, 2017.

**623** Parry, 4 Pancras Square, London, 2017.

## Ireland

After the Easter Rising in 1916 and the declaration of independence in 1921, followed by two years of civil war, the Irish Free State did not emerge as a fully independent constitutional republic until 1937. It was first represented architecturally in the Irish Pavilion, designed by Michael Scott for the New York World's Fair of 1939, the plan of

which was conceived with the outline of a shamrock. After the Second World War, the Scott office took a more sophisticated line in the form of a Corbusian bus terminal (1953) in the centre of Dublin, designed in collaboration with the engineer Ove Arup. In the 1960s Scott's young partners, Ronald Tallon and Robin Walker, having worked in Chicago, shifted the practice away from the influence of Le Corbusier towards that of the practice of Mies van der Rohe in Chicago, beginning with the RTÉ (Irish state radio and television) headquarters in Dublin (1967).

The hiatus generated by the economic slump of the next decade would be offset by Noel Dowley's Kahnian Kilfrush House, built in Limerick in 1970. After graduating, Dowley had studied with Kahn in the United States; and it was he who, while teaching at University College Dublin, persuaded Shane de Blacam to follow suit and work for Kahn upon completing his degree. In the meantime John Meagher graduated as an architect from the Helsinki University of Technology and went to Philadelphia to work in the office of Venturi, Rauch and Scott Brown. On their return to Ireland, De Blacam and Meagher established their joint practice in the early 1980s, with a commission to reconstruct the dining hall of Trinity College Dublin following a disastrous fire. A decade later they would build for the same client their Kahnian, timber-clad Samuel Beckett Theatre (1992), capped by an Irish vernacular barn roof and erected on a prominent site in the Trinity College campus. Later Alvar Aalto influenced their architecture, for example their building at 1 Castle Street [625], inserted into the urban fabric of Dublin in 1999. Here the two influences are synthesized in a particularly compelling way, combining Kahnian timber panelling with Aalto's cantilevered, castellated brickwork (comparable to Aalto's Säynätsalo City Hall of 1950). A similar syntax is evident in their ten-storey apartment building of 2000 in the Temple Bar district of Dublin: the so-called Wooden Building [624], where the

synthesis is enriched by brickwork with pronounced mortar joints in the walls of the vertical access tower.

**624** De Blacam and Meagher, Wooden Building, Dublin, 2000. Elevation.

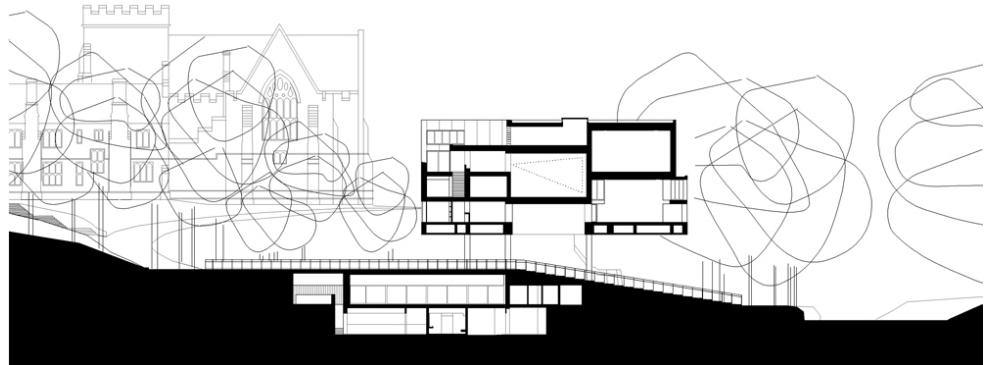
**625** De Blacam and Meagher, 1 Castle Street, Dublin, 1999.

The exceptionally fertile architectural culture of Dublin seems to have emerged not only because of the EU-backed Irish economic boom of the 1990s, but also because of the tectonic and topographic discourse of the School of Architecture of University College Dublin. From here the most talented members of the so-called Group 91 came forward, above all Grafton Architects, the practice founded by Shelley McNamara and Yvonne Farrell, and John Tuomey and Sheila O'Donnell, who, after studying and working in London, returned to Dublin in 1981 to establish their own partnership.

Like the British Brutalists of the mid-1950s, Group 91 renounced the perennial Miesian influence on Irish architecture in favour of a series of measured references to the vernacular; however, much of this was permeated here and there by classicism, as in the symmetrical Ranelagh School built in Dublin to the designs of O'Donnell and Tuomey in 1998. Making a refined use of recycled brickwork, the language of this school owes something to Stirling's Ham Common apartments and their syntax of exposed concrete and load-bearing brickwork that preceded his later Post-Modern work (see p. 301).

The next project that effectively consummated O'Donnell and Tuomey as leading practitioners of the 'School of Dublin' is their timber-clad, pinwheeling Glucksman Gallery [626] built in 2004 for University College Cork on a floodplain close to the main entrance to the campus. This

ingeniously planned, concrete-framed structure makes an indirect allusion to Stirling's Leicester Engineering Building of 1959 (see p. 303). However, they soon followed this achievement with two works that decisively depart from any Brutalist antecedent. Although both of these buildings were completed in the 2000s, their context and subject matter were quite different, one being a monopitched, timber-framed and -clad machine shop built on a former reform school in the mountainous landscape of Connemara [627], and the other a brick-clad, concrete-framed, cliff-like complex, known as Timberyard Housing [628, 629], ingeniously inserted into the dense urban fabric of Dublin.



**626** O'Donnell and Tuomey, Glucksman Gallery, University College Cork, 2004. Section.

**627** O'Donnell and Tuomey, GMIT Furniture College Letterfrack, Galway, 1997-2001.

**628** O'Donnell and Tuomey, Timberyard Social Housing, Dublin, 2009. Plan.

**629** O'Donnell and Tuomey, Timberyard Social Housing, Dublin, 2009.

Grafton Architects, who were also part of Group 91, developed their own somewhat Aaltoesque manner, as in

their Urban Land Institute building of 2002 and three-storey Waterloo Lane Mews built in Dublin in 2008. However, they attained another scale entirely with their Bocconi University extension, Milan, won in competition and completed in 2008. They were the only architects in a limited competition who were able to meet the mandatory requirement that the main auditorium should be equally accessible to the university and the city. Aside from fulfilling this condition the architects also met the requirement of providing 100 faculty offices. With this commission Grafton Architects were invited to enter – and won – one academic competition after another, including those for a school of economics in Toulouse, France (2009–16), and a technical university in Lima, Peru (2011–15) [630, 631]. Inspired by the Brazilian architect Paulo Mendes da Rocha, they conceived the latter as an audaciously tectonic, cantilevered, reinforced-concrete megastructure. They took a similar tectonic approach in their eight-storey faculty building projected for the London School of Economics in Lincoln's Inn Fields, and in their proposal for a new City Library for Parnell Square, Dublin [632]; both were won in competition, in 2015 and 2014 respectively. Like their UTEC building in Lima these last two works have been conceived largely in section as expressively structured public space.

**630** Grafton Architects, University Campus, UTEC, Lima, Peru, 2011–15.  
Transverse section.

**631** Grafton Architects, University Campus UTEC, Lima, Peru, 2011–15.

**632** Grafton Architects, Dublin City Library, Parnell Square, Dublin, 2015–.

# France

The revival of architecture in France dates from the student revolt and civil unrest of May 1968, which was accompanied by a total breakdown of the Ecole des Beaux Arts into a series of smaller ‘unités pédagogiques’ (UP), not only in Paris but also in the provinces. This decentralization transformed French architectural education and led to the creation of UP 8 and UP 3 in Paris, led respectively by the architects Henri Ciriani and Henri Gaudin. The 1972 international competition for the Centre Pompidou in Paris inaugurated a programme of government-sponsored construction that would culminate in the so-called ‘Grands Travaux’ built in Paris and elsewhere in France during the 1980s, during the presidency of François Mitterrand. Among the embellishments to the French capital at this time were two works, built at either end of the Champs-Élysées: first, a new entrance to the Louvre by the American architect I.M. Pei in 1989 in the form of a monumental glass pyramid, and, second, a giant arch completed in the same year at La Défense, on the same axis as the Arc de Triomphe and Louvre, to the designs of the Danish architect Johan Otto von Spreckelsen. Other important competition designs constructed during the 1980s were Bernard Tschumi’s Parc de la Villette (see p. 350); the new Opéra at the Bastille, designed by the Canadian architect Carlos Ott; and the Musée d’Orsay, built within the Baroque shell of the Gare d’Orsay, a railway station by the river Seine, to the designs of the Italian architect Gae Aulenti. The City of Paris also commissioned important works from the younger generation, including Jean Nouvel’s Institut du Monde Arabe (1987), Christian de Portzamparc’s Cité de la Musique

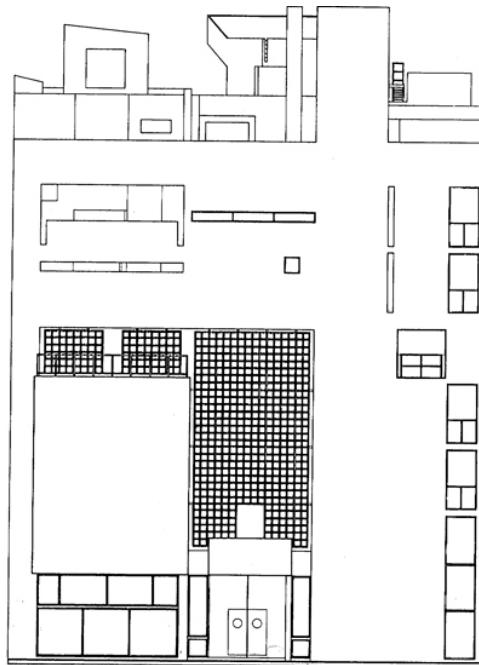
(1991) and Dominique Perrault's new national library, the Bibliothèque de France (1995).

The government-backed revitalization of architectural education and research also had an impact on the leading magazines of the period, namely *L'Architecture d'aujourd'hui*, under the editorship of Bernard Huet and *AMC (Architecture, mouvement, continuité)*, directed by Jacques Lucan. These editors spearheaded a reappraisal of the French modern tradition, from the pioneering reinforced-concrete works of Auguste Perret, Tony Garnier and Eugène Freyssinet, to the quasi-Art Deco line pursued by Michel Roux-Spitz and Rob Mallet-Stevens. Attention was also given to the ferrovitreous constructions of Eugène Beaudouin and Marcel Lods - above all their Maison du Peuple, designed with Jean Prouvé and built at Clichy in 1936.

A new awareness of the work of Le Corbusier manifested itself in various ways in France in the 1980s: in the first instance, two important works were realized by the last members of Le Corbusier's studio, the French Embassy at Rabat by Guillermo Jullian de la Fuente (1985) and the French Cultural Centre in Damascus by José Oubrerie (1986) [634]. In the second instance, the Corbusian syntax was reinterpreted by such figures as Henri Ciriani, not only in his own work, but also in that of his pupils, for example the Cité d'Artistes, Paris, which was won in competition by Michel Kagan in 1989. The typological line of the Italian Tendenza (see p. 330) also influenced Ciriani's concept of la pièce urbaine: an intervention that was capable of engendering a self-contained micro-urbanity, as in his Noisy II complex built in Marne-la-Vallée in 1980 (fig. 302). A similar intent informs the archaeological museum [633] that he designed for Arles in 1991. At the same time, Le Corbusier was not the only influence, however, for where Christian Devillers's glass-lensed parking garage built at Saint-Denis, Paris, in 1983 [636] aspired to a Constructivist rigour, Laurent Beaudouin, Christine Rousselot and Jean-Marie Roussel's

*bâtimen<sup>t</sup>d'angle*, built in Nancy in the same year [635], was inspired by the topographic architecture of Álvaro Siza.

**633** Ciriani, Archaeological Museum, Arles, 1991.



**634** Oubrerie, French Cultural Centre, Damascus, Syria, 1986. Elevation.

**635** Beaudouin, Rousselot and Roussel, apartment block, Rue des Fabriques, Nancy, 1983.

**636** Devillers, Parking Municipal des Chaumettes, Saint-Denis, 1983.

From the 1980s four particularly distinctive practices emerged in France, two of which experienced the untimely deaths of their founding partners, the first being Michel Kagan and the second Françoise-Hélène Jourda. Kagan belonged to that generation who, graduating in the late 1970s after the reorganization of the Ecole des Beaux-Arts, would be inspired by the French modern tradition to such a

degree that he was able to transcend the aesthetic legacy of Le Corbusier's Purism. Kagan, along with Beaudouin, became increasingly aware of the way in which Le Corbusier's achievements of the 1920s and 1930s were well matched by the works of a number of talented Parisian architects, including Rob Mallet-Stevens, Eileen Gray, Paul Nelson, Jean Ginsberg and Michel Roux-Spitz, the last being the designer of outstanding mid-rise apartment buildings for which Kagan had great respect. Kagan was also influenced by André Lurçat, above all by his masterly Karl Marx School of 1930 in Villejuif, as is evident from the university building that Kagan designed for Cergy-Pontoise in 1999 [639]. Kagan's Cité d'Artistes [637], completed in 1993, posited a dynamic synthesis of interpenetrating three-dimensional forms that he continued to refine over the next two decades in a series of rationally organized, Corbusian complexes built between 2000 to 2007; the first was a nine-storey residential block that he completed in Rue de l'Amiral Mouchez, Paris, at the millennium [638].

**637** Kagan, Cité d'Artistes, Citroën Cévennes, Paris, 1993.

**638** Kagan, 70 Logements, Rue de l'Amiral Mouchez, Paris, 2000.

**639** Kagan, Université neuville III.1, Cergy-Pontoise, France, 1999.

The Lyons practice of Françoise-Hélène Jourda and Gilles Perraудин first became known on the European scene in the early 1990s with their design for the Mont-Cenis Training Centre, completed at Herne-Sodingen, Germany, in 1999. This enormous greenhouse, carried on an intercolumnar system of stripped tree trucks with cable-stayed, lattice timber beams above, and faced in channel glass, was large

enough to maintain a Mediterranean microclimate throughout the year. It opened up to facilitate cross ventilation in the summer and closed down in winter, when it is heated by solar radiation combined with air brought into the building through underground tunnels. This large wooden structure, named after the now defunct Mont-Cenis coal mine, was part of the Emscher Park remediation of the Ruhrgebiet, an area that was formerly the industrial powerhouse of Germany. Following this achievement, Françoise-Hélène Jourda opened her own studio specializing in sustainable timber structures. This gave rise to two more remarkable civic works designed and constructed before her death: a covered and open-sided market building erected in Lyons in 2001 [640] and a new botanical garden for Bordeaux clad in channel glass and built in 2003 [641]. Although both structures are carried on roughly dressed timber columns, those supporting the market building are tapered and socketed into metal casings, which both anchor them to the ground and connect them to transverse timber beams supporting a monopitched polycarbonate roof above, through which comes the necessary natural light for the stalls below.

**640** Jourda, market hall, Place du 8 Mai 1945, Lyons, 2001.

**641** Jourda, Botanical Museum of Bordeaux, 2003.

The third notable practice is that of Anne Lacaton and Jean Philippe Vassal, who came to the fore with their Latapie House built at Floirac in 1993. This was their first minimal dwelling, which was promptly supplemented by a conservatory with the same plan area. This provision of additional space at minimal cost was the *raison d'être* behind their habitual use of 'off-the-peg' greenhouse

technology as the key motif of their practice. This technique made up the poetic ethos of their steel-framed single-storey Cap Ferret house [642], built at Lège in 1998 on a pine-covered dune site overlooking Arcachon Bay to the west of Bordeaux. Here they were able to preserve six existing trees on the site by incorporating them into the house: an ingenious solution that was achieved through the invention of flexible collars to allow the trees, which rise up through the roof, to move with the wind. The kitchen/bathroom and the sleeping space are both reduced to the minimum to afford generous living space. Lacaton and Vassal followed this achievement with their restoration and transformation of an eleven-storey apartment tower at La Chesnaie, near Saint-Nazaire [643]. Between 2006 and 2017 the plan of this building, dating from the 1970s, was rearranged and its balconies converted into conservatories, affording, in effect, a glazed extension of the living space, a provision that was more appropriate to the rainy, windswept climate of northern France. Their gloss on this achievement clearly outlines the ethical and economic rationale of their overall approach:

**642** Lacaton & Vassal, house at Cap Ferret, 1998. This single-storey house is ingeniously designed to incorporate existing trees.

**643** Lacaton & Vassal, apartment tower transformation, La Chesnaie, France, 2006-17. The existing building is in grey with the additions built around it.

*The global cost of 40 transformed apartments is very much below the cost of their demolition and reconstruction. The savings made by the transformation enable most of the new apartments to be financed. We hope that the project sufficiently demonstrates that the demolition of the four*

*towers can be avoided to the benefit of their transformation.<sup>1</sup>*

Other than their design and realization of one curtain-walled residential work after another, their most successful public work to date has been the new architecture school built in Nantes of 2009 [644]. This building, as with most of their work, may be seen as continuing the French light-weight, metallic tradition dating back to the pioneering figures of Jean Prouvé and Édouard Albert.

**644** Lacaton & Vassal, Ecole d'Architecture, Nantes, 2009.

Philippe Madec has long been dedicated to the cultural and economic regeneration of the French countryside, as is evident from a number of sustainable works that he has designed and realized since 2006, beginning with a new village centre for Saint-Christol in the Languedoc. This work comprises seven timber-framed, free-standing structures that are arranged in relation to one another so as to constitute a new communal hub for the existing village. This complex, known as Vivainino, is dedicated to the local economy of viticulture and comprises a gourmet restaurant, a wine boutique, a communal hall, an interactive exhibition space and an information centre. In 2017 Madec completed a larger cultural centre [645] for Cornebarrieu, near Toulouse, using adobe construction for the small-scale ancillary spaces and a timber-framed superstructure for the main public volumes. Comprising a 328-seat auditorium and a 150-seat conference room, plus offices and other functions, this complex is raised on a concrete deck 60 centimetres (23½ inches) above the high point of the floodplain. Apart from the adobe, a significant sustainable aspect of this work is its construction from locally sourced

larch and Douglas fir, imported from sustainably managed forests.

**645** Madec, cultural centre, Cornebarrieu, Toulouse, 2017.

## Belgium

The division in the modern state of Belgium, created in 1831, between the French- and the Flemish-speaking populations had repercussions for the development of modern architecture after the First World War. The French-speaking architects were more susceptible to the influence of Le Corbusier, while their Flemish counterparts gravitated either towards the Wrightian line emanating from the architect Hendricus Theodorus Wijdeveld's magazine *Wendingen* or to the abstractions of Dutch Neo-Plasticism. Distanced from these affinities was the patrician figure of Henry van de Velde, who, on returning to the country in 1925 after his exile in Switzerland, built a modest brick house for his own occupation in Brussels, before becoming in 1927 the director of the newly formed Institut Supérieur des Arts Décoratifs in Brussels, known as La Cambre after the ancient abbey in which it was housed. In 1929 he designed and realized a remarkable home for the elderly in Hannover, Germany, featuring a syncopated sequence of bay windows in brick, before adopting fair-faced concrete for the library that he built for the University of Ghent in 1936. Van de Velde combined concrete with brick cladding in his final masterwork, the Kröller-Müller Museum in Otterlo in the Netherlands, under construction from 1937 to 1953 [**646**].

**646** Van de Velde, Kröller-Müller Museum, Otterlo, The Netherlands, 1937–53.

Belgium's reconstruction after German occupation and bombardment in the First World War was greatly influenced by the Anglo-Saxon garden city movement, particularly as it was embodied by Raymond Unwin's *Town Planning in Practice* of 1909, the main precepts of which were reiterated by the landscape architect Louis van der Swaelmen in his *Préliminaries d'art civique* of 1916. He put these principles into practice in two successive settlements designed with the Bruges architect Huib Hoste: the Klein Rusland garden estate of 1921 and the Kapelleveld garden city of 1923–26. These works parallel Victor Bourgeois's much more didactic Cité Moderne built outside Brussels between 1922 and 1925 [647] and also enriched with a landscape by van der Swaelmen. This seminal work, reminiscent of Tony Garnier, was published in the Belgium town planning magazine *La Cité*, which had been founded in 1919 by the urbanist Raphaël Verwilghen as the official organ of the Société des Urbanistes Belges. However, the social utopianism of these post-war years gave way in the early 1920s to the innate conservatism of the Belgium middle class, indicated by the withdrawal of state funding for social housing in 1923. After this Bourgeois's activity became increasingly diverse, ranging from the cubistic house and studio that he designed and built for the sculptor Oscar Jespers in Woluwe-Saint-Lambert in 1928 [648] to the utopian World City that he proposed under the patronage of Paul Otlet for Tervuren Park, Brussels, in 1932.

**647** Bourgeois, Cité Moderne, Brussels, 1922–25.

**648** Bourgeois, Oscar Jespers's House, Woluwe-Saint-Lambert, 1928.

The next generation of Belgian modernists included Léon Stynen, Louis Herman De Koninck and Gaston Eysselinck, who were all at different times influenced by Le Corbusier, although this inspiration did not by any means determine their entire careers. Among them Eysselinck, on graduating from the Academy of Ghent in 1928, first made an architectural pilgrimage to the Netherlands, where he encountered not only the De Stijl Movement, but also the Amsterdam School and the work of W.M. Dudok, as is evident from the brick-faced Serbruyns House that he completed in Ghent in 1930. However, this achievement coincided with his first full encounter with the work of Le Corbusier through the publication of the latter's *Oeuvre complète 1910–1929*. This accounts for Eysselinck's sudden adoption of Le Corbusier's 'Five Points of a New Architecture' of 1926, as is evident in Eysselinck's own house built in Ghent on a triangular, leftover site in 1931 [649]. However, in the second half of the 1930s he returned to the use of precision brickwork combined with elegant steel-framed windows: a fall-back position adopted by many Belgian modernists during the interwar period. After the Second World War, Eysselinck briefly returned to Le Corbusier with his Central Post Office for Ostend, dating from 1945, the ultimate development of which displayed something of the monumental character of Le Corbusier's entry for the League of Nations competition of 1927.

**649** Eysselinck, Eysselinck House, Ghent, 1931.

The Antwerp architect Léon Stynen fully embraced the work of Le Corbusier only after a visit in 1952 to the Unité d'Habitation at Marseilles. He was so inspired by the Unité as to propose a diminutive version of the same concept with central corridors and double-height living spaces, but without the characteristic cross-over units and communal

facilities. Stynen, like many other Belgian architects of his generation, such as Eduard Van Steenbergen, Robert Puttemans and Jean-Jules Eggericx, finally settled for a well-proportioned domestic format in precision brickwork, as found in his own house in Antwerp of 1932, and in a small estate of six two-storey houses that he built in two-tone brick on the left bank of the river Escaut in Antwerp in 1939. Apart from his domestic work [651], Stynen specialized in the design of casinos, including those in Knokke, Chaudfontaine, Blankenberge and Ostend [650], all of which were predicated on a Neo-Classical *parti* overlaid with a modernist syntax.

**650** Stynen, Casino in Ostend, 1950.

**651** Stynen, Immeuble d'habitation, Kessel-Lo, 1956. Section.

A sole exception to this Belgian pursuit of a conservative modernity was Louis Herman De Koninck, who envisaged his work being constructed of patent concrete blocks, such as those being produced by the building contractor Firmin De Smaele. The firm had developed the patent Gebabloks for the purpose of the reconstruction of the country after the devastation of the 1914–18 war. This was the material that De Koninck used to build his own two-storey house and studio at Uccle, near Brussels, in 1924 [652]. Planned within a square, this residence, built on the edge of a precipitous drop, comprised an architect's office and a bedroom at the entrance level, with a sequence of living, dining and kitchen areas accommodated at the garden level one floor below. Although De Koninck was always looking for practical ways to achieve optimum ergonomic arrangements at minimum cost, he was also a member of the Belgian wing of CIAM and thus played a key role in the categorically Functionalist

Brussels CIAM congress of 1930. For this occasion he designed, like Eyselinck, a suite of chromium-plated, tubular-steel chairs after prototypes initially designed by Ludwig Mies van der Rohe and Marcel Breuer, the dimensions being discreetly modified in order to avoid infringing the patent rights.

**652** De Koninck, De Koninck House, Brussels, 1924.

The masterwork of De Koninck's career was unquestionably the house [[653](#), [654](#)] he designed in 1929 for the Belgian landscape architect Jean Canneel-Claes. This work, completed in 1931, has to be ranked as one of the most economical houses built anywhere in Europe during the high modern period of the 1930s. By the ingenious use of sliding/folding doors, De Koninck was able to accommodate within the living room a separate section for Canneel-Claes's office. A spiral stair gave immediate access to the bedrooms and bathroom on the floor above, with an additional flight giving access to the roof terrace. Unlike Le Corbusier, who had first received the commission, De Koninck met Canneel-Claes's condition of affording direct access to his cubistic parterre, which as a landscape architect Canneel-Claes had conceived in opposition to both the French formal garden tradition and the Anglo-Saxon Picturesque manner. De Koninck was always trying out the latest technical innovations, which included on this occasion walls of pumice concrete. Concrete floors were finished in linoleum throughout, and patent Vera-Lux glass lenses, designed by H.P. Berlage, were used to light the corner staircase. During the 1930s this house was the most published work of the Belgian Modern Movement, appearing in both *La Cité* and in the Dutch magazine *De 8 en Opbouw* in 1932. Two years later it was included in F.R.S. Yorke's publication *The Modern House*. Despite this international

triumph, the second half of the 1930s saw the gradual stagnation of the Modern Movement in Belgium for, as Pierre Puttemans wrote in 1976:

**653** De Koninck, Canneel House, Brussels, 1931.

**654** De Koninck, Canneel House, Brussels, 1931.

*Despite the basic function as understood by the Cubist architects, luxury was inherent in the bourgeois system which did not expect architecture to establish that the bodily measurements and biological needs of a worker were similar to those of his employer, but wanted it, on the contrary, to emphasize the difference ... So there we were at the end of a great epoch for architecture. Modernism ... was only represented by a small band of followers; it had been accepted neither by the bourgeoisie, nor by extension by the masses ... It was as though the bourgeoisie when first threatened by the socialist wave of modernism, relied on the latter's own internal contradictions so that (as Marcel Smets emphasized) the battle had been enjoined strictly on the grounds of form.<sup>1</sup>*

Nothing could be further removed from De Koninck than the hardline socialist Antwerp architect Renaat Braem, who was inspired by N.A. Milyutin's linear city paradigm as set forth in his book *Sotsgorod (Socialist Towns)* of 1930. This was the primary inspiration behind the linear city that Braem proposed in the mid-1930s: his 100-kilometre (62-mile) canal, road and rail infrastructure linking Antwerp to Liège. Braem's commitment to the main planning precept of the Soviet avant garde seems to have prompted him to enter Le Corbusier's studio in Paris, where he worked on designing modular shop prototypes for Bata and on the art

museum that Le Corbusier projected for Paris in 1935. By this date Le Corbusier had already become a prominent figure on the Antwerp scene by virtue of his project for the urbanization of the left bank of the Escaut [655], which was designed in association with the architects Huib Hoste and Félix Loquet.

**655** Le Corbusier, plan for the left bank of the river Escaut, Antwerp, 1933.

Braem inspired the post-war generation with his project of Kiel Park City development for Antwerp (1950), which provided 7,500 units in a series of thirteen-storey, free-standing slab blocks designed in association with the architects Maevement and Maes. This project led to the invention of a gallery access system in which the external gallery was set lower than the living level in order to ensure privacy. Despite the emerging policy of the central government, favouring wholesale suburbanization, the municipalities of Antwerp and Brussels still commissioned large housing schemes, designed by Braem in association with other architects.

The international exhibition staged in Brussels in 1958 represented a moment of renewed confidence in Europe, as was evident from the pavilions designed by leading international architects, such as the elegant German pavilion by Egon Eiermann and Le Corbusier's reinforced-concrete Philips Pavilion [656, 657], a hyperbolic shell structure housing a mediatic *tour de force*, devised by the architect. This was his renowned multimedia installation *Poème électronique*: a kinetic concatenation of sublime images accompanied by *musique concrète* composed by Edgar Varèse and Iannis Xenakis. Xenakis was a composer-architect who, as a refugee from the Greek Civil War, had collaborated with Le Corbusier on the design of the pavilion.

**656** Le Corbusier, Philips Pavilion, Brussels World Expo, 1958.

**657** Le Corbusier, Philips Pavilion, Brussels World Expo, 1958.

With the building of the new university town of Louvain-la-Neuve between the late 1960s and the mid-1970s, a kind of Brutalist brick and concrete aesthetic came to the fore in Belgium, involving architects who had been trained after the Second World War. A rather extreme version of this ethos was evident in the work of Juliaan Lampens, who, after studying architecture at the Sint-Lucas School in Ghent from 1940 to 1950, immediately opened his own office to spend the next decade mostly designing quirky, retardataire houses with mandatory double-pitched roofs before designing a series of single-storey, reinforced-concrete houses, beginning with his own house built in Eke about 1960. Lampens' radical anti-bourgeois attitude attained its apotheosis in his Van Wassenhove House built at Sint-Martens-Latem in 1974: articulated into an open living volume with a semicircular sleeping area enclosed by a timber screen. Here the further subdivision of the space was achieved through thin concrete partitions, which differentiated the rudimentary functions under a clear-span roof. On this occasion a concrete pitched roof discharges rainwater through a giant concrete gargoyle into a circular tank within the living-room terrace. This *béton brut* bunker is Lampen's ultimate existentialist statement, totally outstripping in its audacity the ideology of Brutalism.

Stéphane Beel, one of the leading Belgian architects of the next generation, established his minimalist reputation overnight in 1993 with the so-called Villa M in Z [658], a 50-metre (164-foot) long, single-storey luxury house built along one side of a large lawn. Clad in timber boarding and raised clear of the ground, this house is entered from one end via a

subterranean garage, a trope that Beel repeated in his second house of consequence, the Villa P in R [659]; in typological terms this is a single-storey courtyard house that has paradoxically lost its patio by virtue of it being partly raised on *pilotis* and situated on a bluff within a densely wooded site. Beel's early houses are symptomatic of the so-called New Simplicity that he developed in collaboration with Xaveer De Geyter as a genre expressly distinct from the spectacularity of the latter-day Dutch avant garde led by Rem Koolhaas. Since this moment Beel has maintained his laconic approach over a wide front, designing in addition to private houses large-scale civic works such as the new law courts built in Ghent in 2010. In an interview with Moritz King in 2005, Beel set forth the substance of his approach in the following terms:

**658** Beel, Villa M in Z, Zedelgem, 1987–92.

**659** Beel, Villa P in R, Rotselaar, 1991–93.

*I prefer to go through this process with the client, because I believe in discussion ... where two ways of thinking come together and suddenly a third emerges as if by chance. ... One is not acting outside a context. I don't mean what is seen as the context but what lies behind it ... Society, for example, the way society manifests itself, the way society moves, as an architect you are concerned with that too and that is also context ... You don't build a house just for those people, you are working in an environment and you shouldn't have too many illusions about improving or rebuilding the world. But you do have to be aware that you are engaged in more than just the things you have been asked to be engaged in, if that's all you are concerned with, it seems to me to be a failure.<sup>2</sup>*

Perhaps the most critical aspect of Beel's architecture is its 'anti-spectacular' character, which has enabled him to insert significant cultural institutions into leftover, interstitial spaces within the traditional urban fabric.

More susceptible than Beel to the profoundly Surrealist tradition in Belgian artistic culture, the Ghent architects Raul Robbrecht and Hilde Daem have often operated at the interface between architecture and art, perhaps nowhere more effectively than in their light-weight demountable pavilions. These were designed for the exhibition of art or as artistic exhibits in themselves, or as combinations of both, as in the Aue Pavilions in plywood. These pavilions were erected first in Aue Park, Kassel, for the contemporary art exhibition Documenta IX in 1992, where they temporarily housed an exhibit by Dan Graham, and later in the Netherlands at Almere in 1994 and Amersfoort in 2014. These works were paralleled by their setting for René Heyvaert's exhibition 'The Things I See', staged in St Peter's Abbey, Ghent, in 1986. It is equally typical of Robbrecht and Daem's work that they would adopt an eccentric proportional system for the design of buildings, based on the numbers 3, 5 and 7, a system supposedly adopted by Louis Kahn. When the numbers are multiplied together they produce the total of 105, which the architects are in the habit of adopting as an alternative to the standard metre. The most significant work that these architects have produced to date is the 1,700-seat auditorium and concert hall that they deftly added to the traditional fabric of Bruges in 2002 [660].

**660** Robbrecht & Daem, Auditorium, Bruges, 1998–2002.

# Spain

The Modern Movement in Spain was initiated by progressive Catalan architects who constituted the group named GATCPAC, an acronym that was changed in 1930 to GATEPAC (Grupo Arquitectos y Técnicos Españoles para el Progreso de la Arquitectura Contemporánea; ‘Group of Spanish Architects and Technicians for the Progress of Contemporary Architecture’), in order to widen the movement beyond Catalonia to include Spanish modern architects in general, above all Fernando García Mercadal from Madrid and José Manuel Aizpúrua and Joaquín Labayen from San Sebastián, who jointly designed the first discernibly modern building in Spain: the Royal Nautical Club of 1931 built in San Sebastián. In that year GATEPAC published the first issue of its magazine *AC: Documentos de Actividad Contemporánea*, significantly featuring on its cover Leendert van der Vlugt and Mart Stam’s Van Nelle Factory of 1929 in Rotterdam (see p. 145). Edited by José Luis Sert and Josep Torres i Clavé, *AC* had an international agenda, reproducing material from the third CIAM meeting on the SS *Patras* of 1933. The last issue of *AC*, no. 25 of June 1937, carried a photograph of a political demonstration on its cover confirming that the editorial would be aligned with the Republican side in the Spanish Civil War (1936–39).

The renewal of modern architecture in Spain has its origin in the early 1950s, when, after a decade of stagnation following Franco’s victory in the Civil War, the country’s architects began to pick up the threads of a progressive culture, beginning with Francisco Cabrero’s monumental Union Building, Madrid, of 1949 and Josep Antoni Coderch’s apartment block erected in Barcelonetta in 1951 and influenced by the post-war manner of Ignacio Gardella.

Equally influenced by Italy, Alejandro de la Sota's Governor's Palace built in Tarragona [661] in 1957 owed something to Giuseppe Terragni's Casa del Fascio of 1936. The overall appeal of De la Sota's approach stemmed from his penchant for the precise articulation of constructional form and from his ability to create stimulating spatial constructs within the confines of a minimalist envelope. It is a measure of de la Sota's sophistication that he would see the Governor's Palace as a point of transition in terms of political representation, since it epitomized a moment when the traditional monumentality of stone, commonly associated with the authority of the state, could now be rendered as a dynamic, abstract envelope, similar in its effect to the seemingly weightless marble planes that Mies had deployed in his Barcelona Pavilion of 1929.

**661** De la Sota, Governor's Palace, Tarragona, 1957.

Whether through the effect of his teaching in Madrid or of the gymnasium that he built for the Colegio Maravillas in Madrid (1962), de la Sota's austere but dynamic syntax became for a while something of a normative architectural method in Spain. Among his more accomplished followers were Víctor López Cotelo and Carlos Puente, particularly for their library in Zaragoza (1984). De la Sota's influence first became manifest in Catalonia with Josep Llinàs's School of Civil Engineering built in Barcelona in 1990. The Mora d'Ebre Hospital [662] built two years before in Tarragona, to the design of Elías Torres Tur and José Antonio Martínez Lapeña, also seems to have been subject to this inspiration, particularly for the way in which they were able to transcend the hyper-technological character of the modern hospital into one of the most humanly scaled works built anywhere in the second half of the 20th century.

**662** Martínez Lapeña and Torres Tur, Mora d'Ebre Hospital, Tarragona, 1982-88.

De la Sota's influence was mediated by two other lines emanating from the faculty of the leading architectural school in Madrid: I have in mind the Aaltoesque approach of Antonio Fernández Alba, evident in his El Rollo monastery built at Salamanca in 1962, or Francisco Javier Sáenz de Oiza's Wrightian Torres Blancas apartments built in the outskirts of Madrid in 1968 and his Banco de Bilbao office tower [663] completed in the centre of the city in 1981, vaguely reminiscent of Wright's Johnson Wax Research Tower of 1946. Largely faced in corten steel, with rounded corners, this mid-rise tower is one of the few skyscrapers of the post-war era to break with the post-1945, Miesian paradigm of the curtain-walled, four-square, minimalist, orthogonal office building.

**663** Sáenz de Oiza, Banca de Bilbao, Madrid, 1971-81. In the left foreground is the gymnasium of the Colegio Maravillas by De la Sota, 1962.

Among the Madrilenian architects who emerged in the mid-1970s, one of the most sophisticated was surely Rafael Moneo, who - taught by Sáenz de Oiza and apprenticed with Jørn Utzon - was as much influenced by Nordic architecture as Alba had been before him. Moneo's unique manner, combining aspects of the works of Gunnar Asplund and Wright, first appeared in his brick-clad Bankinter in Madrid, realized in collaboration with Ramón Bescós in 1977. Moneo's capacity to synthesize diverse traditions into new forms is evident in his National Museum of Roman Art [664] built in Mérida in 1985, where a brick-tiled interior of Roman proportions and a brick-clad, buttressed exterior allude to both the Roman past and the mosque at Córdoba dating from the Arab occupation of Spain. This museum was

superimposed over the newly excavated remains of the Roman city in such a way that its piers are set down on the ancient footings: an audacious gesture that contaminated, as it were, the purity of the archaeological excavation. Moneo added a subterranean tunnel to this undercroft in order to permit direct access on foot to the nearby open-air remains of a Roman theatre and amphitheatre, thereby simulating the experience of walking through the ancient city.

**664** Moneo, National Museum of Roman Art, Mérida, 1980–85. Aerial view of the museum under construction, showing its relationship to the town centre and the Roman amphitheatre and theatre.

Through his teaching in Barcelona and Madrid, Moneo exercised a decisive influence on the next generation, including the Seville-based practice of Antonio Cruz and Antonio Ortiz. This is evident from their earliest work, a four-storey apartment building that they ingeniously inserted into the dense fabric of Seville in 1976, to their much larger four-storey, brick-faced Carabanchel housing estate completed in Madrid in 1989 [665]. Their national reputation was consolidated around this time by the realization of the monumental Santa Justa railway terminal in Seville [666]. Thereafter their prestige as civic architects would be reinforced through one public commission after another, culminating in the calm, symmetrical monumentality of the Olympic Stadium that they saw completed in Seville at the millennium. In between these achievements they produced a number of designs for housing schemes, including their Novo Sancti Petri project in Cádiz, which was a reinterpretation of Jørn Utzon's Kingo typology of 1958. Cruz and Ortiz adapted Utzon's single-storey courtyard house to a multi-storey format, with units grouped together so as to shield both the individual home

and the estate from its exposure on a windswept coastal site.

**665** Cruz and Ortiz, Carabanchel housing estate, Madrid, 1986–89.

**666** Cruz and Ortiz, Santa Justa Railway Terminal, Seville, 1987.

While the critical culture of Madrid in the post-Franco period after 1975 stemmed from Juan Daniel Fullaondo's journal *Nueva Forma*, the critical discourse in Barcelona was energized by the magazine *Arquitecturas Bis* founded by Rosa Regàs in 1974. The editorial line of this newspaper represented the combined efforts of a closely knit editorial board under the leadership of the architect-historian Oriol Bohigas, including figures teaching at the ETSAB faculty of architecture in Barcelona, such as the architects Federico Correa, Helio Piñón, Ignasi de Solà-Morales and Rafael Moneo, and the aesthetic philosopher Tomás Llorens.

In 1982 Bohigas, as city architect, published a plan for the restructuring of Barcelona under the title *Plans i Projectes per a Barcelona*. Two factors made this programme unique: firstly, the aim to refurbish the city on a piecemeal basis and, secondly, a determination on the part of the municipality to turn the plan into reality. Bohigas's Barcelona plan led to the realization of ten parks, two major avenues and numerous plazas of varying size, including one facing the Sants Station, rendered as a minimalist public space in 1986 to the designs of Helio Piñón and Albert Viaplana with Enric Miralles and Carme Pinós as assistants. Carefully graded and furnished so as to reinforce the character of the site, this work is typical of the stress that is placed on topography in Spanish architecture.

The selection of Barcelona as the site for the 1992 Olympics had the effect of expanding Bohigas's city plan,

entailing not only a totally new residential quarter for 10,000 people, to serve as the Olympic Village and later as regular housing stock, but also to create a new relationship between the city and the sea by diverting a major rail link inland away from the coast. Called upon to design sports facilities for the Olympics, many Catalan architects demonstrated a capacity to build in the manner of French *grands constructeurs*, among them Esteban Bonell and Francesc Rius in their velodrome built at Vall d'Hebron in 1984 [667] and basketball arena at Badalona of 1991 [668], as civic monuments capable of consolidating the surrounding urban fabric.

**667** Bonell and Rius, Horta Velodrome, Vall d'Hebron, Barcelona, 1984.

**668** Bonell and Rius, Olympic Sports Pavilion, Badalona, near Barcelona, 1991.

From Antonio Vázquez de Castro's Caño Roto low-rise workers' housing in Madrid of 1961 to Josep Antoni Coderch's multi-storey upper-middle-class housing realized above built-in parking in the Sarria district of Barcelona in 1974, the building of residential stock for an increasingly prosperous society encouraged Spanish architects to evolve new patterns of urban development and to refine further their traditional skill in the organization of domestic space. The typological approach of the Italian Tendenza, as proselytized through the Barcelona magazine *2C Construcción de la Ciudad*, had a decisive influence on the new housing types developed during this period, from Francisco Barrionuevo's perimeter blocks in Seville of 1980 to the high-rise slabs built in the Palomeras district of Madrid in 1983 to the designs of Estanislao Pérez Pita and Jerónimo Junquera. Equally inventive solutions were projected for institutional buildings, such as the

abstract, white Colegio San Fermín, Madrid, of 1986 designed by Alberto Campo Baeza, which in retrospect seemed to echo the minimalist architecture of Tadao Ando.

One should not underestimate the important cultural role that was once played by the *colegio* system in Spain, prior to its deregulation by the European Union, since these guild-like institutions guaranteed the Spanish profession a level of protection that hardly existed in any other country. The regionally based *colegios* exercised a powerful influence over the entire construction industry, having jurisdiction not only over building permits but also over professional fees from which they subtracted a small percentage for its services. This system was thus able to patronize local architectural culture through exhibitions, lectures and subsidized magazines. The continuing validity of the Spanish tradition in architectural reportage and criticism largely derived from this patronage, as is still reflected even now in outstanding Spanish publications including *El Croquis* and *Arquitectura Viva*. Not only did this erstwhile institutional support assure Spanish architects of their prestige, but it also encouraged them to design with reference to an immediate reality rather than to become preoccupied, as elsewhere, with either an inaccessible future or an equally remote past.

Despite the unfortunate deregulation of this system, the capacity of Spanish architects to make a realistic contribution to society persists, for while Spanish work has become more varied, the profession still retains an ability to build in an exceptionally rich and effective manner, as may be seen in the work of the Galician architect Manuel Gallego. He graduated from the ETSA (Escuela Técnica Superior de Arquitectura) Madrid in 1963 and thereafter worked as an assistant to de la Sota before becoming an architect within the Galician ministry of housing, while still maintaining a small practice that would allow him to realize the occasional piece of urban infill in remote parts of Galicia.

His most important work to date is the Galician presidential complex that he realized for Santiago de Compostela in 1999–2002 [669]. Built on a diminutive acropolis elevated above the city, this carefully inlaid topographic work is as much a beautifully articulated landscape as it is the seat of provincial government. This greensward site, structured by low retaining walls executed in rough-hewn local stone, serves to ground the low-rise, ashlar-faced buildings, the character of which is enlivened by well-detailed, generously proportioned timber windows.

**669** Gallego, Galician Presidential Complex, Santiago de Compostela, 1999–2002.

Owing to the cultural vitality of the Spanish provincial city, Spain continues to nurture a strong civic tradition, amply reflected in Rafael Moneo's wide-ranging career, from the Kursaal complex in San Sebastian to his delicate insertion of a multi-storey city hall into the medieval fabric of Murcia in 1998. And what is true of Moneo also applies to the careers of many other Spanish architects who have been engaged over the past two decades in generating an exceptional spectrum of civic buildings, from the Usera Library, Madrid, by Abalos and Herreros, to Francisco Mangado's Baluarte Auditorium, completed on a trapezoidal site in the centre of Pamplona, both works dating from 2003. Among the more accomplished civic structures to be completed in Spain is a small public library in the Madrid suburb of Villanueva de la Cañada, realized to the designs of Churtichaga and Quadra-Salcedo in the same year. Here, the open book stacks have been treated as a spiralling street-space, the ramped floors and walls of which are built of reinforced brickwork by way of a homage to the work of Eladio Dieste. A comparable evolution of regional culture may be traced in the work of Guillermo Vázquez Consuegra,

who, having graduated from the ETSA Seville in 1972, first made his reputation with a long, four-storey, low-cost housing block completed as a single urban element in 1987 [672]. Entirely finished in white rendering, this building became a symbol of a renewed modernity in southern Spain, and he consolidated his position in this regard with an equally striking telecommunications tower built in Cádiz in 1993 [670].

**670** Consuegra, telecommunications tower, Cádiz, 1993. Elevation.

The Madrid School yielded a new generation of architects who were pupils of both Sáenz de Oiza and Moneo, among them the practice of Luis Mansilla and Emilio Tuñón. They began in the 1990s with their exceptionally rational Zamora Museum [673, 674], inserted into the heart of a traditional urban fabric in 1996, followed by the closely related Castellón Museum of Fine Arts completed in the heart of that city at the millennium. Of a similar, slightly younger generation coming out of the same school are Enrique Sobejano and Fuensanta Nieto, who, now based in Madrid and Berlin, have enjoyed a particularly successful career. Their first project was a university chancellery for Vigo, which they won in competition in 1996, and was followed by an equally rigorous housing complex built by the side of a motorway in Seville in 2001 [676]. Perhaps their most sublime work to date is their Madinat Al Zahara Museum [675], completed in 2008 on the site of an Islamic city, dating from ad 936, the remains of which were discovered in 1911. The quiet elegance of this building stems from its white, labyrinthic, ‘mat-building’ form, which – closely integrated with the topography – may be read not only as a museum but also as a metaphor for the original settlement.

Another Madrilenian practice coming into its own is that of Ángela García de Paredes and Ignacio García Pedrosa,

who – having been apprenticed to the architect of the National Theatre, José María García de Paredes – produced as their first independent work the Valdemaqueda Town Hall in 1998: a small, rationalist work comprising two low-rise structures set in the midst of a historic fabric. This would be the first in a series of civic buildings that they completed around the millennium, ranging from a congress centre for Murcia (2002) to a museum in Almería of virtually the same date. Perhaps their most subtle and accomplished work to date is the public library of Ceuta [671], built in Algeciras in 2014 over the excavated remains of a medieval city.

**671** Paredes Pedrosa, Ceuta Public Library, 2007–14.

**672** Consuegra, Social Housing Ramón y Cajal, Seville, 1983–87.

**673** Mansilla + Tuñón, Zamora Museum, 1992–96.

**674** Mansilla + Tuñón, Zamora Museum, 1992–96.

**675** Nieto Sobejano Arquitectos, Madinat Al Zahara Museum, Córdoba, 2008.

**676** Nieto Sobejano Arquitectos, dwelling by SE-30 Highway, Seville, 2001.

## Portugal

Any appraisal of the evolution of modern architecture in Portugal has to acknowledge the didactic and creative contribution of Fernando Távora, who, together with Carlos Ramos, was the prime mover of the reformation of the Porto School of architecture throughout the 1950s. Távora's lifelong preoccupation was to combine the functionality of the Modern Movement with the equally reasonable, but less abstract, rationality of vernacular culture, an ambition that he perhaps came closest to realizing in the *pousada* (hotel) [677] that he added in 1984 to the 18th-century Santa Marinha da Costa Convent in Guimarães.

**677** Távora, Santa Marinha da Costa Convent hotel addition, Guimarães, 1975–84.

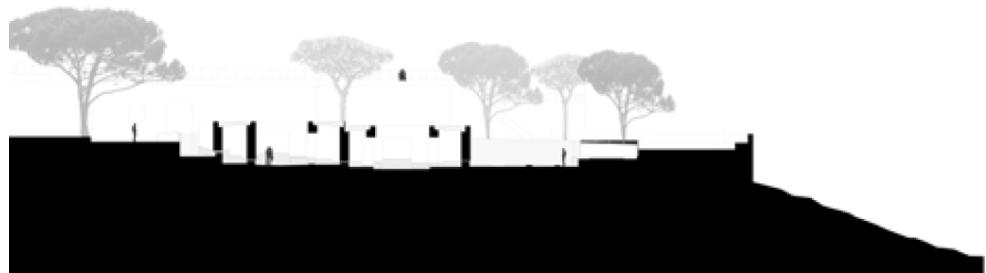
Although the Porto School has largely shaped the perception of Portuguese architecture over the past forty years, a number of other architects across the country also accomplished significant works in the same period, above all the practices of the Lisbon-based architects Gonçalo Byrne and João Luís Carrilho da Graça. Starting within a decade of each other, they both established the lines of their respective practices early in their careers, with the first largely focused on the design of university campuses and the second orientated towards museological commissions. Byrne's career began with a continuous six- to eight-storey housing complex built in the relatively low-rise Chelas district of Lisbon from 1972 to 1974. However, Byrne came into his own as a civic architect with the faculty buildings that he designed for the universities of Oeiras and Coimbra over the years 1988–96; one of his finest works from this period is the Department of Electrical and Computer Engineering built for the University of Coimbra in 1991. The most sculptural aspect of Byrne's career to date has been

the maritime control tower that he designed for the port of Lisbon in 2001 [678].

**678** Byrne, Torre APL, Lisbon, 2001.

Carrilho da Graça's career began with a hilltop swimming pool, designed with Carlos Miguel Dias for Campo Maior in 1990 [679]. Thereafter he assumed a more minimalist approach than that of Byrne, first with a theatre and concert hall that he designed in Poitiers, France, in 2008 and then with an archaeological museum completed in Lisbon the same year [680]. The latter is typical of the architect's penchant for superimposing circulation on top of an archaeological site so as to focus the visitor's attention on the stone foundations that remain. The seemingly thick walls of this design are built up out of corten-steel plates and are covered with translucent glass roofs.

**679** Carrilho da Graça, Municipal Swimming Pool, Campo Maior, 1990.



**680** Carrilho da Graça, Praça Nova, Archaeological Museum, Lisbon, 2008. Section.

An atypical work equally removed from both Porto and Lisbon is the Paula Rego Museum built in Cascais between 2005 and 2009 to the designs of Eduardo Souto de Moura [681, 682]. This building, housing the work of Rego, establishes its unique architectural presence through two

shell concrete volumes superimposed in each instance over square plans, respectively housing a library and a café. The *in situ* concrete of these forms is dyed red in contrast to the lawn and trees onto which the building opens.

**681** Souto de Moura, Paula Rego Museum, Cascais, 2005–09. Elevation.

**682** Souto de Moura, Paula Rego Museum, Cascais, 2005–09. Roof plan.

One of the little-acknowledged Portuguese achievements in the 21st century are the new schools designed and realized for the municipality of Óbidos between 1989 and 2010, beginning with a school built adjacent to a stadium in the centre of the city. Hyper-aware that the traditional school is now rapidly evolving under the impact of digital technology, the municipality elected to build four new schools, designed by the émigré architect Claudio Sat [683, 684], instead of upgrading or replacing older, under-equipped schools in the rural hinterland. Like the schools built in São Paulo, Brazil, during the first decade of the 21st century, these schools have also been conceived in such a way as to function as community centres in the evening.

**683** Sat, Furadouro School, Óbidos, 2010.

**684** Sat, Furadouro School, Óbidos, 2010. Site plan.

At this juncture one also needs to acknowledge the important contribution made by the leading Portuguese landscape architect João Gomes da Silva, who has worked on a number of seminal projects in collaboration with such architects as Álvaro Siza and Carrilho da Graça. Among his

key works in this regard is the parkscape that he created for both Siza's Malagueira housing in Évora in 1997.

## Italy

After Benito Mussolini's assumption of dictatorial power in 1922, the rise of the Modern Movement in Italy was inseparable from the modernizing architectural and urbanistic aspirations of the Fascist state as outlined by the engineer Gaetano Ciocca and the architect-editor Ernesto Nathan Rogers in their article 'Per la città corporativa', published in Pietro Maria Bardi's magazine *Quadrante* in 1934. It was essentially this urban vision that the industrialist Adriano Olivetti advanced in 1937, when he commissioned the practice of BBPR – Gianluigi Banfi, Lodovico Barbiano di Belgiojoso, Enrico Peressutti and Ernesto Rogers – along with the architects Luigi Figini and Gino Pollini, to produce a regulatory plan for the Valle d'Aosta region. This idea would be further elaborated in a subsequent article that appeared in the same year in *Quadrante* written by Banfi and Belgiojoso, entitled 'Urbanistica corporativa'. The earliest fruits of the Valle d'Aosta plan were the housing and schools designed for the new industrial town of Ivrea by Figini and Pollini from 1939 to 1942. It is significant that Olivetti's ultimate split from Mussolini occurred only in 1943, the year in which both he and Rogers went into exile in Switzerland. It is equally telling that after the war Olivetti resuscitated his Saint-Simonian model of an ideal industrialized society through a didactic emphasis on the idea of a cooperative community

as promulgated in his journal *Comunità*, first published in 1948.

The intense and complex Italian architectural debate from 1945 onwards was initiated by two exceptional personalities: Bruno Zevi, the architectural historian, and Ernesto Rogers. Given that both had Jewish origins, they were compelled eventually to leave Italy following Mussolini's alliance with the Third Reich in 1936. Zevi went to London in 1939, where he briefly attended the Architectural Association School of Architecture, before going on to the United States, where he studied with Walter Gropius at the Graduate School of Design, Harvard University, receiving his BArch degree in 1942. Whereas Rogers remained until the pending defeat and destruction of Italy forced him to leave in 1943 for Zürich, where he spent his enforced exile in the company of Sigfried Giedion, Max Bill and Alfred Roth.

The publication of Henry-Russell Hitchcock's pioneering study of Frank Lloyd Wright, *In the Nature of Materials* (1941), convinced Zevi as to the inherently liberating dimensions of Wright's organic architecture, although he did not meet Wright until 1945, the year in which he published his basic thesis *Verso un'architettura organica*, featuring an image of Wright's Fallingwater on its cover. On returning to Italy in that year he founded his school for organic architecture and, more importantly, the Associazione Per l'Architettura Organica (APAO). Following Wright, by the term 'organic' Zevi had in mind a functionally and structurally expressive architecture which was simultaneously responsive to the topography of the site and the exigencies of the local climate.

In 1948 Zevi was appointed by Giuseppe Samonà, the director of the Venice School of Architecture, to take over the teaching of history and theory as part of a new curriculum. Zevi would remain in Venice for the next fifteen years before going to the University of Rome in 1960 to take

up the professorship left vacant by the death in 1960 of Marcello Piacentini. One of the most paradoxical figures to be seemingly influenced by Zevi's organicism was Luigi Moretti, whose masterly Girasole apartment building [685], erected in Rome in 1950, remains – despite its organic character – as paradoxically removed from Wright as it is distant from the Rationalism of Moretti's pre-war career.

**685** Moretti, Casa Il Girasole, Rome, 1950.

Rogers, nine years older than Zevi, had been a founding partner of BBPR, the first realized work of which was a weekend house exhibited at the fifth Milan Triennale, in 1933. It is clear that the partners of BBPR, like many other Italian architects of the time, were committed to the modernization of Italy under Fascism and they completed four major works for the Mussolini regime prior to the outbreak of the Second World War: an eleven-storey Milanese apartment block; a state-sponsored children's health centre and a medium-rise, low-cost housing estate, both in Legnano; and a design for the Palazzo della Poste built for the site of the ill-fated E42 exhibition, the planned world's fair of 1942, to be staged near Rome. Given this beginning, it is a tragic irony that the first commission realized by BBPR after the war should be a monument to concentration camp victims [686], particularly since both Banfi and Belgiojoso had suffered incarceration for their anti-Fascism during the war, with Banfi dying in a camp in 1943. This small monument erected in a Milanese cemetery in 1945 comprised a welded, tubular-steel frame and free-floating planes pinwheeling asymmetrically about an urn was contained within a virtual cube on a stone base. The quasi-Neo-Plastic character of this monument anticipated the 1951 reappraisal of the Dutch De Stijl movement initiated by the Stedelijk Museum in Amsterdam with an

exhibition which, designed by Carlo Scarpa, was restaged in Rome in the following year. One year later, in 1953, Zevi published his own appreciation of De Stijl in a book entitled *La Poetica dell'architettura neoplastica*.

**686** BBPR, Monument for the Victims of Nazi Concentration Camps, Milan, 1945.

The established Milanese architect Gio Ponti, founder of the magazine *Domus* in 1928, played a key role in Rogers's post-war career by twice appointing him as editor of leading magazines, first *Domus* in 1945 and then *Casabella* in 1953, an avant-garde journal that had been previously edited by the heroic figure of Giuseppe Pagano, who had not survived the war. Rogers added the subtitle *continuità* ('continuity') to the name *Casabella*, signifying the intent of critically cultivating the legacy of the Modern Movement as it had evolved during the first four decades of the 20th century. This re-evaluation of the movement led to a sequence of special issues devoted to the work of such proto-modernists as Henry van der Velde, Hendrik Petrus Berlage, Hans Poelzig and Adolf Loos, while at the same time featuring the works of emerging talented post-war architects such as Kenzo Tange, Max Bill and O.M. Ungers. A number of young architectural intellectuals were adopted by Rogers as editorial assistants and essayists, among them Aldo Rossi, Giorgio Grassi, Vittorio Gregotti and Guido Canella. These four made up the core of Rogers's *Centro Studi*: a seminar that met regularly to formulate the agenda of the magazine with some of them going on to stake out theoretical positions of their own, leading to such works as Rossi's *L'architettura della città* and Gregotti's *Il territorio dell'architettura*, both dating from 1966, and Grassi's *La costruzione logica dell'architettura* of 1967. These architects would start to practise independently, the first, Rossi, with the metaphysical form of the apartment building that he

integrated into Carlo Aymonino's constructivist Gallaratese complex in Milan. He was followed by Gregotti, with his projection of the University of Cosenza as a continuous linear city, built 1973–80 as a straight line across the virgin open landscape of Calabria for some 3.2 kilometres (2 miles), thereby demonstrating his concept that architecture had to be closely integrated with the existing landscape. Three years later Grassi, in collaboration with Antonio Monestiroli, realized at Chieti an austere rational student dormitory [688], somewhat reminiscent of Schinkel's Altes Museum of 1834 (see p. 20).

At variance with both Gregotti's topographically inflected architecture and Grassi's rational assembly of trabeated orthogonal elements, Carlo Aymonino's housing complex [687, 689], built in Milan (1967–72) and inspired by the Russian avant garde of the 1920s, was an ensemble comprising duplexes, apartments and an open-air theatre. It was extensively served by stairs, ramps and aerial bridges in such a way as to echo the Soviet concept of a 'social condenser'.

**687** Aymonino, Monte Amiata housing complex, Gallaratese 2, Milan, 1967–72.

**688** Grassi and Monestiroli, student dormitory, Chieti, 1976–79.

**689** Aymonino, Monte Amiata housing complex, Gallaratese 2, Milan, 1967–72.  
Site plan.

Ernesto Rogers's most significant post-war contribution as an architect was his twenty-six-storey Torre Velasca apartment building, built in the centre of Milan in 1956, a work that featured an exposed steel frame structure inspired by the structural rationalism of Auguste Perret. The

shaft of the tower was crowned by a seven-storey element cantilevered out on all four sides so as to resemble the silhouette of a 14th-century fortified turret. Although this was not the most exotic example of the Neo-Liberty style, which the British critic Reyner Banham attacked in his provocative essay ‘Neoliberty: The Italian Retreat from Modern Architecture’, published in *The Architectural Review* in 1959, it was nonetheless symptomatic of the historicizing mannerism that was prominent in Italian work at the time (compare Franco Albini’s La Rinascente store in Rome of 1961). What Banham failed to acknowledge, however, was that for the architects of Rogers’s generation the legacy of the Modern Movement in Italy had been profoundly compromised by its association with Fascism. This unease with the Rationalist architecture of the interwar period surely also accounts for Zevi’s reluctance to acknowledge the importance of Giuseppe Terragni, which he did not do until 1968 when he devoted an entire issue of his magazine *L’architettura: cronache e storia* to documenting Terragni’s work.

Banham was not alone in his critique of Neo-Liberty, as is evident from the British and Dutch criticism of the Torre Velasca during the last CIAM meeting in Otterlo in 1959. By then Rogers had already outlined the nature of the Italian dilemma two years earlier in the editorial he wrote for *Casabella* (issue 215), entitled ‘Continuity or Crisis’. In this piece, subject to the influence of Enzo Paci’s phenomenology, Rogers had first posed the problem of how one may develop a humanist mode of building without succumbing to the materialist logic of reductive functionalism. The critical humanism advocated by both Rogers and Zevi would be repudiated by Zevi’s prime pupil at the University of Rome, namely Manfredo Tafuri, whose critical judgement, fully articulated in his books *Theory and History* (1968) and *Architecture and Utopia: Design and Capitalist Development* (1973), challenged the very idea of

an *operative history* upon which Zevi had placed so much store. Instead Tafuri, profoundly influenced by Marxism, advocated a radical modernity in which any trace of bourgeois humanism would be eliminated – the evocation of a socialist ‘degree zero’ that foreclosed on the possibility of architecture participating in any kind of ameliorative practice in the interim.

To one side of this closure lay the independent position of Giancarlo de Carlo, who was both a critical intellectual and an architect – first via his editing of his journal *Spazio e società*, published from 1978 to 2001, and second through his lifelong commitment to the development of Urbino, typical of which were the new university classrooms and a lecture hall that he built into the historical fabric of the city. Later De Carlo was commissioned to design a new residential college for the University of Urbino [690], which he proceeded to organize as if it were a terraced interpretation of an Italian hill town. There followed further colleges for the university on nearby hilltop sites, with circulation built into the dormitories as they descend the slopes.

**690** De Carlo, Nuovi Collegi Universitari (University of Urbino), 1956. Plan and section.

From 1969 to 1974 De Carlo was involved with the design of social housing for the Villaggio Matteotti at Terni, sited some 100 kilometres (62 miles) north-west of Rome. Commissioned by a state-owned steelworks, this housing was ultimately successful largely due to the fact that De Carlo had stipulated that the future inhabitants should be allowed to participate in the design process and moreover should be paid for doing so.

As rooted as De Carlo was, one of the most fertile practices in Italy in the 1960s was that of Gino Valle, whose

work was restricted for the most part to Udine and its immediate vicinity, where one of his most arresting buildings was the Zanussi Rex offices [691] that he built in Pordenone in 1961. Of all the Italian post-war architectural practices, the ones that came closest to the American corporate practice were those of Gregotti Associati and Renzo Piano Building Workshop, based in Genoa. However, unlike Piano, Gregotti was always involved with historical sedimentation and with the catalytic effect of form on the articulation of the landscape as in his project for the University of Florence [692], dating from 1971, and in the parallel blocks of his Zen Housing, built outside Palermo in 1973.

**691** Valle, Zanussi Rex, Pordenone, 1959–61.

**692** Gregotti Associati, proposal for the University of Florence, 1971.

## Greece

Although the influence of Classical Greece on the German Enlightenment is well known, the reciprocal influence of German Neo-Classicism on Greek architecture after the nation gained its independence from the Ottoman Empire in 1829 is less familiar. This cultural transfer, so to speak, is partly explained by the superimposition of Prince Otto of Bavaria as a monarch for the newly constituted Greek state in 1832. This new nationalistic culture was accompanied by the adoption of Demotic Greek as the spoken language of

the country, which conversely possibly accounts for the attempt to arrive at a modern architecture for Greece based on an inflection of the native vernacular.

The pioneer in this endeavour was Dimitris Pikionis, who became a member of the architectural faculty at the National Technical University in Athens in 1921. He took his students on trips to Aegina in order to study the vernacular architecture of the Greek islands. There he came across the vernacular stone ruin of the Rhodakis House, which became a symbol of his unattainable ideal in architecture. However, Pikionis's quasi-archaeological attempt at a new autochthonous modern manner was his 1925 Karamanos House in Athens [693], ultimately based on the remains of a Greek house excavated in the ancient city of Priene. This house had a discernibly metaphysical character, stemming from his association with the painter Giorgio de Chirico, whom he had met when they were both students at the Athens Polytechnic in 1904.

**693** Pikionis, Karamanos House, Athens, 1925.

The year 1922 was a disastrous one for Greece, when, abetted by Britain and France, it invaded Turkey only to have its army routed at Smyrna by the forces of Kemal Atatürk, who consequently expelled the Greek population from Asia Minor. This debacle placed an enormous burden on the Greek state, which had to absorb a large number of refugees overnight. Moreover, no adequate accommodation seems to have been made for them until the early 1930s, when some low-rise housing was built for the refugee population [694]. This kind of housing was subsequently matched by an extensive school building programme initiated by Eleftherios Venizelos's government, which was the first to be democratically elected in Greece after the proclamation of the new constitution in 1927. This led to the

stage for the emergence of a modern, rationalist architecture in Greece that first appeared in a number of new schools designed by emerging architects including Nikos Mitsakis, Patroklos Karantinos, Kyriakos Panayotakos and Dimitris Pikionis. Pikionis's rationalist school built on the lower slopes of Mount Lycabettus, Athens, in 1932 was his only unequivocally modern building. All of this activity would be documented and celebrated in Karantinos's book, *The School Buildings*, published in Greek in 1938.

**694** Kyriakos and Laskaris, apartment block for refugees, Athens, 1933–35. Plan.

These schools came to the attention of the Swiss aficionado of the Modern Movement Alberto Sartoris, who published these schools in his first international survey of modern architecture, *L'architettura funzionale* of 1932. This book came out just before the fourth congress of CIAM that took place in 1933 on the SS *Patris* en route from Marseille to Athens and subsequently in Athens itself, by virtue of Stalin's refusal to host the congress in Moscow. As the architect and historian Andreas Giacumacatos informs us, the Berlin architect Fred Forbát had already prepared the ground for this change in venue by virtue of his familiarity with modern architecture in Greece. A small Greek CIAM group had been formed in Athens in 1932 by Stamo Papadaki, whose own modern house, completed in Glyfada in 1933 [695], was of reinforced-concrete frame construction with brickwork, all rendered and painted white. As Giacumacatos has written, CIAM IV was a resounding success:

**695** Papadaki, K.F. House, Glyfada, Athens, 1932–33.

*the reception accorded to the Congress was an outstanding example of Greek hospitality at its best and, at the same time, resulted from an enthusiasm dictated by the vision of modernization which had become mature and urgent in Greek society. The 1930s in Greece were rather similar to the 1960s: the first part of the decade, down to 1936 (as to 1967), was one of a strong progressive drive forward which, however, was doomed to be cancelled out by politics and by the totalitarian governments on which the drive ran aground.<sup>1</sup>*

The worldwide economic depression that followed the stock market crash of 1929 would ultimately undermine Greek democracy, leading to the fall of the Venizelos government and then to the military dictatorship of General Ioannis Metaxas, which endured from 1936 to his death in 1941. These events led up to the Second World War, during which the country was occupied in rapid succession by the Italians in 1940 and by the Germans in 1941. This last humiliation seems to have been ironically anticipated by the first exhibition of German-inspired Neo-Classical Greek architecture staged in Athens in 1938 by the Hellenic-Germanic League. From 1942 onwards, rival monarchist and communist partisans sustained a continuous guerrilla war against the German occupiers until the liberation of Athens in 1944. After an uneasy post-war interregnum, the Greek Civil War broke out between these rival factions and lasted from May 1946 to October 1949, a conflict that was finally settled in favour of the monarchist faction; the superimposed Greek monarchy lasted for another twenty-five years before it was finally abolished in 1974.

Among the works of the Greek Rationalists, one work – namely the Archaeological Museum of Heraklion in Crete – stands out not only for its architectonic and technical brilliance, but also for its protracted construction, passing through the turmoil of the Metaxas regime, the Second

World War and the Civil War. It was completed in 1958, its final form much as it had been designed by Karantinos in 1933 [696]. This building was surely comparable in terms of its architectonic precision and rhythmic order to Giuseppe Terragni's Casa del Fascio, Como, of 1936. The unity of the formal and functional logic of the Heraklion museum makes it an exemplary rationalist work, as was the school that Karantinos proposed for Heraklion in 1933.

**696** Karantinos, Archaeological Museum, Heraklion, Crete, 1933.

An ultimate standoff between the universal rationalism of the Modern Movement and a locally inflected functionalism inspired by the vernacular would be represented by two schools built in Thessaloniki between 1933 and 1937, first, an eminently rational girls' school designed by Nikos Mitsakis in 1935, predicated on the regular spacing of its concrete frame, and Pikionis's experimental school [699], completed two years later. Although the latter was just as logically arranged in section and plan, Pikionis was able to take advantage of a sloping site to provide the school with courtyard/playgrounds at different levels. At the same time the building reflected the climate and the vernacular architecture of northern Greece, through its use of shallow-pitched tiled roofs with deep eaves plus delicately detailed timber verandas and fenestrations which testified to the rainy, colder climate. Irrespective of these climatic differences, Pikionis adopted virtually the same syntax in Athens in 1953, shortly after the Civil War, when he completed his Potamianos House in Filothei [697]. In this instance the stylistic trope of tiled roofs and timber verandas contrasted with an underlying reinforced-concrete frame, faced in random fieldstone. Something of this same rustic aesthetic was featured in a children's garden that he built in Filothei [698] shortly after and in the timber pavilion

erected on Philopappou Hill [700] in the landscape that he created adjacent to the Acropolis in 1957. The tactile poetics of these works can be traced back to Pikionis's essay 'A Sentimental Topography', first published in the Greek magazine *The Third Eye* in 1935.

**697** Pikionis, Potamianos House, Filothei, Athens, 1953.

**698** Pikionis, Children's Garden, Filothei, Athens, 1960–65.

**699** Pikionis, Experimental School, Thessaloniki, Athens, 1937.

**700** Pikionis, Philopappou park adjacent to the Acropolis, Athens, 1957.

As his holiday houses of the 1950s and the 1960s amply testify, Aris Konstantinidis was just as committed as Pikionis to the cultivation of a Greek modern architecture derived from the specificity of the site and climate and from the polemical adoption of a primitive building technique derived from the local vernacular, an 'architecture degree zero', as we find in the reinforced-concrete frame and roof and the rubble-stone infill of Konstantinidis's Sykia House of 1951 [701, 702]. A similar tectonic sensibility informs the site-sensitive hotels and motels that he designed for the Greek government tourist organization, Xenia, among them a remarkable hotel built in the 1960s in the treeless mountainous landscape of Meteora at Kalambaka [704]. Around this time Konstantinidis published the first in a series of small books devoted to documenting the specific vernacular of Athens and Mykonos, which he followed in 1975 with a photographic survey of the country's vernacular as a whole in his book *Elements for Self-Knowledge*.

**701** Konstantinidis, Vacation House, Sykia, Korinthia, 1951. Details.

**702** Konstantinidis, Vacation House, Sykia, Korinthia, 1951.

**703** Konstantinidis, Holiday House, Anavyssos, Attica, 1961-62.

**704** Konstantinidis, Xenia Motel, Kalambaka, 1960.

Two totally contrasting talented architects of the second half of the 20th century were Takis Zenetos and Kyriakos Krokos: the first was notable for his unequivocally avant-gardist, technological stance and the second for his tectonically rationalist reference to Byzantine building in his Museum of Byzantine Culture, designed and built in Thessaloniki between 1978 and 1993. Through Krokos's intricate use of red brick, this work metaphorically represented the Byzantine culture it was destined to house. No one has characterized the essence of this work better than Savas Condaratos: The basic theme of the building is perpendicular access: a spiral upward route – a kind of internal street – leads to the various gallery levels, though without making it compulsory to visit them. The gentle tunnel-like progression is transformed into an architectural tour and takes on a symbolic nature ... The Museum of Byzantine Culture is one of the most important buildings in post-War Greek architecture because it embarks on an exemplary dialogue with history ... It stands out for the meditative sobriety which pervades it and for its ability to transverse the entire Greek tectonic tradition and to reconstruct its archetypal essence.<sup>2</sup>

Krokos returned to this particularly articulate syntax of brick and *béton brut* in a house that he designed for Filothei, Athens, in 1989 [705].

**705** Krokos, Vettas Residence, Filothei, Athens, 1989–91.

Educated in Paris, Zenetos was committed to the direct expression of modern technology, as found in the light-weight, stripped-down, steel-framed theatre that he built on the lower slopes of Lycabettus in 1965. Zenetos's first built work in Athens was the large, curtain-walled industrial plant that he designed for the Fix Brewery in Athens in 1957. He followed this technological *tour de force* with a six-storey apartment block with plate-glass balustrading that he built on the prestigious Amalias Avenue in Athens in 1959. Two years later he realized a dramatically cantilevered, steel-framed house overlooking a pine forest beside the sea in Kavouri in Attica. Thereafter came his ultra-experimental steel-framed Agios Dimitrios School [706] of the first half of the 1970s. The multi-layered circular plan-form of this building allows a seemingly endless rearrangement of the available space, while the horizontal louvres at the eaves vary both in angle and density according to the trajectory of the sun.

**706** Zenetos, Agios Dimitrios School, Athens, 1975.

Apart from the influence of post-war Miesianism, particularly evident in the work of Nicos Valsamakis, namely, his elegant Lanaras House built in Anavyssos, Attica, in 1963 [707], Greek modern architecture in the last quarter of the 20th century seems to have been an extraordinarily sensitive reiteration and elaboration of the syntactical legacy of 1930s Greek Rationalism. This

*répétition différente* is especially manifest in the six- to eight-storey infill apartment buildings (*polykatoikìa*) that proliferated in Athens throughout the late 1950s, amounting to a kind of contemporary vernacular that would be as much designed by enlightened builders as by professional architects. Conforming to the typical height and width of the average plot and featuring a range of standard balconies, canopies and roof terraces, along with horizontal windows, shaded by retractable sunblinds, this modern architectural repertoire, set within an existing orthogonal street grid, spontaneously created a modern urban continuum comparable to the uniformity of Tony Garnier's Etats-Unis neighbourhood built in Lyons between 1924 and 1935. Perhaps no single Athenian building so succinctly captures this normative syntax as does Constantinos Doxiadis's Ekistics research office built on the lower slopes of Lycabettus in 1961 [709]. It is disconcerting to realize that this received *lingua franca* of modern Greek architecture has now become routine, largely restricted to speculative development and to accommodation of the ever-expanding tourist industry that totally exceeds the modest programmes that Konstantinidis envisaged when he worked for the Xenia organization in the 1950s.

**707** Valsamakis, Lanaras Residence, Attica, 1961-63.

An exception has been Agnes Couvelas, who has sought to predicate her architecture on a particular climate and topography and on the islands' extant craft culture, as found in her own house in Santorini of 1994 [708]. As Karin Skousbøll has written:

**708** Couvelas, House of the Winds, Santorini, 1994. Elevation.

**709** Doxiadis, Kouravelos and Scheepers, Ekistics research office, Athens, 1955-61.

*Throughout the synthesis of this house the context ... was a constant reference point: the monolithic rocks of the beach, the strong breeze (meltemi) in the caldera, the characteristic fortress (goulas) at Emboreion ... The handling of the strong winds was of great importance, so the outer shell of the house had to be sturdy without being sealed ... As a consequence the shell of the building was eroded and perforated in order to trap the wind and light and yet continue to protect ... The character of the mass alludes to the local technique of dug out dwellings, the so-called hyposkapha.<sup>3</sup>*

After completing this work, Couvelas produced a number of larger site-specific civic projects in the islands, including the Prehistoric Museum at Thera (1998-2000) and an Archaeological Museum of Naxos in 1994, where the expansion of the museum also necessitated the reconstruction of the central public square.

## Former Yugoslavia

Yugoslavia was the one European nation in which a liberal socialist society – as this had been envisaged by the pre-war Modern Movement – endured for nearly forty years, from the end of the Second World War to the death of its leader, Marshal Josip Broz Tito, in 1980. Key to Tito's success was his prestige as a triumphant leader of the partisans during the war and the fact that – after the expulsion of Yugoslavia

from the Soviet Bloc in 1948 – he was able to maintain a one-party state while unifying six distinct ethnic identities.

Of the six republics that made up Tito's Yugoslavia, Slovenia was the most cosmopolitan by virtue of bordering on Italy and Austria, which border it to the west and the north. At the same time it seems to have had an affinity post-1918 for the then newly created state of Czechoslovakia, with which the Slovenian master architect Jože Plečnik was profoundly involved by virtue of being commissioned by the first Czech president, Tomáš Masaryk, with the task of transforming Prague Castle into a presidential residence [710]. By way of responding to this task, Plečnik designed a number of Neo-Baroque set pieces of varying size and extent with which to convert and embellish the castle, in such a way as to erase all traces of the former Austro-Hungarian Empire. First among the cryptic symbolic elements that Plečnik added to the castle was a monumentally symbolic stone basin resting precariously on two stone blocks. This was followed by a sequence of equally oneiric works that Plečnik designed for the castle before returning definitively in 1921 to found and direct a school of architecture in Ljubljana. Under Tito post-war Yugoslavia under Tito became a modernist utopia both socially and architecturally. As Vladimir Kulić has written:

**710** Plečnik, Prague Castle, 1931.

*In the early post-war years, mass volunteer labor was a matter of practical necessity in a war-ravaged country sorely lacking an education cadre and modern technology ... there was a great deal of genuine enthusiasm in this period as young brigadiers built new roads, railway lines, dams, irrigation canals, factories and cities. One of the largest early sites of volunteer labor was New Belgrade, where in the late 1940s bare-handed youths from all over the country*

*filled in the marshland with sand to consolidate the unstable terrain of the new federal capital. Another example was the Adriatic Highway whose route along the coast from Slovenia through Croatia, Bosnia and Herzegovina, to Montenegro enabled the emergence of mass tourism. As the country developed, however, the practical need for mass volunteer labor abated, and youth labor campaigns shifted to less physically taxing projects such as afforestation, the construction of youth resorts or archeological excavation. At the same time, the motivation to participate also shifted to travel in the country, as volunteering in effect became a form of active vacationing under the banner of brotherhood and unity.<sup>1</sup>*

It is clear that between 1945 and the mid-1960s, amid a major socio-economic transformation, a remarkable panoply of modern architecture was achieved in Yugoslavia, including such distinguished works as the Federal Executive Building, designed by a team led by Vladimir Potočnjak and erected in New Belgrade from 1947 to 1962 [711]. This six-storey work was modelled in part on Le Corbusier's Tsentralsoyuz Building erected in Moscow in 1930 and in part on the UNESCO Headquarters completed in 1956 in Paris to the designs of Marcel Breuer, Pier Luigi Nervi and Bernard Zehrfuss.

**711** Potočnjak, Government Building, New Belgrade, Serbia, 1947–62.

During this same period two particular building types emerged in Yugoslavia: first, apartment buildings of exceptional ingenuity, reflecting the state's guarantee to provide a high-quality apartment for every Yugoslav citizen, and, second, tourist hotels as a reiteration of the idea of the *social condenser*, found in the Soviet *dom kommun* and workers' clubs of the late 1920s. The former were

exemplified by the mid-rise apartment blocks of New Belgrade [712], and in the extraordinary twenty-three-storey slab blocks designed by Vladimir Braco Mušić and built in the industrial city of Split from 1968 to 1980 [717]. The latter were manifest in the sophisticated medium-rise modernist hotels built at intervals on the motorway running down the Adriatic Coast from Slovenia to Dubrovnik and beyond, such as the Solaris Hotel, designed by Boris Magal and built at Šibenik, Croatia, in 1968. Of this hotel building boom, Maroje Mrduljaš has written:

**712** Mušić and others, Block 23, New Belgrade, Serbia, 1968–74. Plan.

*The Yugoslav model of modernization managed to channel the development of mass tourism toward the creation of a new urban layer, one that was both culturally compelling and competitive on the international market. Thanks to the policy of free access to all types of interior and exterior public spaces, locals were able to appropriate tourism infrastructure for everyday use. Supported by reasonable planning and preservation, the architects of Yugoslavia merged modernist concepts with lessons of the Mediterranean and utilized the hotel typology for research in cultural, and in some extent, social authenticity.<sup>2</sup>*

Like Plečnik, Edvard Ravnikar was initially trained in Vienna, from 1926 to 1930. He returned to Ljubljana to study with Plečnik for another five years. Thereafter he worked as an assistant on Plečnik's National Library, under construction from 1936 to 1941, and completed a memorial to the fallen of the 1914–18 war in a manner reminiscent of Plečnik. In 1939 Ravnikar went to Paris where he worked briefly for Le Corbusier on the Quartier de la Marine project for Algiers. Ravnikar's Modern Gallery, designed for Ljubljana in 1939, was an exemplary rationalist work with a

classical stone façade, recalling the stonework of Otto Wagner. After the formation of the republic of Yugoslavia in 1945, Ravnikar was involved in various state projects including the new town of Nova Gorica, situated on the Italian-Slovenian frontier. In 1952 he designed a series of war memorials, the most majestic being that at Kampor on the island of Rab, on the site of a notorious Italian concentration camp [713].

**713** Ravnikar, Rab Memorial Complex, Kampor, Island of Rab, 1952.

Apart from his penchant for contrapuntal form, a key aspect of Ravnikar's architecture is its tectonic expressivity evident in both the basic structural form and in its surface treatment. This brilliant articulation is never more vital than in his design for the Revolution Square complex in Ljubljana (1961–74) [714]. There Ravnikar was able to evoke the image of Bruno Taut's mythical 'city crown' (see p. 124) through two seventeen-storey office towers, which face each other across the central axis of the square. Each tower comprises a curtain-walled office space wrapped around three sides of a triangular service core from which the floors are cantilevered.

**714** Ravnikar, Revolution Square, Ljubljana, 1961–74.

A complement to this monumental twin-tower configuration is the adjacent Cultural Congress Centre [715, 716], which consists of three auditoria built around a smaller central circular auditorium. The whole is accessed by a generous common reception foyer, linked to a galleria, a department store and a bank running up one side of the square. Other than the magnificent civic centres built by Alvar Aalto at the same time, it is difficult to find another

urban intervention in the European continent that is comparable to what Ravnikar achieved in Ljubljana during the heyday of Tito's non-aligned Yugoslavia.

**715** Ravnikar, Cultural Congress Centre, Ljubljana, 1983.

**716** Ravnikar, Cultural Congress Centre, Ljubljana, 1983.

**717** Mušič, Split 3, Croatia, 1968-80.

## Austria

It was Otto Wagner who first coined the term 'Modern Movement' in his book *Moderne Architektur* of 1899. Yet towards the end of his life he seems to have sensed the pending denouement of modernity on the eve of the first industrialized war of 1914–18, as is suggested by the more measured title, *Die Baukunst unserer Zeit*, of the fourth edition of his book of 1914. He could hardly have foreseen, however, the economic devastation that befell Austria along with the dismantling of the Austro-Hungarian Empire in 1918, the year of his death. As a result, Vienna suffered both housing and food shortages, which led to the election of a socialist government under Mayor Jakob Reumann. Under Neumann 'Red Vienna', as the city was then known, entered into an extensive programme of building workers' housing in the form of a loose 'ring' of mid-rise perimeter blocks on the city fringes. The most monumental of these

developments was the Karl Marx-Hof (1926–30), built to the designs of Karl Ehn [718], who had been a pupil of Wagner.

**718** Ehn, Karl Marx-Hof, Vienna, 1930.

Soon after its completion the Karl Marx-Hof was besieged by artillery in a show of force by the government to repress a workers' rebellion. Despite this violent hiatus the emphasis on social housing reappeared in the Wiener Werkbundsiedlung of 1930–32, which, under the direction of the architect Josef Frank, was modelled on the Deutscher Werkbund housing exhibition staged in Stuttgart in 1927. This Viennese model settlement featured amongst other works a row of five terrace houses by Gerrit Rietveld, a free-standing house by Richard Neutra and a pair of semi-detached houses by Adolf Loos, which were the last works of his life. A key figure in Vienna in the late 1920s and early 1930s was Peter Behrens, who, after being appointed professor in the Vienna Academy of Fine Arts, practised as an industrial architect designing factories and warehouses in a manner somewhat reminiscent of Erich Mendelsohn. A much younger Austrian figure of comparable stature at the time was the Tyrolean architect Lois Welzenbacher, whose Heyrovsky House [719, 720] at Thumersbach, near Zell am See, of 1932 was an organic masterwork equal to the finest contemporaneous houses designed by Hans Scharoun.

**719** Welzenbacher, Heyrovsky House, Thumersbach, 1932.

**720** Welzenbacher, Heyrovsky House, Thumersbach, 1932.

Austrian architecture did not easily recover from the country's annexation by the Third Reich in 1938 and from

the Second World War until the early 1950s, when Roland Rainer came to the fore with his Sports Hall, Vienna, of 1952 and his prefabricated, timber-framed Fertighaus Siedlung of 1953. Thereafter Rainer's practice was largely devoted to the development of low-rise, high-density housing as a new universally valid form of land settlement appropriate to an automotive age, as he demonstrated most persuasively in his Puchenau housing estate [723], under continuous development on the banks of the river Danube between 1963 and 1995. The cultural ecological advantages of this approach were fully documented in his book *Livable Environments* of 1972.

After graduating from Clemens Holzmeister's masterclass in the Vienna Academy of Fine Arts in 1955, Gustav Peichl became an influential figure on the Austrian scene in 1964 by founding the magazine *Bau* along with Hans Hollein, Walter Pichler and Oswald Oberhuber. Four years later he won a competition for the design of a group of provincial radio stations [721], which were built between 1969 and 1984 as five concentrically planned stations in Eisenstadt, Salzburg, Innsbruck, Linz and Dornbirn, with Peichl giving each one a precisely detailed, machine-like, metallic identity.

**721** Peichl, typical ORF Regional Studio, 1969–81.

Anton Schweighofer was equally committed as Peichl to the invention of new building types, hence the stepped format of his Neo-Constructivist orphanage proposed for Vienna in 1969 [722]. In retrospect this may be read as a transitional work between Rainer's ecological rationalism and the emerging anarchic artist-architects of the Graz School of architecture of whom the most extreme was Günther Domenig. The Steinhaus of 1986, designed for his Domenig's occupation, veered towards sculpture rather than

architecture, although its internal spaces were of a liveable size and generous proportions. Coop Himmelb(l)au's steel construction *Blazing Wing*, installed in Graz in 1980, was equally artistic. However, the overall Neo-Constructivist line of the Graz School, as represented by the work of Volker Giencke, Helmut Richter and Klaus Kada, would distinguish itself from the *de-constructivist* approach of Coop Himmelb(l)au as we first encounter this in 1986 in the penthouse lawyer's office that they designed for the top of a classical block in Vienna as a cataclysmic concatenation of steel and glass [725]. Nothing could be more removed from this than Kada's glass museum at Bärnbach of 1988 or Giencke's conservatory for the botanical garden of Graz of 1992, where the necessary hothouse heating was integrated with the tubular metal framing supporting the glass. Giencke's collage-like, multi-material approach to building was distinguishable from Richter's maximizing use of glass, as this is found in the long, entirely glazed façade of his Brunnerstrasse housing in Vienna of 1990 or in the large secondary school that he built in Kinkplatz in the same city in 1994. Again, as with Peichl's radio stations, there is a discernible affinity with Anglo-Italian High-Tech architects but without the same concern for typological invention or functional technique. Coop Himmelb(l)au, for its part, would eventually arrive at a *modus operandi* that was as much constructivist as deconstructivist, for example in the concatenation of planar surfaces of the office building that they erected at Seibersdorf in Lower Austria in 1995. Of an equally organic but much more plastic character, reminiscent of Welzenbacher, was the winter sports gymnasium built at Stams in the Tyrol in 1982 to the designs of Othmar Barth [726].

**722** Schweighofer, City for Children, Vienna, 1969.

Despite the fact that he spent most of his professional career in the United States, Raimund Abraham was also a graduate of the Graz School, as is suggested by the nuanced Neo-Constructivist character of the twenty-three-storey Austrian Cultural Foundation [724] that he finally completed in New York in 2002. Abraham received this commission through winning the 1992 state competition, open exclusively to Austrian architects, for which there were 226 entries. Built on an extremely difficult, narrow-fronted site, this remains one of the first buildings of exceptional quality to be constructed in Manhattan after the achievement of Wright's Guggenheim Museum in 1959.

**723** Rainer, low-rise, high-density housing, Puchenau, first phase, 1965–67.

**724** Abraham, Austrian Cultural Institute, New York, 1992–2002. Section.

**725** Coop Himmelb(l)au, Rooftop Remodelling, Falkestrasse, Vienna, 1986. Section.

**726** Barth, Sports Gymnasium, Tyrol, 1982. Section.

## Germany

The ‘Man and Space’ symposium, held in Darmstadt in 1951, was the first gathering of German architects and intellectuals after the apocalyptic destruction and defeat of the Third Reich in 1945. The philosopher Martin Heidegger

made a significant contribution to this event with his seminal essay ‘Building, Dwelling, Thinking’, which emphasized the importance of the place-form as a bounded domain rather than the abstract and functional space favoured by modern architecture throughout the late 1920s and the 1930s.<sup>1</sup> Heidegger’s emphasis on the bounded domain was matched by Hans Scharoun’s presentation of one of his first organically planned schools with the implication that Darmstadt might be persuaded to build a prototype [727]. This building was a categorical departure from the reductive functionalism of the Neue Sachlichkeit, which had been a dominant feature of modernism in the Weimar Republic. Scharoun’s subsequent practice was mostly devoted to the design of schools and housing. The most consummate example of the former was his Geschwister-Scholl School built at Lünen (1959–62), named after Hans and Sophie Scholl – the anti-Nazi martyrs of the White Rose movement – while the most striking example of the latter was his Romeo and Juliet apartments built in Stuttgart in 1959 [728]. However, his masterwork was the Philharmonie concert hall, built in the Berlin Tiergarten in 1963 [729]. This work was predicated on the radical concept of placing the orchestra in the middle of the chamber, surrounded on all sides by inclined planes of ‘vineyard’ seating. Beneath the seating was suspended a sequence of cascading foyers, provided to accommodate the audience during the intermission. The outstanding acoustics of the chamber made it one of the most successful concert halls of the 20th century.

**727** Scharoun, prototype organic school projected for Darmstadt, 1951. Plan.

**728** Scharoun, Romeo and Juliet apartments, Stuttgart, 1959.

**729** Scharoun, Philharmonie Hall, Berlin, 1963.

Another accomplished German architect to emerge immediately after the war was Egon Eiermann, who, having studied with Hans Poelzig in the early 1930s, had enjoyed a modest pre-war career. In 1947 Eiermann was appointed to the professorship of architecture at Karlsruhe University, which greatly facilitated his post-war practice. From the outset his work was characterized by an elegantly proportioned rationalism, which was already evident in the single-storey weaving shed, faced in corrugated asbestos, that he built in the Schwarzwald in 1951. He followed this simple, elegant structure with one powerfully rhythmic work after another, including the Neckermann mail order warehouse in Frankfurt (1951) [730], the German Pavilion at the Brussels World's Fair (1958), his own house in Baden-Baden (1962) and the Olivetti Training Centre in Frankfurt (1968–72). Eiermann's key contribution to West Berlin was his Kaiser Wilhelm Memorial Church of 1962 [731], built next to the bombed-out shell of a 19th-century Neo-Romanesque church of the same name. This took the form of a steel-framed octagonal nave and campanile, each prism being faced in coloured glass lenses, which were back-lit at night.

**730** Eiermann, Neckermann Mail Order Building, Frankfurt, 1951.

**731** Eiermann, Kaiser Wilhelm Memorial Church, Berlin, 1962. Section.

One of the most prominent talents to emerge from Eiermann's teaching in Karlsruhe was Oswald Mathias Unger, who by the early 1960s had already designed and executed a considerable amount of brick-faced housing in

Cologne, most of which was around six storeys in height, including an exceptionally elegant mixed-use block in Hansaring [733], of 1959, with projecting balconies and exposed concrete floor slabs. This Brutalist brick syntax culminated in his own pinwheeling house [732] built in the Müngersdorf district of the city in the same year. This was Unger's Brutalist signature before he moved to Berlin in 1965 and then to Cornell University in the United States in 1968, when he adopted a more rationalist, hardline approach indirectly inspired by his passing interest in Russian Constructivism. He abandoned this reductive functionalism after his return to Berlin in 1975, when he embraced a kind of Post-Modern classicism that remained his *modus operandi* until the end of his career.

**732** Unger, Unger House, Cologne, 1959.

**733** Unger, housing block in Hansaring, Cologne, 1959.

Another important figure on the German post-war scene was the engineer-constructor Frei Otto, who began his career with the design of translucent canvas tents erected as temporary tensile structures for German flower shows. The characteristic undulating form of these tents depended as much on the domed apices, held in place by tent poles, as on the pull of guy-lines clustered around circular concrete sumps that allowed water to drain off the roofs. Otto later devised a transparent acrylic undulating roof similarly held in place over a wire network on tubular-steel pylons and tied back by wire cables to the perimeter of Günter Behnisch's stadium erected for the Munich Olympic Games in 1972 [734]. This almost dematerialized organic roof form sheltering the stadium was seen as being symbolic of the new democratic Germany, in contrast to the monumental

symmetrical stadium designed by Werner March for the Reichssportfeld, Berlin, for the Nazi Olympic Games of 1936. Behnisch's equally organic, High-Tech ferrovitreous manner attained its apotheosis in his Hysolar Research Institute built for Stuttgart University in 1987.

**734** Behnisch and Otto, Olympic Park, Munich, 1967-72.

The year 1972 saw the completion of a unique experimental housing complex in Munich, built to the designs of Otto Steidle in collaboration with Doris and Ralph Thut [735]. Predicated on a 7.2 x 8.8-metre (23½ x 29-foot) prefabricated concrete frame, this three-storey matrix was realized as a flexible modular system, modelled on the so-called 'supports' system developed by the Dutch architect John Habraken. Habraken's concept was that residents would be free to modify their living units over time in accordance with their changing needs by adding or subtracting components, conforming dimensionally to the modularity of the basic structure. This technological ideal proved impossible to achieve, largely because such components were never industrially produced, although this stepped apartment block in Munich with set-back terraces for each unit still remains fully occupied.

**735** Steidle, with Doris and Ralph Thut, Genter Strasse housing, Munich, 1968-72. Section.

Around this time Josef Paul Kleihues arrived on the Berlin architectural scene, where he established his standing with two exceptional works: his five-storey, brick-faced, perimeter apartment block erected in Vinetaplatz in 1977 (fig. 303) and the immaculately detailed, curtain-walled vehicle repair shop built for the Berlin street cleaning

department in 1978. Thereafter Kleihues's career was devoted, between 1984 and 1987, to directing the Berlin Internationale Bauausstellung (IBA; International Building Exhibition), a para-governmental operation similar in its administrative capacity to the authority of the Hansaviertel building exhibition that was built adjacent to the Berlin Wall in 1958.

The municipalities of Barcelona and Bologna were similarly dedicated to the modernization of the obsolete European city, partially echoing in actual practice the so-called reconstruction of the traditional city advocated by Leon Krier and Maurice Culot. However, unlike Krier and Culot, and even Ungers, Kleihues did not consider the pre-war Modern Movement as negative. Instead, as the architectural historian Winfried Nerdinger explains, Kleihues envisaged the reconstruction of the city as a dialectical confrontation between a progressive modernity and the traditional 'place-form' provided by the streets and blocks of the 18th- and 19th-century urban fabric.

The unexpected fall of the Berlin Wall in 1989 effectively brought Kleihues's reconstruction of Berlin to a close and, regrettably, the building boom that followed favoured a return to one-off free-standing buildings. This trend was exacerbated by the neo-liberal laissez-faire economic policies emanating from the US and the UK, and this led to the growth of suburban fabric, accompanied by the supermarket, which had the effect of undermining traditional shopping frontage and with it the viability of the city as a whole. With the reunification of Germany in 1989 the tax base and the purchasing power of the society shifted from the traditional city to the suburbs.

This transformation led to the rise of the ecological movement as a critical alternative, divided between a technological approach and a 'greener' socio-cultural stance. The limitations of the former are suggested by the cold character of Werner Sobek's steel-framed, totally

glazed, zero-carbon house built in Stuttgart at the millennium [736]. A more comprehensive alternative is evident in the sustainable practice of Thomas Herzog, such as in his twenty-storey Deutsche Messe building erected for the Hannover Fair in 1999 [737, 739]. The remarkable aspect of this ‘sustainable’ office prototype is the way in which the 24 × 24-metre (979 × 979-foot) plan office space may be arranged either as totally open space, articulated solely by office furniture, or subdivided into individual offices, or even as a mixture of both. Either way round all users can enjoy a modicum of natural ventilation by opening the glazed full-height, sliding doors separating the interior and exterior glazed skins, with the outer envelope being open at the corners to allow for the natural movement of air, while simultaneously shielding the space from turbulence induced by the wind. Since the building is still air-conditioned, this allows for 85 per cent of thermal energy contained in the extracted air to be used for pre-heating the fresh air entering the void between the inner and outer skins. For ease of maintenance, sunshading is installed behind the double-glazed outer façade with the result that the cantilevered floor slab does not have to be thermally isolated from the main slab.

**736** Sobek, House R128, Stuttgart, 2000.

**737** Thomas Herzog, Deutsche Messe AG Administration Building, Hannover, 1999.

Herzog’s Halle 26 was built for the Hannover Fair of 1996 [738]. In this instance the achievement was as much tectonic as environmental, with the distinguished engineer Jorge Schlaich acting as structural consultant; the catenary roof of the building was determined by the need to erect the

structure rapidly rather than by the environmental attributes of its section. The main support for the three-bay catenary roof, with each bay spanning 55 metres (180 feet), was provided by three triangulated steel trestles 30 metres (100 feet) high, with a fourth set somewhat lower. The wire cable structure carrying the roof was covered by two layers of wood, with gravel in between in order to add stabilizing weight to the catenary. The up-curving profile of the resulting section, with a vent under the eaves, serves to induce thermal uplift and exhaust stale air, while fresh air is drawn into the hall via transverse triangular-sectioned glass ducts spanning between the trestles. To a similar end, the inner curve of the roof was used as a light reflector at night, while the availability of natural light during the day was topped up by an anti-solar glass panel let into the valley of the roof.

**738** Herzog, Halle 26, Hannover Fair, 1996.

**739** Thomas Herzog, Deutsche Messe AG Administration Building, Hannover, 1999.

Ullrich Schwarz's idea of a reflexive modernity, put forward but left undefined in his introductory essay to the catalogue for the 'New German Architecture' exhibition staged in Hamburg in 2002, seems to find something of its potential articulation in Thomas Herzog's work. There, as Schwarz puts it:

*Modernism becomes self-reflexive by making itself aware of its own underlying principles, preconditions and consequences ... Habermas refer to Modernism as an unfinished project. Modernism becomes complete (in the*

*sense of perfection) only through the recognition and acceptance of its own boundaries.*<sup>1</sup>

## Denmark

Two factors influenced the emergence of the Modern Movement in Denmark: first, the exceptional standards maintained by the architecture department in the Royal Academy of Art, Copenhagen, which even in the early 21st century remains one of the most distinguished schools in Europe; and second, the Skønvirke ('beautiful work') movement led by the rebellious figure of Peder Vilhelm Jensen-Klint, who, influenced by the German architects Paul Mebes, Paul Schultze-Naumburg and Heinrich Tessenow, sought to establish a new building tradition based on the Danish vernacular. Jensen-Klint, who was antithetical to both the Royal Academy and the aesthetic sophistry of the Scandinavian National Romantic movement, fully articulated his position with a striking masterwork built of concrete-frame construction in the centre of Copenhagen and faced inside and out in precision brickwork. This was his cathedral-scaled Grundtvig's Church, under continuous construction from 1920 to 1940 [740]. Jensen-Klint remained opposed to the European classical tradition throughout his life and it is significant in this regard that Denmark remains one of the few European countries where brick production and construction still play a major role in building culture, as opposed to stone, which remains associated with Classicism. In an age that seems to be totally dedicated to the elimination of craftsmanship, Denmark is the one country capable of producing an exceptionally diverse range

of quality bricks, and the well-trained graduates of the Royal Academy continue to demonstrate their capacity to build in this material, all of which testifies to the craft-based character of Danish architectural education and practice.

**740** Jensen-Klint, Grundtvig's Church, Copenhagen, 1920–40. Photo taken in 1926, before completion.

Nevertheless, during the first decade of the 20th century the Academy also trained a generation of architects who became involved in the cultivation of Nordic Classicism, a style capable of continuing the dense, built-up character of the European city. The prime mover behind this movement in Denmark was Carl Petersen, whose Faaborg Art Museum has generally been seen as the beginning of Nordic Classicism. In 1919 he joined forces with Ivar Bentsen to design a multi-block megastructural scheme for the former railway station site in Copenhagen. Equally monumental and of a similarly stripped Neo-Classical manner was Hack Kampmann's police headquarters posthumously completed in Copenhagen in 1924 [742]. The unifying concept behind all of these works was a medium-rise perimeter block, dressed in stone – as in Kampmann's masterwork – but more often rendered in cement as in Povl Baumann's large five-storey apartment block in Copenhagen of 1921. The prolific Kay Fisker, who graduated from the Academy in 1920, became the ultimate master of the brick-faced residential perimeter block as is evident from the six-storey housing block that he built on a large triangular site in Copenhagen in 1932 [741]. However, the ultimate Nordic Classical work from a monumental standpoint was Edvard Thomsen's Øregård School of 1924 [743] was close in its stripped-down abstraction to the form of Giuseppe Terragni's Casa del Fascio, Como, of 1936 (figs 203 & 204).

**741** Fisker, Rosenørns Alle housing block, Copenhagen, 1932. Elevation and plan.

**742** Kampmann, Police Headquarters, Copenhagen, 1919–24. Section and plan.

**743** Thomsen, Øregård School, Gentofte, Copenhagen, 1922–24.

Having been a protégé of Edvard Thomsen, Vilhelm Lauritzen begun his own practice in 1922 by winning a competition for a department store in the Nordic Classical manner. However, after visiting Walter Gropius's Bauhaus in Dessau of 1925 and the Weissenhofsiedlung in Stuttgart of 1927, he shifted his *modus operandi* to functionalism, as is evident from the glare-free light fittings that he designed with Fritz Schlegel in 1929 as an alternative to Poul Henningsen's famous PH lamp produced in the same year. Five years later, Lauritzen's breakthrough came with his 1934 design of the Radio Building in Copenhagen, which he followed in 1936 with a design for a new air terminal at Kastrup [744, 746], just outside the city. Lauritzen's Radio Building was influenced by the architecture of other earlier radio stations in Europe, ranging from G. Val Myers's BBC Building, London, to Hans Poelzig's Haus des Rundfunks, Berlin, both dating from 1931. Lauritzen was aware of the acoustical advantages of non-parallel walls in recording studios and incorporated them into his building, which was flanked on one side by a wing of multi-storey offices and on the other by a large concert hall. The design of this hall involved a new concept of illuminating orchestral space, worked out with the lighting engineer Mogens Voltelen, the main principle of which was to avoid hanging lamps so as to facilitate the installation of microphones while otherwise maintaining an uninterrupted ceiling.

**744** Lauritzen, Kastrup Airport, Copenhagen, 1936–39.

**745** Jacobsen, with Møller, Aarhus City Hall, Aarhus, 1937–42.

**746** Lauritzen, Kastrup Airport, Copenhagen, 1936–39.

The Kastrup air terminal exemplified the machine aesthetic of the period, but not to the same extent as other contemporary European airports, which was surely due to the influence of the functional, but ludic spirit of Gunnar Asplund's Stockholm Exhibition of 1930. Lauritzen strove for a similar popular functionalism, which accounts for the organic inflection of the terminal's plan and the undulating ceiling of the departure hall, representing the turbulent movement generated by aircraft in flight. Accompanying this feature was the equally fluid form of a two-storey glazed restaurant overlooking the runway.

Arne Jacobsen graduated from the Royal Academy in 1928, and, after working briefly for the city architect Paul Holsoe, opened his own office in 1930 on the strength of his so-called House of the Future of 1929 and the Rothenberg House built at Klampenborg in 1930. Unlike other modern architects of his generation Jacobsen tended in the first decade of his practice towards Nordic Classicism, although on occasion he would also favour the brick architecture of the Skønvirke movement, as found in his Monrad-Aas House in Copenhagen, dating from 1930.

Jacobsen first adopted an unequivocally modern manner in the Bellevue seaside resort that he built in successive stages at Klampenborg in the 1930s, including the ingeniously planned Bellavista housing of 1936 [747] and the crowning element of the Bellevue Theatre and Restaurant completed in 1937. This unequivocal modernity

would be tempered in the same year by his winning design for Aarhus City Hall [745], designed with Erik Møller, which unequivocally demonstrated a modern version of the town hall while engaging in Nordic Classicism as a language capable of expressing democratic values. The building was organized into three basic units which differentiated the main entrance and council chamber from the council offices and the six-storey archive block accessed from a secondary entrance. As Kjeld Vindum points out, the gently arched laylight of diffused glass covering the main entrance was derived from Thomsen's Øregård School.

**747** Jacobsen, Bellavista Housing, Klampenborg, Copenhagen, 1931–36.

Jacobsen's post-1945 career begins with the Søholm Housing built in load-bearing brick at Klampenborg in 1950 [748], a development in which he lived for the rest of his life. In this work Jacobsen was able to evoke a discreet sense of domestic comfort and luxury in a largely windowless cluster of cross-wall houses arranged in chevron formation, the whole producing a rhythmic silhouette of monopitched roofs and chimneys. This feeling for a modern domesticity is most evident in the double-height dining room, which (as in Jacobsen's own home) was invariably furnished with one of his circular tables, surrounded by his famous Ant chairs, fabricated out of bent plywood with three steel legs. This chair, first produced in 1952, established Jacobsen's reputation as an industrial designer, capable of creating in addition to furniture a popular range of domestic items in metal, glass and ceramics.

**748** Jacobsen, Søholm Housing, Klampenborg, Copenhagen, 1946–50.  
Jacobsen's own house with double-height dining room.

Aside from Søholm, Jacobsen's post-war career was affected by his encounter with Miesianism as represented by SOM's Lever House, New York, which, designed by Gordon Bunshaft, was completed in 1952. Jacobsen's twenty-five-storey SAS Royal Hotel, Copenhagen, of 1955 is similarly handled as a high-rise slab block poised over a low-rise podium, with both parts wrapped in an elegant curtain wall. In spite of Jacobsen's subsequent penchant for high-rise, curtain-walled corporate office blocks, he managed to nurture a capacity for typological invention, as in his Munkegård Elementary School built in Soborg in 1958 [749]. The pavilioned classrooms of this single-storey school, executed in brick and grouped in pairs about a common patio, represent one of the most brilliant innovations in school design in the post-war era. Despite his sense of social responsibility and his feeling for the appropriate expression of a building in relation to its societal role, Jacobsen has perhaps been at his best as an industrial architect, as in his CAC Engine Factory dating from the early 1950s. In the interim, his industrial design legacy has been best developed by the KHRAS group, founded by Knud Holscher, as may be judged from their Pils Headquarters Building built at Lyngby in 1993.

**749** Jacobsen, Munkegård School, Soborg, 1958. Section and aerial view.

The late 1950s and mid-1960s saw the emergence of Jørn Utzon and Henning Larsen as the leading architects of the next generation, strikingly in the case of Utzon through his Sydney Opera House design of 1957. Less well known, but equally significant, was his excursus into low-rise, high-density housing, which began with his entry into the Southern Swedish housing type competition of 1950 [751], which promulgated the idea of an expandable courtyard house comprising a monopitched, single-storey dwelling

occupying two contiguous sides of a square or rectangular court. The idea was that each householder would be able to expand the house *ad hoc* within the four sides of the walled-in garden court. This house type would be adopted by Utzon in his Kingo and Fredensborg housing schemes of 1956 and 1963 respectively [750]. Utzon was clearly the master architect of his generation, not only for the Opera House, but also for the Bagsværd Church, which he built in a Copenhagen suburb, shortly after his return from Australia in 1967. In many respects Bagsværd was the ultimate realization of the transcultural ‘roofwork/earthwork’ paradigm that had preoccupied him throughout his career. This all but diagrammatic syndrome of a shell concrete roof suspended over a podium occurs at the very beginning of his career and eventually assumed a more subtle and resolved form, as is clear from the undulating reinforced-concrete vaults spanning the nave above a basement-earthwork (fig. 323).

**750** Utzon, Fredensborg courtyard housing, Fredensborg, Copenhagen, 1963.

**751** Utzon’s entry for the Southern Swedish House Competition, 1950.

Larsen first came to public notice with his winning entry for the 1966 Trondheim University competition, which was influenced by Shadrach Woods and Manfred Schiedhelm’s Free University Berlin of 1963 (see p. 313). Thereafter, however, his work became increasingly Post-Modern before gradually transposing into a broad-based corporate practice, as evident from the Moesgaard Museum built at Aarhus by the office in 2015 [752]. Here expansive new galleries containing recent findings in the archaeological collection of a well-established local museum have now been housed in a

turf-covered earthwork expressly designed to harmonize with the unspoiled rolling landscape of Skåde.

**752** Henning Larsen, Moesgaard Museum, Aarhus, 2015.

## Sweden

Both National Romanticism and Nordic Classicism attained their ultimate expression in Stockholm in the mid-1920s: the first in the Stockholm Town Hall, completed to the designs of Ragnar Östberg in 1923, and the second with the Stockholm Public Library by Gunnar Asplund, finished in 1928 after six years of construction. However, the Modern Movement arrived seemingly overnight with the Stockholm Exhibition of 1930 [**753–55**], designed by a team of young architects under the leadership of Asplund and inspired by a comprehensive cultural programme conceived by Gregor Paulson, who was the director of the Swedish Society of Craft and Design. Paulson had been in Berlin during the first years of the Deutsche Werkbund, an experience that convinced him of the necessity of reconciling the elegance of industrial production with more traditional arts and crafts values. Stockholm 1930 was the beginning of a warmer, more accessible functionalism consciously opposed to the reductive, economic, standard functionalism of the Neue Sachlichkeit. This spiritual difference was beautifully summed up by Alvar Aalto when he wrote of the exhibition: ‘This is not a composition of glass, stone and steel, as a visitor who despises functionalism might imagine. It is a

composition of houses, flags, floodlights, flowers, fireworks, happy people and clean table cloths.'

**753** Asplund, Restaurant, Stockholm Exhibition, 1930.

**754** Asplund & Lewerentz, Stockholm Exhibition, 1930. Perspective of exhibition site and landscape.

**755** Asplund, Stockholm Exhibition, 1930. Axonometric of main exhibition structure.

The exhibition was the spearhead of a popular environmental culture, with the Social Democratic Party being elected in 1931 and henceforth establishing the full scope of its welfare state policy. The party effectively remained in power in Sweden until the assassination of the prime minister, Olof Palme, in 1986. In his 1931 essay, 'White Industry' Paulson set forth his strategy of transforming social values, raising the level of popular taste and generally improving the living conditions of the working class. This gradualist approach to the task of changing society was further articulated in a polemical tract accompanying the exhibition. Entitled *Acceptera*, it urged society 'to accept reality that exists', arguing that 'only in that way do we have any prospect of mastering it, taking it in hand and altering it to create a culture that offers an adaptable tool for life.'

There is no compact survey of the architecture and planning achievements of the first two decades of Swedish social democracy to rival the American architect G.E. Kidder Smith's book *Sweden Builds* (1950). In it he demonstrated through his didactic photographs the syntactical range of the softer Scandinavian functionalist line (*funkis*) capable of

combining the rational organization of space and the logic of engineering forms with softer internal timber finishes and furniture and correspondingly subtle, rhythmically positioned light fittings such as the famous PH series of pendant lamps, designed by the Danish cultural critic Poul Henningsen. This *funkis* culture arising directly out of the Stockholm Exhibition of 1930 was elaborated further over the next two decades to a Swedish environmental *lingua franca* in which a whole generation of architects and engineers, led by the architects of the government-backed Swedish co-operative movement, built a social democratic architectural culture. In this it is difficult to discern any trace of a separate personal style, whether it is the work of Paul Hedqvist, Hans Westman, Eskil Sundahl or the practice of Lallerstedt, Lewerentz and Helldén, who were responsible for the City Theatre of 1943 in Malmö [757, 758], where the size of the auditorium could be varied from 110 to 100 seats through a flexible, undulating screen wall. One of the only architects to pull back from this approach was Asplund himself in his Forest Crematorium crowning the Woodland Cemetery [756], with which his career had begun. This trabeated peristyle of the atrium before the main chapel signals a decisive return to Nordic Classicism. It is a tragic irony that he was the first person to be cremated there at its completion in 1940.

**756** Asplund, Main Crematorium, Woodland Cemetery, 1940.

**757** Lallerstedt, Lewerentz and Helldén, City Theatre, Malmö, 1943.

**758** Lallerstedt, Lewerentz and Helldén, City Theatre, Malmö, 1943. Plan.

By this date the leadership had passed to the distinguished architect and planner Sven Markelius, as we may judge from his design for the Swedish Pavilion at the New York World's Fair of 1939, to be followed his plan for Vällingby new town. This town featured a new type of eleven-storey apartment building accommodating four apartments per floor, symmetrically clustered around a central staircase and lift. The subsequent British new towns were not able to equal the clarity of Vällingby, neither in terms of its medium-rise residential towers nor in terms of its efficient road and rail connections to Stockholm. The legacy of Stockholm 1930 was at its best at this juncture for thereafter it began to be eroded by bureaucracy in the name of economic efficiency, as in one housing scheme after another the standard eleven-storey tower blocks were clad in the populist multi-coloured schemes devised by the practice of Sven Backström and Leif Reinius.

Born in 1914 in London and educated at a Quaker school before studying architecture, Ralph Erskine went to Sweden in 1937 in order to familiarize himself with the new architecture of the Swedish welfare state. Unable to return to the UK owing to the outbreak of the Second World War, he would remain in Sweden for the rest of his life.

More than any other contemporary British or Swedish architect Erskine demonstrated an exceptional capacity early in his career to work at different scales, from enclaves providing a protective microcosm capable of sustaining a community in a hostile natural environment to large, self-contained forms in otherwise rather placeless contexts, such as his well-known theoretical project for an arctic town [759] as an enclave, enclosed by a thick perimeter wall stacked with housing facing within the artificial crater. This audacious project gained him a hearing within the elite Team 10 circle dominated by Aldo van Eyck and the Smithsons. This idea of conceiving housing as a continuous landscape form reoccurred throughout his prolific career: at

Kiruna in Lapland (1961–66); in Clare College, Cambridge (1968–69); in Resolute Bay in the Northwest Territories of Canada (1973–77); and finally in the Byker Wall complex in Newcastle, England, in 1981. However, this preoccupation with residential megaforms did not prevent Erskine from also designing, when appropriate, relatively small-scale urban complexes comprising medium-rise residential perimeter blocks. Erskine practised throughout his life as a brilliantly inventive, pragmatic architect, whose organic syntax came close to that of Aalto, as in his paper-making factory at Avesta of 1953, faced in brick, and in the beautifully detailed, prefabricated concrete flats that he built at Växjö in 1954. He was also capable of giving his work a powerful, almost Constructivist character, as in the ski hotel built early in his career at Borgafjäll in 1950 [760]. Although the building of Swedish social democratic housing became increasingly bureaucratized after 1945, Erskine never stopped demonstrating how ‘place-creation’ must be given priority in order to mediate the placeless tendencies of the post-war world.

**759** Erskine, Arctic Town, Lapland, 1961.

**760** Erskine, Ski Hotel, Borgafjäll, 1950.

**761** Erskine, Paper-making Factory, Fors, 1953.

Somewhat paradoxically around the time of the Stockholm Exhibition, Asplund’s former partner Sigurd Lewerentz was engaged in the design of the Institute of National Insurance in Stockholm (1928–32) [762] as a hybrid part-Nordic Classic, part-Functionalist design. He followed this in 1937 with his equally eccentric Villa

Edstrand built at Falsterbo, before abandoning architecture altogether in favour of designing and fabricating his own patented steel windows. He returned to the field with two remarkable brick churches, St Mark's at Björkhagen and St Peter's at Klippan [763], both designed and built from 1962 to 1966. Of St Peter's, Colin St John Wilson has written:

**762** Lewerentz, Institute of National Insurance, Stockholm, 1928–32. Elevation.

**763** Lewerentz, St Peter's Chapel, Klippan, Sweden, 1962–66.

*Lewerentz, apparently concerned only with a dogged working out of an issue in terms of building construction, in the end arrives at a figure pregnant with symbolic meaning – its form irresistibly evoking the form of the cross with a harshness for which we are quite unprepared... I know of no precedent in the architecture of our time for the sheer impact of a way of building transformed into symbolic statement. It seems worthwhile therefore to look closer at the building rules that Lewerentz set himself. In the first space we find that the use of brick is subject to three propositions stringently applied in the teeth of common-sense compromise. First, Lewerentz proposes to use it for all purposes: wall, floor, vault, roof light, altar, pulpit, seat. Second, he will use only the standard, full-size brick; there will be no specially shaped bricks. Third, no brick is to be cut. The only way these conditions can be met is by a very free proportioning in the ratio of mortar to brick; to achieve such jointing (often very large) a very dry mortar mix that included ground slate was employed.*

The work of Peter Celsing seems, in many respects, to be an uncanny synthesis of the work of Asplund and Lewerentz, although Celsing himself seems to have never have worked

for either of them. Despite this, his brick churches, built between 1952 and 1959, anticipated the atmosphere of Lewerentz's late churches, even featuring, in the case of the church he built in Vällingby new town, Lewerentz's penchant for thick mortar joints. At the same time, he proved himself to be a heroic public architect within the long tradition of the Swedish welfare state, above all in his Film House, Stockholm (1964–70) [764, 766], and in his Culture Centre, completed in 1976 on the south side of Sergels torg square in the centre of the capital – a building that briefly served as the seat of the Swedish Parliament while its own building was under restoration. Both of these Stockholm works are rationally and ingeniously planned and without any superfluous ornament. They recall through the generosity and boldness of their form the paradigm of the social condenser as envisaged in the Soviet Union in the 1920s. At the same time Celsing suddenly abandoned his former *funkis* manner with the Bank of Sweden [765] on the same side of the square as the Culture Centre. Although this work was a gridded eight-storey prism, it also featured a highly mannered use of black granite revetment hewn in such a way as to create a highly textured, ornamental surface. The inner court of this building was conversely faced in a faceted, metallic curtain wall, rising up over the attic of the building to enclose the recreational facilities on the roof. It seems that at the end of his short but intensely creative life Celsing was beginning to pull away from the heroic ideals of Stockholm 1930 to embrace a ludic, even decorative, approach to tectonic form.

**764** Celsing, Swedish Film House, Stockholm, 1964–70.

**765** Celsing, Bank of Sweden, Stockholm, 1975. Elevation.

**766** Celsing, Swedish Film House, Stockholm, 1964–70. Section.

## Norway

Modern architectural culture was first consciously developed in Norway by the cosmopolitan architect Arne Korsmo, who began his career by working as an assistant for Arnstein Arneberg and Magnus Poulisson, who designed the Oslo City Hall, which was completed in 1931, in the National Romantic manner. In fact, the studio of these architects overlooked the first functionalist building in Norway, the Skansen restaurant of 1925 designed by Lars Backer. Despite this prestigious beginning much of Korsmo's early professional life was shaped by his expertise in timber construction, which led to his appointment in 1936 as a lecturer in the timber-orientated design programme of the National College of Applied Arts in Oslo. Throughout the 1930s Korsmo designed and built a number of distinguished modern houses, of which the finest was the Dammann House, Oslo, of 1932 [**767**], which the distinguished Norwegian architect Sverre Fehn would later acquire and live in.

**767** Korsmo, Dammann House, Oslo, 1932.

Unable to practise during the German occupation of Norway (1940–45), Korsmo fled to Stockholm in 1944, where he worked for Paul Hedqvist. Upon returning to Oslo, he welcomed the opportunity in 1949 to travel to the United States on a Fulbright Scholarship in the company of his wife,

the enamel artist Grete Prytz. America proved to be a stimulating experience for both of them, above all for the nascent industrial design culture of Moholy-Nagy's Institute of Design in Chicago, which by then had been incorporated into Mies van der Rohe's department of architecture at the Illinois Institute of Technology (IIT). The other American city that would have an enduring influence on Korsmo's work was Los Angeles, where he and Grete were duly impressed by Charles and Ray Eames' house in Pacific Palisades. They were equally captivated by other houses built in the city under the sponsorship of John Entenza's Case Study House programme. Despite the enduring influence of his American experience, Korsmo remained in close contact with the Danish architect Jørn Utzon, whom he had first met in Stockholm in 1944, and with whom he subsequently collaborated on a number of projects in the late 1940s. The ultimate outcome of his US tour was the twin houses that he built in Planetveien (1953–55), outside Oslo [768]: one for the architect-historian Christian Norberg-Schulz and the other for his own occupation. The timber-lined interiors of Korsmo's own house went beyond the light-weight, technological rationality of Mies and Eames by which he was patently influenced. This is particularly evident in the importance that he attached to the hearth as the spiritual core of the house, of which he wrote:

**768** Korsmo, Twin Houses, Planetveien, 1955.

*The fireplace satisfies, for example, the need to come to rest before the movement and sounds of a fire. It gathers everyone who comes to the house in a ritual similar to that of the tea ceremony, a simple 'in-between' moment of heightened contemplative quiet – even though many are gathered together.*

The other rationalist line of the post-war Modern Movement in Norway was that of PAGON (Progressive Architects Group Oslo Norway), organized in 1948 by Korsmo's students, including Sverre Fehn, Geir Grung and Odd Kjeld Østbye, who had qualified as architects under his tutelage. Fehn rose to the fore in the 1950s as the one architect able to develop the industrial modular rationality generally favoured by the PAGON group into a material expressivity: first with his laminated timber-framed Norwegian Pavilion, built for the Brussels Universal Exhibition of 1958; then with his timber-framed Schreiner House, Oslo, of 1963; and, above all, with the monumental, reinforced-concrete Nordic Pavilion in the gardens of the Venice Biennale in 1968. In the Schreiner House, which possesses a distinctly Japanese flavour, Fehn arrived at a surprisingly articulate interaction between the exposed timber framing of the roof – which accommodated a brick core housing a free-standing chimney shaft and an adjacent bathroom and kitchen. This structurally expressive language was developed further in the Underland and Wessel Houses (1960–65), close to Oslo, culminating in his quasi-Palladian house built at Norrköping in Sweden in 1964 [769, 770]. This symmetrical exercise in load-bearing brickwork and timber framing is based on a ‘square-within-a-square’ plan, which is beautifully articulated by the built-in cabinetwork of its four corner windows. This precision had the effect of giving a single-storey house a formal presence comparable to that of Mies van der Rohe’s Farnsworth House of 1953. Equally tectonic, though of a more majestic public character, the Nordic Pavilion in Venice [771] is predicated on a number of extremely simple moves: the first being the 2.5-metre (8-foot), double post-tensioned reinforced-concrete beams that bear onto two concrete piers and then divide into twin cantilevered, reinforced-concrete brackets, which pass around two sides of an existing tree. This magnanimous structural gesture supports a grid of thin,

prefabricated, long-span concrete planks forming the roof. These primal elements establish the main volume of the exhibition space, which is top lit through plastic gutters hung between the concrete planks. The *genius loci* of this solution derives not only from its intimate relationship with a mature tree but also from the need to accommodate a major change in level at this point in the gardens.

**769** Fehn, villa at Norrköping, 1964.

**770** Fehn, villa at Norrköping, 1964. Plan.

**771** Fehn, Nordic Pavilion, Venice, 1962.

The key defining work of the first half of Fehn's career is the Hedmark Archaeological Museum at Hamar, completed in 1979 [[772](#)-[774](#)]. This museum is built within the remains of an 18th-century farmhouse and a medieval monastery. Fehn introduced a reinforced-concrete passerelle into this complex as a way of conducting the visitor through this history, beginning with a concrete entrance ramp that rises out of the rubble of the courtyard. This bridge-like form establishes a relationship between the *béton brut* of its construction and the articulate, triangulated timber trusswork and purlins of the reconstructed double-pitched barn roof overhead, elegantly suspended above the ruined stonework of the original foundation.

**772** Fehn, Hedmark Archaeological Museum, Hamar, 1979.

**773** Fehn, Hedmark Archaeological Museum, Hamar, 1979. Section.

**774** Fehn, Hedmark Archaeological Museum, Hamar, 1979. Plan.

Like Carlo Scarpa, by whom he was patently influenced, Fehn was henceforth destined to become a museum architect, designing and executing a whole sequence of exceptional institutions in remote parts of Norway, including the Glacier Museum, built at Fjærland in 1991 [775]. Perhaps the most dynamic and rigorously unified of these works was the combined museum and study centre [776] commemorating the 19th-century Norwegian polymath Ivar Aasen (1813–96). Here the concrete plastic dynamism of the outer form, integrated with its alpine site, fuses with the exposed concrete bulkhead of the interior, within which is exhibited the memorabilia of Aasen's life.

**775** Fehn, Glacier Museum, Fjærland, 1991.

**776** Fehn, Ivar Aasen Centre, Ørsta, 2000.

## Finland

Since the Second World War Finland has seen two main trends in architecture: on the one hand sensitive variations on the organicism of Alvar Aalto, and on the other a constructivist swerve away from his pervasive influence. In the former, the main problem has been how to pursue the native organic tradition while keeping a distance from the idiosyncratic tropes of the master. This predicament has led to a geometrically inflected, stripped organicism, found, for

example, in Kaija and Heikki Siren's Otaniemi Church (1957) and later in Käpy and Simo Paavilainen's Olari Church (1976). A similar line is also evident in the work of Juha Leiviskä, above all in his masterly twin churches – St Thomas's Church at Oulu (1975) and Myyrmäki Church at Vantaa (1985) [780–782] – both of which are as much indebted to Dutch Neo-Plasticism as to Aalto. However, the primary drive in Leiviskä's architecture is the modulation of light, which no doubt explains his personal affinity with Erik Bryggman's Turku Chapel of 1941, where light plays an equally central role.

While Aarno Ruusuvuori was the first to move away from Aalto in the audaciously cantilevered, minimalist steel structure of the printing works that he built in Tapiola in 1964 [778], the pursuit of such an overtly constructivist expression was continued in the industrial buildings designed by Erkki Kairamo of Gullichsen, Kairamo and Vormala, most particularly in his Marimekko textile plant, Helsinki, of 1974 [779]. This high-tech approach is combined with a flair for an articulated expressivity that is particularly evident in Gullichsen, Kairamo and Vormala's Westend housing at Espoo of 1982 [777] and in their office tower for the Itäkeskus shopping centre on the outskirts of Helsinki in 1987. A softer Neo-Constructivist trend aspiring to a cooler, more abstract expression than that of the Italo-British High-Tech architects may be found in the Jyväskylä Airport (1988) by Pekka Helin and Tuomo Siitonen, who also designed a prototypical collective dwelling in the form of a stepped housing block, built on the Hestra Estate, near Borås in Sweden, in 1992. An equally abstract tendency is evident in the work of Mikko Heikkinen and Markku Komonen, above all in their Science Centre built at Vantaa in 1986, which is somewhat reminiscent of the work of Rem Koolhaas but with detailing taken to a higher resolution.

**777** Gullichsen, Kairamo and Vormala, Liinasaaren-kuja housing, Westend, Espoo, 1982.

**778** Ruusuvuori, Printing Works, Tapiola, 1964.

**779** Kairamo, Marimekko Textile Works, Helsinki, 1974.

Many reasons besides prosperity may be invoked to account for the manifestation of so much talent in such a small country. In the first place, there is the evident influence of one of the most rigorous architectural schools in the world, that of the Helsinki Technical University, with its traditions going back to the leadership of Usko Nyström (see p. 224). Other predisposing factors are: (1) the enormous national prestige enjoyed by Aalto in his lifetime; (2) the long-established principle of holding open competitions for virtually every public building in Finland; and (3) the high design standards established by such furnishing firms as Marimekko and Artek. To all this must be added the didactic cultural support provided by the Museum of Finnish Architecture under a series of directorships, namely, Juhani Pallasmaa, Asko Salokorpi, Aarno Ruusuvuori, Markku Komonen and Marja-Riitta Norri – particularly for the editorial support they successively gave to the journals *Abacus* and *Arkkitehti*, with which the museum was associated. The international influence of the Aalto Prize and the associated Aalto Symposium held every three years in Jyväskylä should also be acknowledged as a crucial cultural influence. The choice of recipients of this award testifies to the vitality and perspicacity of the architectural debate in Finland and to the Finnish ability to recognize quality wherever it occurs. Finally, as in Japan, the state has played a fundamentally significant role, above all through its

patronage of architecture, maintained as part of the country's post-war diplomatic balancing act between the United States and the USSR.

The celebration of Post-Modernism in the Venice Biennale of 1980, followed by the collapse of the Soviet Union and the corresponding fall of the Berlin Wall in 1989, provoked a critical reflection on the current state of architecture in Finland in the form of a retrospective in 1992 of the leading architects practising in Helsinki. This exhibition, staged by the Museum of Finnish Architecture and entitled 'Architecture Present: 7 Approaches', featured the contributions of: Gullichsen, Kairamo and Vormala; Juha Leiviskä; Helin and Siitonens; Heikkinen and Komonen; Käpy and Sino Paavilainen; and, lastly, Georg Grotenfelt, with his unique domestic manner, synthesizing Aaltoesque tropes with elements directly taken from the Finnish agricultural tradition. Also in 1992, Scott Poole's canonical assessment of Finnish practice after Alvar Aalto was published under the title *The New Finnish Architecture*, to which Colin St John Wilson would add the following provocative evaluation: All in all, the status of contemporary architecture in Finland constitutes a certain reproach to the reactionary nostalgia, the dithering and scuttling, the lost sense of common purpose, and the instant kitsch that dominate the scene and are fostered elsewhere by those whom Habermas has rightly stigmatized as 'the Avant-Garde of the Great Retreat'.

**780** Leiviskä, Myyrmäki Church and Community Centre, Vantaa, 1985.

**781** Leiviskä, Myyrmäki Church and Community Centre, Vantaa, 1985. Section.

**782** Leiviskä, Myyrmäki Church and Community Centre, Vantaa, 1985.

Distant from the Helsinki scene celebrated in the 1992 exhibition, there is the equally accomplished practice of the Oulu-based architects Mikko Kaira, Ilmari Lahdelma and Rainer Mahlamäki, above all surely for their masterly Finnish Forest Museum and Information Centre [783], built at Punkaharju, near the country's eastern border, in 1996. Appropriately clad throughout in wood – in the form of horizontal boarding and louvres – this complex comprises a reinforced-concrete frame, supplemented by an articulate use of light steel components. As Peter MacKeith has written:

**783** Lahdelma and Mahlamäki, Finnish Forest Museum and Information Centre, 1996. Site plan.

*The consideration of construction and materials deepens the counterpoint at all scales of design. The sound intention has been to steer clear of literal uses of wood. Geometry as well as function determines the contrast of materials used; stairs and ramps, for instance, are of concrete structure and glass enclosure and grey-painted steel is used in an understated support role. ... The interior experience of the museum is enlivened by sectional slices through the roof of the drum to admit natural light. ... The curved rooflight functions as a kind of sundial for the visitor, who, entering at the top level of the entrance court, is propelled down the switchback ramp into the exhibition levels themselves. The overlapping of spaces and visible interconnection through slots between walls and bridges is inventive; the visitor is always returned for orientation to the absolute centre of the drum, tracing and retracing their steps across a giant horizontal slice of tree-trunk embedded in the floor, metaphorically always returned to the life of wood itself.*

Three other works by this practice merit particular mention: an addition to the Tampere University of Technology (1995); the Folk Art Centre at Kaustinen (1997); and the Museum of the History of Polish Jews in Warsaw (2013). Each of these works manifests the capacity to combine dynamic plastic form with a rational organization of the plan in a way that ultimately harks back to the Russian Constructivist avant garde.

Pekka Helin has to be counted among the most accomplished ‘high-tech’ architects practising in Finland. His work is notable for its rational modularity, invariably enriched by an articulate use of material, as in the patented copper revetment of his Sello Library and Music Hall of 2003 or his timber-clad Finnforest Modular Office of 2005, both works being built in Espoo. It is difficult to overestimate the technical and aesthetic prowess of Helin’s practice, particularly the remarkable range, precision and richness of his detailing, from the Shipboy Housing, Helsinki, of 1995 [785, 786] to the brick-faced offices of the Kamppi headquarters in downtown Helsinki of 2006. Moreover, the scope of this practice includes the sensitive rendering of private villas, such as the Villa Krona in Kimitoön (2010) [784], built in the Gullkrona Archipelago. Here the geometry of the villa’s form is closely related to the bedrock of the site, with its variegated colours and glaciated surface, while the overall cladding of the exterior in larch, which weathers to a silvery grey. This timber complements the sedum on the roof as it changes from green to brown in the course of the summer. At the same time the cantilevered structure covering the space, combined with pine panelling and ash flooring, subtly continues the Aalto legacy without any direct quotation, creating a welcoming, warm environment in the face of hostile nature.

**784** Helin, Villa Krona, Kimitoön, 2010.

**785** Helin, Shipboy Housing, Helsinki, 1995. Unit plan.

**786** Helin, Shipboy Housing, Helsinki, 1995.

## Afterword

# Architecture in the Age of Globalization

*The globalization of capital is, of course, somewhat spurious. Yet it is an important ideological innovation. The capitalist system undergoes a kind of mutation to its essential form, the culmination of which would be the complete (notional) capitalization of nature in which there no longer remains any domain external to capital. This is tantamount to the assumption that an external nature does not exist. The image is no longer Marx's (or the classical economists') of human beings acting on external nature to produce value. Rather, the image is of the diverse elements of nature (including human nature) themselves codified as capital. Nature is capital, or, rather, nature is conceived in the image of capital. The logic of the system is thus the subsumption of all the elements of nature-considered-as-capital to the finality of capital's expanded reproduction.*

*Theoretical difficulties immediately arise as a result of the fact that this is a largely imaginary functional integration. The rhetoric stresses harmonization and optimization; the reality is disorder and conflict. As Baudrillard remarks, 'Everything is potentially functional and nothing is in fact.' Two sources of contradiction are inherent in the process of the capitalization of nature, which furnish our justifications for proposing a shift from an industrial to an ecological Marxist perspective on production, on the 'eventual' and 'inevitable' collapse of capitalism, and thence on the conditions for some sort of socialism. The first is the*

*fact that the planet is materially finite, a situation that creates biophysical limits to the accumulation process. The second, which is synergetic with the first, is the fact that capital does not and cannot control the reproduction and modification of the ‘natural’ conditions of production in the same way it purports to regulate industrial commodity production.*

Martin O'Connor *Is Capitalism Sustainable?*, 1994<sup>1</sup>

The diverse phenomena that accompany globalization are closely associated with the ever-escalating rate of telematic communication and the constant increase in transcontinental air travel. As a consequence, the practice of architecture today is as global as it is local, as we may judge from the international celebrity architects who are increasingly active all over the world, directly responding to the flow of capital investment. Our current susceptibility to spectacular imagery is such that today the worldwide reputation of an architect is as much due to his or her iconographic flair as it is to their organizational and/or technical ability. This worldwide phenomenon has been termed the ‘Bilbao effect’ – so coined for the way in which, throughout the 1990s, provincial cities vied with one another to have a ‘brand’ building designed by a celebrated architect, largely as a result of the media acclaim accorded to Frank Gehry’s sensational Guggenheim Museum, realized in Bilbao in 1995. During the decades that have succeeded this triumph, the scope of the celebrity architect has widened immeasurably, with signature architects travelling all over the globe in order to supervise the erection of iconic structures, thousands of miles apart, in totally different cultural and political contexts. This has been particularly evident in China and the Arabian Gulf today, where diverse architectural stars rival one another with the projection of one spectacular building after another, from Paul Andreu’s

National Grand Theatre of China, with its three auditoria housed under a single titanium dome (2006), to Jacques Herzog and Pierre de Meuron's overstructured Beijing National Stadium for the 2008 Olympic Games.

For its equally gargantuan size, structural audacity and perverse shape, it would be difficult to imagine a more dramatic structure than Rem Koolhaas's seventy-storey Chinese Television Headquarters (CCTV) in Beijing, with its inclined trapezoidal profile crowned by a 70-metre (230-foot) cantilever some 230 metres (755 feet) in the air. Such technological ostentation recalls the audacity of the Eiffel Tower, along with El Lissitzky's Wolkenbügel proposal of 1924, by which the CCTV seems to have been inspired. However totally removed from the axiality of both Eiffel's tower and Lissitzky's 'anti-skyscraper', the imbalanced, asymmetrical nature and arbitrary siting of Koolhaas's television megastructure preclude it from having any urbanistic or symbolic significance, except as a gargantuan representation of manipulative media power. It was designed to house a working population of 10,000, engaged in the programming of some 250 channels streaming out to a billion people a day.

Skyscrapers of a much greater height are equally symptomatic of our 'society of spectacle', in which cities compete for the dubious honour of realizing the world's tallest building. Dubai has been the leading contender, with its 160-storey Burj Tower designed by Skidmore, Owings and Merrill. While such extravagances seem increasingly irresistible in capital cities throughout the developed world, global megalopoli are ever more attended by large masses of impoverished people, particularly in countries under development. Here, cities with already congested infrastructures continue to become denser, so that the population within the metropolitan region of Mexico City now stands at 21 million, along with that of Beijing and Mumbai at around 20 million each, São Paulo at 12 million,

Jakarta at 9 million, Tehran at 8 million, Bogotá at 7 million, and Caracas at 2 million. To these statistics we may add the alarming prediction that within the next fifteen years some 300 million rural Chinese will migrate into cities within the Republic of China. A transfiguration on such a scale will only exacerbate the fact that Asian cities are among the most polluted in the world: the air quality in Beijing, for example, is six times worse than that of the average European capital.

With equally wasteful consequences as far as gasoline consumption is concerned, cities in the United States such as Houston (7 million), Atlanta (6 million) and Phoenix (4.8 million) continue to lose population in their centres while constantly expanding their suburban hinterland with little or no provision for public transport. The negative socio-ecological nature of such settlement patterns is only too familiar. In the United States alone well over 1.2 million hectares (3 million acres) of open land are lost each year to suburbanization. This situation is not helped by the current pattern of government subsidy in the United States, which is skewed 4 to 1 in favour of autoroutes rather than rail or bus transit.

## **Topography**

Two seminal publications dating from the mid-1960s and early 1970s announce the emergence of topography and sustainability as the two environmental meta-discourses of our time; together they exercise a pervasive influence not only on landscape and urban design, but also on the field of architecture in general. The two texts in question, Vittorio Gregotti's *// territorio dell'architettura*, of 1966, and Ian McHarg's *Design with Nature*, of 1971, were to emphasize in different ways the significant integration of man-made form with the Earth's surface. Gregotti saw the marking of ground as a primordial act, undertaken in order to establish a man-

made cosmos in the face of the chaos of nature; he emphasized the fabrication of territory as a strategy for establishing a public place-form in the face of the new nature brought into being by the emergence of the urbanized region. He first demonstrated this thesis in his designs for the University of Calabria, built as a linear megastructure across a large swathe of agricultural land in Cosenza, southern Italy, in 1973. Eschewing architectonic intervention, McHarg's research was focused more on the need for a comprehensive approach to the biosphere in order to facilitate and maintain the mutual interdependence of regional ecosystems across a wide front. In retrospect, both approaches were attempts to mediate the effect of the continual expansion of megalopoli throughout the world. Today, they may still be regarded as viable strategies with which to resist the reduction of the man-made world to a limitless diffusion of ill-related, freestanding objects, as alienated from the needs of humans as from the processes of nature.

To advance territorial modification as the basis of a new cultural discipline is to accord a compensatory status not only to the art of landscape but also to built work formulated as if it were a landscape in itself or, alternatively, an object so integrated into the ground as to be inseparable from the surrounding topography. It is just such a reconception of the scope of landscape that currently favours the emergence of the new subdiscipline of landscape urbanism, conceived as a mode of intervention with a totally different strategic aim from the now largely discredited practice of master planning. The American landscape architect Peter Walker was able to demonstrate this in an exemplary way in his 324-hectare (800-acre) layout for the IBM Campus in Solana, west Texas (1992) [787], realized in collaboration with the architects Romaldo Giurgola, Ricardo Legorreta and Barton Myers. Walker

characterized the reparatory scope of his intervention in the following terms:

**787** Walker, IBM Campus, Solana, Texas, 1992.

*When we found the site, it was not a particularly rich meadow. It had been grazed very heavily and over half the topsoil had been lost. There were a few handsome trees that stood up to the grazing and somehow survived ... To repair the rest of it, we took the topsoil off of every single road, building, or parking lot site, stockpiled it, and put it on the meadow, thereby doubling the amount of topsoil.<sup>2</sup>*

Walker pursued an equally large-scale topographic transformation in his Marina Linear Park, San Diego, California (1988), designed with Martha Schwartz, where the right of way of an existing light rail system was converted into an exotic subtropical park. Comparable infrastructural landscape interventions have been standard policy in France, where one third of the state budget allocated to either regional high-speed transit or local light rail has been given over to the design of landscape settings that are capable of integrating new infrastructure into the existing topography. Michel Desvigne and Christine Dalnoky's implantation of a new TGV station outside Avignon in 1995 is typical in this regard, as are numerous other works executed by them in relation to public transit. In Avignon, plane trees were employed to reinforce the linear extent of the station, while the adjacent parking lots were shaded by rows of lime trees selected for their resemblance to the orchards of the surrounding apple-growing region, thereby integrating the station into the character of the existing landscape.

Despite the popular success of both the American parkway and the German *Autobahn* in the 1930s, the

universal expansion of autoroutes over the last half-century has not always been accompanied by environmental design of a comparable quality. An exception to this in Europe is the concrete viaducts and tunnel entrances that the Swiss architect Rino Tami designed for the Ticinese motorway extending from the St Gotthard Tunnel in the Alps to the Italian frontier at Chiasso – a large-scale infrastructure realized over a twenty-year period between 1963 and 1983. More recent, and of more limited scope, are interventions such as Bernard Lassus's somewhat exotic autoscapes in north-western France.

A comparable awareness of the impact of the automobile was evident in the early bridges of Santiago Calatrava, with which he demonstrated that he was as much concerned with the urban footprint of his bridges as with their structural articulation. This was especially true of his Bach de Roda bridge, built just outside Barcelona in 1987, in which the four coupled pairs of bowspring arches in concrete and steel carried the roadbed and also provided for pedestrian viewing platforms on either side of the span. Both the bridge and the axiality of the railway that it traversed were mutually enhanced by pocket parks that the engineer established on either side of the cutting. As part of the bridge abutment, pairs of concrete stairs at either end of the span provided direct access to these parks from the bridge. It is significant from both a cultural and an environmental standpoint that the pedestrian footpaths were elevated above the roadbed so that a person crossing the bridge could see over traffic to the landscape on either side. Moreover, the provision of such panoramic views was combined with raising the pedestrian above the level of the exhaust fumes.

The cultivation of landscape as a matter of ecological policy at a regional scale has become almost second nature in Germany, where the extension of Peter Latz's Emscher Park, which started as a demonstration project for the

detoxification and reuse of obsolete industrial plants, has evolved to become a recreational area stretching some 70 kilometres (43 miles) on either side of the Emscher River near the Ruhr Valley. It is significant that Karl Ganser, one of the main architects of the Emscher reclamation programme, would come to regard the universal megalopolis as another ‘brownfield’ site in the making, one that will prove to be even more resistant to future decontamination and adaptive reuse.

As in much of Alvar Aalto’s architecture, large and complex buildings may be rendered as though they were natural extensions of the topography in which they are situated. This paradigm was surely the primary motivation behind Arthur Erickson’s Robson Square development, Vancouver (1983), wherein a megaform comprising law courts and municipal offices was integrated with a parking garage in such a way as to assume the profile of a stepped escarpment.

A more modestly scaled megaform was realized in Barcelona, in the form of the L’Illia complex [788, 789], completed on the Avenida Diagonal in 1992 to the designs of José Rafael Moneo and Manuel de Solà-Morales. This block, 800 metres (2,600 feet) in length, houses a five-storey shopping mall in addition to commercial frontage on the avenue itself, and accommodates offices and a hotel as an integral part of the medium-rise slab. Built at the edge of Cerdá’s original Eixample and served by a multistorey subterranean car park running the entire length of the complex, the block was designed to respond to the scale of both the existing 19th-century urban grid and the random, *ad hoc* suburban development surrounding the historic core of the city. The stepped profile of this building enabled it to be read as a prominent landmark, particularly when seen from the inner suburban high ground overlooking the city. This megadevelopment effectively demonstrated Solà-Morales’ concept of urban acupuncture – namely a

strategically limited urban intervention, programmed and conceived in such a way as to augment an existing urban condition in a defined but open-ended manner.

**788** Moneo and Solà-Morales, L'Illa complex, Barcelona, 1992. Panoramic view.

**789** Moneo and Solà-Morales, L'Illa complex, Barcelona, 1992. Transverse section through galleria.

Urban acupuncture was also a term adopted by the Brazilian architect-politician Jaime Lerner in order to introduce an efficient public transit system into the city of Curitiba during his tenure as mayor between 1971 and 1992. Among the most innovative aspects of this system are the use of doubly articulated 100-seat buses, and elevated, totally glazed boarding-tubes that facilitate the efficient boarding of such vehicles at each stop. Today this network comprises 72 kilometres (45 miles) of designated bus lanes plus numerous other feeder lines. Over the same twenty-year period, Lerner was also able to introduce many other socially beneficial services in the areas of public health, education, food distribution and waste management. At the same time, despite the city's population having tripled, the administration was able to achieve a hundred-fold increase in the amount of green space per capita: a provision of 52 square metres (560 square feet) per person, in the form of an extensive network of parks running through the city. This general upgrading of public facilities, accompanied by the introduction of a high-speed bus system, was replicated in Bogotá, Colombia, during the successive political leaderships of Enrique Penalosa and Antanas Mockus.

Megaforms conceived as cities-in-miniature may also be used to emphasize the structure of existing topography and to establish identifiable places. The Mexican architect

Ricardo Legorreta has demonstrated this approach on a number of occasions, from the stepped formation of his Camino Real Hotel overlooking the beach in Ixtapa (1981) to the Renault assembly plant that he realized as an ochre-coloured, virtually windowless horizontal form in the arid landscape of Gómez Palacio, Durango, in 1985. Similar large-scale megaforms set against dramatic topographies can be found in a great deal of Latin American work, from Lina Bo Bardi's bridge-like Museum of Modern Art, completed for the centre of São Paulo in 1968, to the even more dramatic 108-room linear dormitory block and astronomical research centre realized by the German architects Auer and Weber in 2001. Cutting across the Atacama desert in Cerro Paranal, Chile, it constitutes a latterday testament to Gregotti's thesis that architecture begins with the marking of ground.

A propensity for landscape with an urban character is evident in the architecture of Enric Miralles and Carme Pinós, who came into their own with two brilliant competition designs of the late 1980s: an archery complex destined for the Barcelona Olympics of 1992, and a proposal for transforming a disused quarry in the nearby town of Igualada into a cemetery [790]. The former design, inspired by Gaudí and the structurally rationalist precepts of Viollet-le-Duc, demonstrated a newfound capacity for folded-plate construction in concrete, ingeniously supported by tubular-steel columns. The result was legible both as undulating roofwork and as a surrogate landscape. In Igualada, with similar ingenuity, the architects were able to exploit the quarry's *in situ* concrete retaining walls as the armature for an inclined prefabricated columbarium. Elsewhere, in the lower part of the quarry, serpentine retaining walls of gabion stonework formed embankments housing private mausolea. In sum, the entire cemetery was subject to a highly differentiated tactile aesthetic, from the Corten steel sliding doors that secured the mausolea to disused rail ties,

set in a weak mix of cement and gravel and scattered throughout the ramped floor of the necropolis.

**790** Miralles and Pinós, Igualada Cemetery, near Barcelona, 1994.

An increasing number of architects have displayed a particularly refined sensitivity towards the integration of landscape with built form, among them the American architect Rick Joy, whose Tyler House, near Tubac (2000) [791], was laid into a gently sloping site in the southern Arizona desert. There, set before a distant mountain range and accompanied by a small cactus garden, the house comprises two single-storey enclosures roofed and faced in Corten steel, their orthogonal masses converging on a common terrace and a swimming pool. The coarseness of the rough steel exterior contrasts with the refinement of the interior palette of white plaster, stainless steel, maple and translucent glass. This juxtaposition of materials owes something to the tactile materiality of Will Bruder's Phoenix Public Library (1995), on which Joy collaborated as an assistant.

**791** Joy, Tyler House, near Tubac, Arizona, 2000. Entry court.

Peter Eisenman's enigmatic Memorial to the Murdered Jews of Europe [792], realized in the centre of Berlin in 2005, is essentially an artificial topography, consisting of a field of 2,511 concrete slabs, set 95 centimetres (37½ inches) apart in such a way that no more than one person at a time can pass comfortably between them. Varying unevenly in height, these stelae assume the form of a gently undulating wave that responds to the fall of the land from one end of the memorial to the other. Save for a

subterranean visitors' centre, there is no representational element of any kind.

**792** Eisenman, Memorial to the Murdered Jews of Europe, Berlin, 2005.

Between the topographic, which pertains to the contours of the Earth's surface, and the morphological, which seemingly emulates the structure of biological and botanical form, there exists a plastic affinity that has been of consequence for architecture ever since the Baroque period. The fact that the primary reference tends to be natural rather than cultural is evinced in the amorphous, tentacular shape of Frank Gehry's Guggenheim Museum in Bilbao. Apart from any allusion that this distorted 'hull' might make to the pre-existing shipyards, it is obvious that its exceptionally fluid shape, along with its seductive titanium skin, exists quite independently of anything that takes place within its interior. In other words, notwithstanding its organic shape, it is paradoxically removed from any kind of interstitial biomorphic organization that is potentially as much a formative presence in architecture as it is in nature. All of this is apparent from the disjunctive, inelegant conditions that this shape engenders, from the perverse, inconvenient system of pedestrian circulation that leads from the river walk to the main entrance, to the total indifference the building displays towards the topographic context in which it is situated. We may count among its infelicities not only the ill-proportioned top-lit galleries, but also the uneconomic and inelegant steel frame that was devised to prop up the extravagant configuration of the skin. Thus an unbridgeable gulf separates the emptiness of Gehry's Bilbao from the organic interdependence of the interior and exterior, that is the *Organwerk* versus the *Gestaltwerk*, as Hugo Häring termed this symbiotic relationship in his Gut Garkau farm of 1924.

## Morphology

One encounters this syndrome not only in the architecture of Gehry, but also in the work of many other contemporary architects, ranging from Ben van Berkel and Lars Spuybroek in the Netherlands to Daniel Libeskind, Greg Lynn and Hani Rashid in the United States, and the London-based practice of the Iraqi architect Zaha Hadid, whose unique talent first came to the fore with her winning entry for the Hong Kong Peak competition of 1983. A decade later Hadid would translate the dynamic manner of her multicoloured Neo-Suprematist graphics into an exceptionally plastic but rather unfunctional reinforced-concrete fire station, which nonetheless assumed its rhetorical place as one more ‘star’ architect folly within Rolf Fehlbaum’s Vitra industrial estate in Weil am Rhein.

As preoccupied with sculptural shape as Gehry, Hadid’s architecture was at its best when produced on a small scale or when a horizontal, topographic dimension takes precedence over the sculptural, as in the transport interchange that she built on the outskirts of Strasbourg in 2001 [793]. This exceptionally sensitive work was commissioned by a local authority as a measure to reduce city-centre traffic and pollution by encouraging commuters to park their cars on the periphery and continue their journey into the city by light rail. Here, well-engineered access roads are combined with the trajectory of a rail link and the sweeping pattern of parked cars to create a three-dimensional megalopolitan set-piece that is as poetic as it is efficient.

**793** Hadid, Car Park and Terminal, Hoenheim-Nord, Strasbourg, 2001.

The main theoretician of the morphological as an end in itself has been the architect Greg Lynn, whose writings have appeared in two successive publications, *Folds*, *Bodies and*

*Blobs* of 1998 and *Animate Form* of 1999. As far as architecture is concerned, certain unavoidable problems arise with this kind of analogical reasoning – not only the dubious stratagem of positing the metabolic processes of nature as the basis of a new architecture, but also the implicit repudiation of building culture as it has emerged overtime as a pragmatic response to the constraints of climate, topography and available material, not to mention those implacable forces of nature such as gravity and climate that always tend to undermine the durability of man-made form.

Unlike Lynn's biomorphic approach, the London-based practice of Foreign Office Architects (FOA), led by Alejandro Zaera Polo and Farshid Moussavi, developed their own pragmatic design method for their Yokohama International Port Terminal (2002) [794] on the basis of a topological interplay between earthwork and roofwork. In an account of their first seven years of practice, entitled *Phylogenesis: FOA's Ark* (2003), they write:

**794** Zaera Polo and Moussavi (Foreign Office Architects), Yokohama International Port Terminal, 2002.

*The Yokohama project started from the possibility of generating organization from a circulation pattern, as a development of the idea of a hybridization between a shed – a more or less undetermined container – and a ground ... Our first move was to set the circulation diagram as a structure of interlaced loops that allow for multiple return paths ... .*

*The second decision in the process was that the building should not appear on the skyline, to be consistent with the idea of not making a gate on a semantic level as well, by avoiding the building becoming a sign. This immediately led to the idea of making a very flat building, and from there we*

*moved into turning the building into a ground. Once we decided that the building would be a warped surface, we sought to produce an argument of consistency between the no-return diagram and the surface ... To spread the building mass as thin as possible, we occupied the maximum area possible within the site. This and the requirement of placing straight boarding decks 15m from the pier's edge along both sides of the building to connect to moving bridges is what determined the rectangular footprint of the building ... The next decision was how to make the form structural. The obvious solution of supporting the surfaces with columns was not consistent with the aim to produce space and organization literally out of the circulatory diagram, and a more interesting possibility was to try to develop a structural system out of the warped surface.<sup>3</sup>*

As far as the contemporary pursuit of a morphological architecture is concerned, what puts the Yokohama terminal in a class of its own is the way in which a constantly warping complex of inclined roofs, ramps and open-air promenades is generated out of faceted bifurcating planes held in place by a geometrically coherent steel-framed superstructure. Unlike almost all of the morphological works cited above, this superstructure provides not only for the spatial articulation of the interior, but also for the phenomenological character of the work, including, in this instance, a large passenger-transit hall covered by wide-span, folded-plate roofs in sheet steel.

The method by which FOA were able to generate and realize this complex work led them to appropriate the concept of phylogenesis as a transformable 'evolutionary' system, with which they were able to approach a wide spectrum of programmes in an equally diverse range of sites and climatic conditions. What is evoked by the term 'phylogenesis' is an aspiration towards the postulation of an appropriate geometrical scheme rather than the selection of

an arbitrary shape. Thus the work of FOA was distinguished by the fact that each new commission, together with its topographic context, was used not only to engender a different *parti* but also to imagine mathematically distinct spatiotectonic networks, so that the received programme was invariably transformed through an unforeseen geometrical format that, however much it may have been derived from typological precedent, was equally likely to have been conditioned by the morphology of the site. In the case of the Yokohama terminal, the tectonic play between earthwork and roofwork is so symbiotic as to become a multilayered topography, rising and falling along the length of the pier. This undulation tends to confirm the fact that it is the superstructure rather than the earthwork that lends itself most readily to being treated as a topological surface.

A comparable topological ethos characterizes the glazed, undulating canopy that runs down the circulation spine of the Fiera di Milano complex [795], built outside Milan in 2005 to the designs of Massimiliano Fuksas. A large-span glazed roof of slightly varying profile in section also covers Nicholas Grimshaw's former Eurostar Terminal [796], added to Waterloo Station in London in 1993. In this instance the sectional variation is a direct consequence of the changing configuration of the site in plan. In this context one should also remember the trope of the crustacean glass roof as it was variously pursued by Austrian architects during the 1980s and 1990s; examples are the crystalline penthouse that Coop Himmelblau planted on top of a traditional Neo-Classical building in the centre of Vienna in 1981–89, and the dynamic structural profile of Volker Giencke's greenhouse erected in the botanical gardens of Graz in 1995.

**795** Fuksas, Fiera di Milano, Milan, 2005. Aerial view of the galleria linking the exhibition halls.

**796** Grimshaw, Eurostar Terminal, Waterloo Station, London, 1993. Transverse section.

## Sustainability

In his study *Ten Shades of Green: Architecture and the Natural World* (2000–05), Peter Buchanan supplements his descriptive analysis of ten exemplary green buildings with ten precepts that cover a wide spectrum of sustainable practices, from the optimization of natural shade, light and ventilation to the use of renewable sources of natural energy; from the elimination of waste and pollution to the reduction of the amount of energy embodied in the construction materials themselves. Buchanan writes:

*The common building material with the least embodied energy is wood, with about 640 kilowatt-hours per ton ... Hence the greenest building material is wood from sustainably managed forests. Brick is the material with the next lowest amount of embodied energy, 4 times (X) that of wood, then concrete (5X), plastic (6X), glass (14X), steel (24X), aluminum (126X). A building with a high proportion of aluminum components can hardly be green when considered from the perspective of total life cycle costing, no matter how energy-efficient it might be.<sup>4</sup>*

Statistics such as these should certainly give us pause for thought, including the sobering fact that the built environment accounts for some 40 per cent of total energy consumption in the developed world, comparable to what is consumed by road and jet travel. Much of this profligate use is due to artificial lighting, which swallows up some 65 per cent of our total consumption of electricity, with air conditioning and digital equipment coming a close second. It is equally sobering that a large part of any contemporary land-fill is invariably made up of building waste: it accounts

for some 33 per cent of the average municipal waste stream in the United States.

In the face of these dystopic statistics, Buchanan's recommendations have a markedly cultural character, such as his advocacy of building according to the anti-ergonomic principle of 'long life/loose fit'. This precept was naturally integral to the load-bearing masonry structures of the past, bequeathing us a legacy of eminently adaptable buildings, mostly dating from the 18th and 19th centuries, many of which we have been able to put to new uses. Such residual value is more difficult to achieve today on account of our standards of minimal space and our commitment to the paradoxically inflexible lightweight building techniques of our time.

Buchanan insists that every building should be closely integrated into its context. He therefore urges architects to pay as much attention to such factors as microclimate, topography and vegetation as to the more familiar functional and formal concerns addressed in standard practice. Exemplary in this regard is Renzo Piano's Jean-Marie Tjibaou Cultural Centre [797], built in Noumea, New Caledonia, in 1998, where the so-called laminated timber 'cases', 20 to 30 metres (65 to 88 feet) in height, refer, at a giant scale, to the traditional Kanak hut. These cases are capped halfway up by sloping roofs that are either solid or glazed according to the function of the spaces beneath, which range from meeting halls to exhibition spaces and dance studios. The inclined roofs are framed and stiffened by steel rings, and, where glazed, are covered by a layer of external louvres. The remainder of the complex consists of a single-storey orthogonal structure, housing exhibition space, administration and research offices, and a 400-seat lecture hall. Informally arranged along one side of this mat-building, the timber cases evoke through their spire-like forms of varying height the profile of a traditional Kanak village. While this allusion was endorsed by the Kanak themselves,

one can hardly overlook the post-colonial context of this work – above all the paradoxical fact that, funded by the French state, it stands as a memorial to the Kanak freedom fighter Tjibaou.

**797** Piano, Jean-Marie Tjibaou Cultural Centre, Noumea, New Caledonia, 1998.  
The timber ‘cases’ simulate the profile of the traditional Kanak hut.

Buchanan’s eighth precept stresses the crucial role to be played by public transport in sustaining the ecological balance of any particular land settlement pattern, since urban sprawl, no matter how green it might be in itself, can hardly outweigh the energy consumed in the daily commute by automobile between home and work and its accompanying environmental pollution. In opposing this entropic prospect, Buchanan stresses the benefits to public health that derive from dense urban form that is well served by public transport and thus sustainable in the wider sense of the term.

An entirely different stratagem towards sustainability is evident in the forty-five-storey Commerzbank [798, 799], realized by Foster Associates in Frankfurt in 1997, structured around an atrium rising for the full height of the building, with four-storey-high sky-gardens alternating from one side of the atrium to the other to admit light and air into the central shaft. The Commerzbank is also clad in double glazing throughout. Here, the outer skin serves to buffer the wind and weather, so that the manually operated lights of the inner skin may be opened at will to ventilate the offices. The building is automatically sealed and air-conditioned only when the climate is extremely hot or cold. The design’s most radical spatio-social innovation turns on the displacement of the service core to the apices of the triangular plan, thereby affording visual access across the atrium to the elevated sky gardens and vice versa. These

garden terraces not only serve to ventilate the atrium but also to provide an interim semi-public breakout space. Adjustable glass dampers span the atrium at the level of every twelve floors in order to modulate the Venturi effect of air movement within the central shaft.

**798** Foster Associates, Commerzbank, Frankfurt, 1997. Section showing air movement through the atrium.

**799** Foster Associates, Commerzbank, Frankfurt, 1997. Sketch of a typical view across the offices into the 'sky-gardens'.

In the United States, where 5 per cent of the world's population consumes 24 per cent of the world's energy, there has been a tendency to deny the reality of global warming and to continue with the maximized consumption of non-renewable energy. This denial is evident in the reluctance of the American government to enforce progressive environmental regulations as a standard mode of practice, an obtuseness that has sometimes been welcomed by architects on the grounds that sustainable design curbs their freedom of expression. Such an attitude is as reactionary as it is perverse, given that responding symbiotically to the exigencies of both climate and context has invariably served as a mainspring for tectonic invention since time immemorable. Equally sustainable - given our proliferating of building waste through wanton destruction - is, as Buchanan implies, the potential for conservation, conversion, repair and reuse of existing buildings. This is exemplified by the brilliant restoration, expansion and refurbishment in 2012 of Astley Castle, Nuneaton, Warwickshire, UK, by the architects Witherford Watson Mann, for which they were awarded the Stirling Prize in 2013.

## **Materiality**

Unlike the ubiquitous white architecture of the early Modern Movement, when buildings were invariably rendered in cement over a light skeleton frame and treated as though they were made of a neutral material verging on the immaterial (a condition that was virtually achieved after 1945 with the ubiquitous, totally glazed Miesian office building), the expressive materiality to which this section alludes has at least some of its origins in the load-bearing brick churches that the Swedish master Sigurd Lewerentz designed during the last two decades of his life: St Mark's in Björkhagen (1958–60) and St Peter's, Klippan (1963–66). No one has written more perceptively of the expressive role played by brick in these works than Richard Weston:

*the sense of containment by bricks is overwhelming. You walk on brick floors, between walls of brick, beneath brick vaults, which span between steel joists, swelling gently like ocean waves ... what photographs cannot convey is the almost preternatural darkness, which binds the fabric into an all-enveloping unity.<sup>5</sup>*

Among the most accomplished practitioners of this emphasis on material have been the Swiss-German minimalists Jacques Herzog and Pierre de Meuron, beginning with their holiday house in Tavole, Italy (1988), in which stones from the site were loosely packed into a delicate reinforced-concrete frame, and their Ricola Warehouse in Laufen, Switzerland (1987), which, set before the cliff-face of a disused quarry, was faced by way of contrast with fibre-cement planks of varying depth. The simple spatial requirements in each instance enabled the architects to treat the material as the primary aesthetic presence in contrast to the rather passive character of the space-form. This emphasis on the tactile character of material would henceforth become the hallmark of their practice, a mode

that invariably has been at its most effective in small and spatially unified commissions, from their copper-sheathed six-storey signal tower in Basel (1995) to their Dominus Winery [800], in Yountville, California, of 1997, a simple single-storey masonry enclosure made out of granite rocks of varying size held in place by wire mesh. This highly aestheticized approach, with its tendency to emphasize the external surface rather than the internal structure or space, has since become an increasingly decorative aspect of their architecture.

**800** Herzog and de Meuron, Dominus Winery, Yountville, California, 1997.  
Gabion construction in granite.

Peter Zumthor, practising out of Haldenstein in the Graubünden, is the other leading Swiss-German minimalist architect. He first rose to prominence with his all-timber shingle-clad St Benedict Chapel built in Sumvitg in 1988. He would go on to consolidate his emerging craft-based reputation with his thermal baths at Vals of 1996, where thin layers of precisely cut stone (locally quarried gneiss) were used to encase the massive concrete matrix of a reconstituted bathing establishment, yielding a sombre yet sensuously introspective interior partially hidden within the interstices of a rather remote Swiss Alpine village.

Trained as a cabinetmaker and with years of experience in conservation work before beginning to practise as an independent architect, Zumthor could hardly be more removed from the sceptical aestheticism of Herzog and de Meuron, even though he too displays a tendency to favour surface effect over either spatial or structural values.

Despite subtle differences in their approach, both Herzog and de Meuron and Zumthor have nonetheless exercised a common influence on a whole generation of Swiss architects, including, to varying degrees, Diener and Diener,

Gigon/Guyer, Peter Markli, Marcel Meili and the firm of Burckhalter and Sumi. Where the practice of Annette Gigon and Mark Guyer is concerned, among their finest work to date has been the Kirchner Museum in Davos, Switzerland, with which they made their name in 1992. A decade later they capped this triumph with an equally tectonic archaeological park built in Osnabrück, Germany, to commemorate the battle of Varus in AD 9. Both works are predicated on the striking use of contrasting materials: fair-faced concrete with panels of steel-framed translucent glass in the case of the Davos museum, and marine plywood plus Corten steel retaining walls in Osnabrück.

Swiss-German minimalism would also seem to have exercised a certain influence outside the country, notably affecting the work of the Dutch architect Wiel Arets, whose Maastricht Academy of Art (1989–93) [801] was deftly inserted into the historic core of the city. The complex configuration of this building consists of a four-storey trabeated reinforced-concrete frame filled with glass blocks.

**801** Arets, Maastricht Academy of Art, 1989–93.

A comparable emphasis on a single all-enveloping material also characterizes the work of the Japanese architect Kengo Kuma, whose Stone Museum in Nasu in the Tochigi Prefecture (2000) is constructed out of narrow bands of stone. A very similar emphasis is present in Kuma's stone-faced extension of the Victoria and Albert Museum in Dundee, Scotland, completed in 2016.

While a mineral origin is still perceivable in brick, glass, concrete and even metal, it is surely undeniable that stone and wood display their original in nature with a phenomenological intensity that can hardly be rivalled; it is this intensity that endows them with a primordial sensibility that other building materials lack.

Timber has also played a remarkable role in recent bridge construction, particularly in Switzerland, in the hands of such distinguished engineers as Jürg Conzett and Walter Bieler – the former for the inverted, cable-tied timber trusswork of his Traversina footbridge, erected in 1996 across the deep Via Mala ravine in the Graubünden, and the latter for a 30-metre (98-foot) laminated straight-timber span built across the river Thur at Bonaduz in the same year.

An additional factor that has completely transformed the scope of material expression today is the greatly increased ease with which materials can be transported across the globe, from their site of origin to the point of their final application, with stops for specialized fabrication in between. This was already the case with Arata Isozaki's Museum of Contemporary Art, Los Angeles, of 1984, which was clad with a red sandstone quarried in India and machine-cut in Italy. A similar but even more dramatic exercise in global production was the totally glazed exhibition pavilion built in the grounds of the Toledo Museum of Art, Ohio, in 2006 to the designs of the Japanese architects Kazuyo Sejima and Ryue Nishizawa (SANAA). Storey-height sheets of iron-free plate glass were rolled in Germany, shipped to China where they were laminated, tempered, cut and bent, then transported to the United States where, to add insult to injury, they now enclose the Toledo Glass Museum in a city which, prior to the deskilling of American industry, had been one of the primary centres for glass production in North America.

## **Habitat**

Our failure to develop a sustainable, homeostatic pattern of residential land settlement over the past half-century is the tragic corollary of our incapacity to curb our appetite for consuming every possible resource. *Towards an Urban*

*Renaissance*, pointedly published by the British government at the millennium, estimated that 3.8 million new households would be required in the UK up to 2025. It recommended that two-thirds of these units should be built on existing intra-urban detoxified brownfield sites rather than be allowed to contribute to the subdivision of formerly agricultural greenfield land. A rider to the report published in 2005 showed that 70 per cent of then-current British development was on brownfield sites, as opposed to 56 per cent in 1997.

Although aspiration to a middle-class way of life tends increasingly to be the norm irrespective of class, the challenge for architects is how to create a sense of ‘home’ without resorting to kitsch or indulging in a nostalgic iconography that has no relation to our contemporary way of life. Low-rise, high-density housing has long been a viable option: one thinks of the Siedlung Halen, Berne, built to the designs of Atelier 5 in 1960 (see p. 360), and the equally canonical, more extensive Puchenau settlement built in stages along the Danube near Linz to the designs of the Austrian architect Roland Rainer (see p. 587), the first phase of which was completed between 1964 and 1967. What is remarkable about this carpet housing model is the way in which it may be brought to serve the housing needs of different classes, from the urban poor of the developing world, who continue to construct low-rise ‘squatter’ settlements, to the urbanized middle classes of the developed world, who are served by the car and occasionally by public transport. It is perhaps indicative of certain cultural differences that while this mode of settlement may be found fairly frequently throughout Continental Europe, it has generally been resisted as a residential pattern in Anglo-American society. As the transportation specialist Brian Richards noted in his first study, *New Movement in Cities* of 1966, it is economically impossible for public transport to complement car use

without the residential land-settlement pattern having a much higher density than the average suburban subdivision.

While considering the genre of low-rise, high-density housing as designed for low-income urban populations, we should acknowledge two separate experimental housing estates, built in Latin America some forty years apart, that now appear as mirror images of one another: the Previ estate outside Lima, Peru, built in 1974 during the government of Fernando Belaunde Terry, under the direction of the British architect Peter Land; and the realization of a prototypical settlement, designed by the Chilean architect Alejandro Aravena and built under the auspices of the Chilean Ministry of Housing in Iquique, Tarapacá, in 2004 [802]. The Previ estate entailed the construction of twenty-three different types of low-rise units designed by various teams of Peruvian and international architects, while the Elemental project represented a collective effort to provide affordable dwellings without overloading the occupants with debt. The first phase at Iquique comprised one hundred 'starter' units, each 30 square metres (323 square feet) in area and built at the cost of \$7,500 per unit. These three-storey narrow-fronted megara, built of concrete block, provide for a living room/kitchen, a bathroom, a bedroom and an access stair. In order to allow for enlargements by the occupants themselves, the units are spaced apart at intervals equal to their width, so that additional rooms may be constructed easily between the party walls. The block layout also yields a series of small squares capable of functioning as communal spaces.

**802** Aravena, housing project, Iquique, Tarapacá, 2004. Elevation.

The most crucial change that has occurred in the late 20th and early 21st centuries is the engineered eclipse of

subsidized rental housing, which had been central to welfare state policy between 1945 and 1975. This has now been replaced, more or less universally, by the ‘housing market’, which has done little to alleviate either the perennial housing crisis or the proliferation of suburban sprawl. A one-off exception is the medium-rise Quartier McNair [803], completed in the Zehlendorf district of Berlin in 2003 to the designs of Baumschlager and Eberle together with the Swiss architect Anatole du Fresne, who was formerly a member of Atelier 5. The settlement consists of an orthogonal permutation of 263 dwellings of two to three storeys, of varying plan type and size, arranged in an alternating block pattern reminiscent of Le Corbusier’s Pessac housing of 1926 (see p. 168). Despite the green roofs and the deployment of solar panels, it is regrettable from the viewpoint of sustainability that the parking areas were not finished with permeable perforated-concrete paving rather than asphalt. In Switzerland this method, facilitating the absorption of storm water and the seeding of parking areas with grass, is virtually a standard technique; it is only marginally more expensive and is capable of offsetting the ‘urban heat-island effect’ that is exacerbated by the use of asphalt. In the final analysis, it is the overall form rather than the detail that allows the Quartier McNair to function as a potential alternative ‘market’ model for inner-city housing. Not least among its virtues is the fact that it is but twenty minutes by public transport from the centre of Berlin.

**803** Baumschlager, Eberle and du Fresne, Quartier McNair, Zehlendorf, Berlin, 2003.

In terms of providing for the housing needs of the middle classes, Baumschlager and Eberle have designed some of the most viable medium-rise housing settlements of any practice in Europe over the past two decades. Nowhere

have they been more successful in this regard than in their Lohbach Siedlung in Innsbruck, Austria (2000) [804]. This generic four- to six-storey development is predicated on apartments of varying size, planned around four sides of a light-court. What imparts a culturally ecological dimension to these blocks is the fact that apartment balconies on the perimeter may be closed off with full-height folding shutters so that, depending on the movement of the sun and on the presence or absence of the occupants, the blocks appear as forms of varying opacity. The overall composition has been carefully considered in relation to the alpine backdrop, while pedestrian movement at ground level has been enhanced by sensitively landscaped gardens. In addition to the folding shutters, the sustainability of this project stems from the provision of photovoltaic panels, from the harvesting of rainwater, and from the provision of a heat-recovery plant in the basement. At the same time the luxurious ambience of the whole derives from its facing materials: from the combination of copper-clad shutters, glass balustrading, and the sliding full-height timber-louvred screens that cover the window openings.

**804** Baumschlager and Eberle, Lohbach Siedlung, Innsbruck, 2000.

All of these housing schemes are but various attempts to reintegrate the individual dwelling into some kind of collective whole, and it is just this drive to recover a former unity that has led late modern architects like Steven Holl to search for new forms of residential aggregation, from his Fukuoka housing complex, completed in Japan in 1992, to his Hybrid Building in Beijing. The latter comprises a self-contained urban fragment of 728 apartments housing 2,500 people together with the essential services required by a neighbourhood of this size. These services are housed partly in glazed bridges that link the eight apartment towers,

ranging from twelve to twenty-two storeys in height, so as to form a loop around the central open space at ground level. The latter is focused about a cinema complex, suspended above a reflecting pool. The harvesting of rainwater in this ornamental retention basin is only part of the comprehensive sustainable strategy adopted in this development, which includes green roofs, naturally ventilated and illuminated underground parking, external sun blinds, openable windows, and, above all, geothermal heating and cooling.

### **Civic Form**

In a world increasingly depoliticized by the media, ‘the space of public appearance’ (to use Hannah Arendt’s memorable phrase) still remains as a democratic ideal for both architecture and society, particularly at a time when a homeostatically balanced way of life is increasingly undermined by the commodification of both the natural and the man-made worlds. What Arendt intends by this term is made explicit in her study *The Human Condition* of 1958:

*The only indispensable material factor in the generation of power is the living together of people. Only when men live so close together that the potentialities of action are always present can power remain with them, and the foundation of cities, which as city-states have remained paradigmatic for all Western political organization, is therefore indeed the most important material prerequisite for power.<sup>6</sup>*

With these words Arendt characterized not only the latent political and cultural potential of civic form, but also the space of assembly wherever this may still be found within public institutions in general. Over the past few decades civic building of quality has been particularly noticeable in France, above all in the work of Henri Ciriani and Jean Nouvel, with the former subtly continuing the programmatic

approach of Le Corbusier, and the latter favouring a technocratic aesthetic that is, at times, equally concerned with the representation of the cultural institution as a space of public appearance.

In the case of Ciriani, the emphasis has fallen not only on the museum as a microcosmos, but also on its potential to serve as a surrogate for the socially unifying religious building. This aspect manifests itself particularly forcefully in two museums realized by Ciriani towards the end of his career: the Archaeological Museum at Arles, completed in 1991, and the Museum for the First World War at Peronne [806, 807], which was integrated into the remains of a 17th-century fortress in 1994. Notwithstanding the undeniably arresting image of a building faced completely in cobalt-blue glass, the museum in Arles is not easily accessible, largely because, detached from the urban core, it can only be approached via a ring road encircling the city. The articulation of its internal space, with freestanding cylindrical columns, conveys the impression of a Neo-Purist enclave, as removed from everyday life as the collection it houses. Such hermeticism does not arise in the case of the Peronne museum, on account of the immediate proximity of the urban fabric and the presence of an adjacent riverside park. Moreover, the elevation of its concrete mass on *pilotis* enables a carefully orchestrated promenade through the sombre relics of the 1914–18 war to be relieved by views over the park that flanks the building on its south-western face.

**805** Holl, Linked Hybrid, Beijing, 2003–09.

**806** Ciriani, Museum for the First World War, Peronne, 1994. Transverse section.

**807** Ciriani, Museum for the First World War, Peronne, 1994. General view.

The eventual size of museums is limited if they are to retain their institutional viability and civic significance. As Le Corbusier's 1934 proposal for a 'Musée à croissance illimitée' demonstrated, a museum of unlimited expansion is self-contradictory both conceptually and urbanistically. This limit, difficult to specify in advance, may partially explain why the new Museum of Modern Art in New York (2004) has now attained a size at which it has begun to lose its capacity to be read within the city as a discrete civic institution. This has come about despite the brilliant orchestration of its penultimate extension by the Japanese architect Yoshio Taniguchi, who attempted to compensate for its extraordinary size and scale by introducing a public galleria, as a virtual right of way through the building, within the street grid of its Manhattan mid-block site.

Richard Meier's Getty Center, completed as a city-in-miniature on a prominent hilltop site in the Brentwood area of Los Angeles in 1997, has an indisputable civic character, as does his Hague City Hall complex, realized in 1995. Apart from being a megaform accommodating offices, shops, a municipal library and a council chamber, what is decisive about this institution is the fact that its thirteen-storey mass encloses a top-lit galleria [809] 183 metres (600 feet) long, modulated by footbridges, fed by freestanding elevators, which link the corridors of the flanking offices. This is a civic volume rivalling in its extent and height the largest galleria of the 19th century, the Galleria Umberto I erected in Naples in 1891. In a city that in recent years has seen its intimate, low-rise, brick-lined street fabric overwhelmed by random high-rise development, Meier's City Hall presents itself as a civic oasis, capable of consolidating a new scale around itself while compensating for the loss of urbanity in the city as a whole. The civic appeal of the galleria itself stems in no

small measure from the fact that it is a large, top-lit public space permanently shielded from the inclemencies of the Dutch climate.

A sense of *civitas* on a heroic scale is to be found in the work of the Berlin architects Axel Schultes and Charlotte Frank, most notably in their winning Spreebogen competition entry of 1993. The scheme assumed the form of a temenos – a strip of federal buildings to be known as the ‘Band des Bundes’ – initially projected as the administrative centre of a reunified Germany four years after the fall of the Berlin Wall in 1989. The Wall had hitherto divided not only East and West Berlin, but also, on a global scale, the democratic West from the Communist East. The Schultes-Frank entry for this international competition was the only scheme to capture the urbanistic and symbolic importance of the site, in terms both of the history of the previous half-century and of the way in which this void in the heart of the city had served repeatedly as the context for tragically contrasting conceptions of Germany’s destiny.

Out of this proposal came the architects’ German Chancellery [808], completed in 2001 as a partial realization of their original scheme, the full extent of which will not now be realized – a regrettable circumstance given the representational status of the building, remarkable not only for its vivacity but also for the lightness of its Neo-Baroque manner, executed in concrete and painted white. Defying convention, the architects chose to represent the German state through an allusion to the scale and deportment the Ali Qapu palace in Isfahan. Bounded by five-storey ministerial offices to the north and south, this central pavilion faces eastwards onto a *cour d’honneur* and westwards onto the Spree River. Patently influenced by Louis Kahn’s sense of monumentality but totally removed from his syntax, the sky lobby of the Chancellery affords a panoramic view over the new Reichstag realized to the

designs of Paul Wallot in 1894 and reconstructed by Foster Associates in 1999.

**808** Schultes and Frank, German Chancellery, Berlin, 2001. Axial view of the *cour d'honneur* with offices.

**809** Meier, City Hall, The Hague, 1995. View of galleria.

The manifestation of civil society in built form is difficult to achieve in our commodified world of universal consumerism, wherein – as Arendt wrote in 1958 – ‘we consume ... our houses and furniture and cars as though they were the “good things” of nature which would spoil uselessly if they are not drawn swiftly into the neverending cycle of man’s metabolism with nature’.

Nothing could be further from this than Colin St John Wilson’s British Library [811], realized in London at virtually the same time as the French Bibliothèque Nationale after a delay of more than two decades. Strongly influenced by the work of Alvar Aalto, this building assumes a more overtly contextual character on account of its organic composition and its facing in red brick, which links it empathetically, in terms of both material and scale, to the Gothic Revival head building of the adjacent St Pancras Station, completed in 1874. While it lacks the axial monumentality of its Parisian counterpart, the British Library is obviously predicated on a more expressively organic and contextual articulation of the institution. Within and without, the vast scale and complexity of the programme are broken down into a number of discretely articulated collections, each subtly connected to the others.

**810** Schultes and Frank, Baumschulenweg Crematorium, Treptow, Berlin, 1999.  
View of central hypostyle hall.

**811** St John Wilson, British Library, London, 1995.

Like most of the works featured in this postscript, the British Library may be seen as a megaform, that is to say as a civic institution that may be experienced by the society as a representation and as a ‘space of public appearance’, while having, at the same time, the typographic character and the scale of a landmark. It is evident that certain programmes lend themselves to this form of embodiment and interpretation more readily than others. I have in mind such institutions as town halls, theatres, museums, hospitals, universities and airports, of which Richard Rogers’s ultimate masterwork, his Barajas Airport, Madrid (2006) [813], is an outstanding example.

It is fitting given their mutual authorship of the Centre Pompidou at the very beginning of their separate careers that an equally arresting megaform should have been realized recently to the designs of Renzo Piano, namely the half-kilometre-long Stavros Niarchos Foundation Cultural Center [812], built just outside Athens as a gargantuan earthwork in 2016. Within this lushly landscaped artificial outcrop are housed two subterranean auditoria, which may be accessed on foot at grade via a so-called agora let into the side of the earthwork. These large and small auditoria have seating capacities of 2,000 and 400 respectively. The other civic institution situated within the body of the megaform is the Greek Library, in addition to the provision of parking. It is perhaps even more pertinent, given the context, that this ‘acropolis’ should culminate at its highest point in a belvedere, sheltered by a typical ‘high-tech’,

lightweight canopy set before the turbulence of a wine-dark sea.

**812** Piano, Stavros Niarchos Foundation Cultural Center, Athens, 2016.

**813** Richard Rogers Partnership, Terminal 4, Barajas Airport, Madrid, 2006.

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## Note for the fifth edition

The bibliography for the fifth edition has been updated not only to cover the titles upon which our research was based but also to include related works for the purposes of further reading and research.

## Abbreviations

**AA**      Architectural Association, London

**AAJ**      Architectural Association Journal

**AAQ**      Architectural Association Quarterly

**AB**      Art Bulletin

**AD**      Architectural Design

**AIAJ**      American Institute of Architects Journal

Architecture, mouvement et continuité

**AMC**

**AR**      **Architectural Review**

**A+U**      **Architecture and Urbanism**

**JAE**      **Journal of Architectural Education**

**JSAH** **Journal of the Society of Architectural Historians**

**JW&CI**      **Journal of the Warburg and Courtauld Institutes**

**RIBAJ** **RIBA Journal**

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