

the surface. Certain of the 'set-pieces' of earlier modern architectural literature are no longer adequate. The concept of an 'International Style', for example, tends to obscure the richness and regional diversity of modernism between the wars. Liberal assumptions about the 'democratic' nature of modern architecture require ever greater revision the more is known about Italy in the 1930s or Spain in the 1950s. A historiography based upon the cultural biases and power structures of the North Atlantic region cannot be justified when dealing with the world-wide dissemination of modern architecture in places like Latin America, the Middle East or India. Much still needs to be done on the intermingling and collision of 'universalizing' types with national and regional traditions, a basic feature of modernism (and possibly of modernization itself) from the beginning. Greater precision has to be given to the personal and period elements of style, and to the interplay between individual inventions, vernacular types and technological norms. Modernism needs to be examined in relation to a variety of world-views and social projects, but while the political context may be crucial, a distinction must be made between the outline of a task and the symbolization which leads to architectural form.

Many of these points were raised in the first edition of *Modern Architecture Since 1900*, but the time has come to pursue them further. The simplest way of demonstrating how the third edition differs from the first is to list the main changes and additions. (A more detailed rationale is supplied in the Bibliographical Note at the end of the book on page 691.) There are seven new chapters in all, dealing with such subjects as: the industrial city and the invention of the skyscraper in the late nineteenth century (Chapter 2); national myths and classical transformations in the early twentieth (Chapter 8); the dissemination of modern architecture in several continents in the 1930s (Chapter 21); disjunctions and continuities in European architecture soon after the Second World War (Chapter 26). The final three chapters (33, 34, 35) form an entirely new Part IV on recent world architecture, organized around such general themes as the re-evaluation of the past, the response to local climates and cultures, the celebration of technology, and the re-emergence of abstraction. Rather than relying upon the usual

transient 'isms', this part of the book selects individual buildings and ideas that seem to add to an architectural culture of long-term value. Beyond the advertised fashions, the years since 1980 have yielded up an architecture of great diversity and richness, even if this has been realized against a background of growing urban disruption and mounting ecological crisis.

The creation of the third edition has been a massive undertaking for all concerned – author, publisher, editors, picture researchers and designer – and represents something like a collective act of faith. When Richard Schlagman took over Phaidon Press in 1990, he and his new architectural editor David Jenkins immediately expressed interest in the long-term future of this book. The initiative for a new edition came at the right time, as there was just about the distance necessary to allow a major revision. The project could not have been carried through without the skill and tact of the same editor who oversaw first and second editions, namely Bernard Dod. I also wish to thank the picture research department (Philippa Thomson in particular) for tracking down photographic treasures in remote parts of the world, and the designer Isambard Thomas for his patience and sensitivity in finding the right form. Last, but not least, I am grateful to my family, Catherine, Louise and Bruno, for sustaining me through a testing transition.

William J. R. Curtis, Cajarc, 1995

introduction

We have long come to realize that art is not produced in an empty space, that no artist is independent of predecessors and models, and that he no less than the scientist and the philosopher is part of a specific tradition and works in a structured area of problems.
Ernst Kris, 1952

The historian who sets out to write a history of modern architecture has necessarily to begin with a definition of his subject. Many past eras have referred to their own architectures as 'modern', so that the term on its own is scarcely discriminating. The 'modern architecture' which is the main topic of this book was an invention of the late nineteenth and early twentieth centuries and was conceived in reaction to the supposed chaos and eclecticism of the various earlier nineteenth-century revivals of historical forms. Basic to the ideal of a modern architecture was the notion that each age in the past had possessed its own authentic style, expressive of the true tenor of the epoch. According to the same outlook, a break was supposed to have occurred somewhere around the middle of the eighteenth century, when the Renaissance tradition had faltered, leaving a vacuum into which had flowed numerous 'inauthentic' adaptations and recombinations of past forms. The task, then, was to rediscover the true path of architecture, to unearth forms suited to the needs and aspirations of modern industrial societies, and to create images capable of embodying the ideals of a supposedly distinct 'modern age'.

Already around the mid-nineteenth century such theorists as César Daly, Eugène Viollet-le-Duc and Gottfried Semper were discussing the possibility of a genuine modern style, but they had little conception of its form. It was not until just before the turn of this century, with considerable stimulus from a variety of intervening structural inventions, that imaginative leaps were made in an attempt at visualizing the forms of a new architecture. This pioneer phase, which resulted in (among other things) Art Nouveau and the Chicago School, was the property of the 'advanced' industrial nations of Western Europe and the United States. Even then there was relatively little consensus concerning the appearance of a new architecture; there were, rather, broadly shared aspirations capable of visual translation in a variety of ways. 'Modern architecture', it was intimated, should be based directly on new means of construction and should be disciplined by the exigencies of function; its forms should be purged of the paraphernalia of historical reminiscence, its meanings attuned to specifically modern myths and experiences; its moralities should imply some vision of human

betterment and its elements should be capable of broad application to certain unprecedented situations arising from the impact upon human life and culture of the machine. Modern architecture, in other words, should proffer a new set of symbolic forms more directly reflecting contemporary realities than had the rag-bag of 'historical styles'.

In actuality, between about 1890 and the 1920s a number of positions emerged which claimed 'modernity' as a chief attribute, until by the latter decade it seemed as if a broad consensus had at last been achieved. At any rate, this is what some practitioners and propagandists wished their contemporaries to believe. They thus invested considerable effort in distinguishing the characteristics of the 'International Style' – that expressive language of simple, floating volumes and clear-cut geometries which seemed to be shared by such diverse architects as Le Corbusier, J. J. P. Oud, Gerrit Rietveld, Walter Gropius, Ludwig Mies van der Rohe, and the rest. *This* they claimed was the one true architecture for the twentieth century. Other contemporary developments were conveniently overlooked, and everything was done to plaster over differences and preserve the façade of a unified front.

But history did not stand still, and the same creative individuals who had seemed to be pushing towards a common aim went their own separate ways; in turn, seminal ideas were transformed by followers. Thus the architecture which was supposed (wrongly, it turns out) to have expunged tradition founded a tradition of its own. In the years after the Second World War, many tributaries and transformations were developed around the world. Reactions, critiques and crises – not to mention widely differing circumstances and intentions – compounded the variety. If a historian were to look back in a century's time at the period 1900–95, he would not, therefore, be overwhelmed by some single, monolithic main line of development running from the 'pioneers of modern design' (to use Nikolaus Pevsner's phrase) up to the architecture of the last quarter of the twentieth century. But he would be struck by the emergence and domination of new traditions gradually overrunning the inheritance of attitudes and vocabularies bequeathed by the nineteenth century. Moreover, this insinuation of new ideas might be

seen in global terms, working its way bit by bit into different national and regional traditions, transforming them and being transformed by them. This book takes such a long view.

Here it has to be admitted that there are particular difficulties of a sort which confront any interpreter of the recent past. The historian who sets out to write a history of modern architecture will be describing and interpreting traditions which have not yet come to an end. There is the danger that he may impose too exclusive a pattern on recent events, so making them point inevitably to whatever aspects of the architecture of his own time he happens to admire. History then degenerates into polemic. This is to be expected in the fashion-conscious literature which always seems to follow in the wake of contemporary movements, but similar faults are found to lie in the carefully pondered scholarly works which pass as the standard books on modern architecture. For all the force and clarity of their achievement, such early chroniclers as Sigfried Giedion, Henry-Russell Hitchcock and Nikolaus Pevsner tended to share the progressivist fervour of their protagonists. Committed in advance to the idea of a unified 'spirit of the age', they felt they recognized its architectural expression in the works of the modern movement of the 1920s, and saw it as their job to write books of revelation, charting the unfolding world drama of the 'true architecture of the times'. (See Bibliographical Note, p. 690.) It is obvious from my earlier remarks that I do not wish to add some glowing extra chapters to such a saga; nor, let it be said, do I wish to add to the ever-growing heap of those 'revisionist' histories intent on demonstrating that modern architecture was some temporary fall from architectural grace. The historian of the present perhaps has a unique and almost unprecedented opportunity to see his subject (or, at any rate the early stages of it) with a certain dispassionate distance, and this should not be thrown away by indulgence in propaganda. Each year more buildings are created and more quarries of evidence on developments earlier in the century are unearthed, and this alone necessitates a revision of the broad picture. But history involves constant reinterpretation as well as the presentation of new facts, and even buildings, personalities and events that once seemed to have some immutable status must be rescrutinized and reconsidered. Between

the ever-growing collection of specialist monographs of quality and the broader but somewhat biased surveys, there is little that can stand scrutiny as a balanced, readable overall view of the development of modern architecture from its beginnings until the recent past. This book is an attempt at bridging the gap.

The earliest historians of modern architecture (perhaps one should call them 'mythographers') tended to isolate their subject, to oversimplify it, to highlight its uniqueness in order to show how different the new creature was from its predecessors. Parallel developments, like Art Deco, National Romanticism, or the continuation of the classical Beaux-Arts, were relegated to a sort of limbo, as if to say that a building in the 'wrong style' could not possibly be of value. This was both heinous and misleading. It seems to me that the various strands of modern architecture are best understood and evaluated by being set alongside other architectural developments parallel with them, for only then can one begin to explain what patrons and social groups used modern forms to express. Moreover, artistic quality, as always, transcends mere stylistic usage.

Another myth that the earliest writers on modern architecture tended to maintain – again to distinguish the new forms from their 'eclectic' predecessors – was the notion that these forms had emerged somehow 'untainted' by precedent. Again this married well with the progressivist bias in their history-writing, but it was scarcely a sensible way of explaining forms. In their eagerness to demonstrate their 'fresh new start', numerous architects between 1900 and 1930 certainly played down the influence of earlier architecture upon them, but this does not mean that one should take their claims at face value. Indeed, the most profound architects of the past hundred years were steeped in tradition. What they rejected was not so much history *per se*, as the facile and superficial reuse of it. The past was not, therefore, rejected, but inherited and understood in new ways. Moreover, modern architecture itself eventually created the basis for a new tradition with its own themes, forms and motifs.

Architecture is a complex art embracing form and function, symbol and social purpose, technique and belief. It would be as inadequate in this case simply to catalogue the ins and outs of style as it would be to reduce modern architecture to a piece

in a chess game of class interests and competing social ideologies. It would be as mistaken to treat technical advances in isolation as it would be to overstress the role of social changes or the importance of individual imagination. It may be that facts of biography are most appropriate (as in the case of Le Corbusier or Frank Lloyd Wright) or that analysis of structure or type is more in order (as with the American skyscraper); it may be right to work at the scale of the individual building in one case, the scale of the city in another; and while a book of this kind obviously cannot portray the entire cultural setting of twentieth-century architecture, it can avoid suggesting that buildings come about in a social vacuum by concentrating on patronage, political purpose and ideological expression in some instances.

Modern architecture has emerged against a setting of major social and technological transformations; it has registered a gradual shift from rural to urban existence in the industrializing world. It has served a multitude of interests and functions from mass housing to the glorification of capitalist institutions, from rarefied private villas to spaces of sacred meaning. It has been used both to break with the immediate past and to reinstate older continuities, both to handle the problems of the big city and to serve the aims of contemplative mysticism. In the circumstances it would be unwise to insist upon a simplistic formula governing the connection between 'ideology' and forms. Architecture is rooted in the processes and paradoxes of society, but it also transforms these into its own terminology: it works by parallel but different rules. The trick is to find the right balance between the internal logic of the discipline and the influence of cultural forces, between the social and the personal dimensions, between the unique order of the individual invention and that which is normative or typical.

Here I must confess to a certain focused interest on questions of form and meaning. Most of the buildings to be discussed in this book are outstanding works of art which therefore defy simplistic pigeon-holing. They are neither direct expressions of political beliefs, nor mere stylized containers of functions, but rich compounds of ideas and forms, which achieve symbolic resonance beyond the level of mere 'signs'. They may be

thought of as dense emblems, microcosms, combining idealized visions of society with three-dimensional interpretations of the human condition. They transcend obvious representation, working on levels that touch mind and senses through the abstract control of space, light, structure, geometry, material and movement. I believe it should be a central aim of any history of architecture to explain why certain configurations and technical solutions were felt appropriate to a particular task, and to probe into underlying meanings and intentions. That simple and misleading word 'style' masks a multitude of sins, and when one investigates an artist of any depth one discovers a sort of mythical content which pervades the forms. We have to do with the ways in which fantasies, ideas, even intuitions of a moral order, are translated into architectural terms.

Next there is the tricky problem of where to begin: when does a specifically 'modern architecture' appear? Enough has been said to suggest that there is no easy answer to this question. It is interesting to note the variety of starting-points of earlier histories, naturally reflecting the writers' various notions of modern architecture. Thus, Nikolaus Pevsner, who wished to stress the social and moral basis of the new architecture, began his *Pioneers of the Modern Movement* (1936) with William Morris and the Arts and Crafts of the 1860s. Sigfried Giedion, who was obsessed with the spiritual fragmentation of his own time and saw modern architecture as a unifying agent, portrayed the nineteenth century, in his *Space, Time and Architecture* (1941), as a split era – on the one hand the 'decayed' forms of eclecticism, on the other those 'emergent tendencies' (many of them in engineering) which pointed to a new synthesis of form, structure and cultural probity. Henry-Russell Hitchcock, who was preoccupied with describing the visual features of the new architecture, suggested in *The International Style* (1932, co-author Philip Johnson), that modern architecture synthesized classical qualities of proportion with Gothic attitudes to structure. In his later writings, though, Hitchcock became less adventurous, preferring to avoid sweeping theories of origins in favour of a meticulous, encyclopedic cataloguing of the sequence of styles.

The emphasis of history-writing was bound to

change as the modern tradition itself grew longer and more varied. Historians after the Second World War perceived their subject in a longer perspective and constructed more complex lineages. Bruno Zevi (e.g. *Storia dell'architettura moderna*, 1950) advocated an 'organic' cultural synthesis extending the spatial principles of Frank Lloyd Wright. Colin Rowe (in celebrated articles of the late 1940s) explored classical continuities within modernism and probed the ideas behind the forms. Reyner Banham, in *Theory and Design in the First Machine Age* (1960), re-created the theoretical background to the first three decades of the twentieth century and investigated the visual conventions and symbolic meanings of the 'machine aesthetic' of the 1920s. Peter Collins's *Changing Ideals in Modern Architecture* (1965) concentrated more upon theories than actual buildings, tracing several of the intellectual components of the modern movement to nineteenth-, even eighteenth-century texts. The writings of Leonardo Benevolo (e.g. *Storia dell'architettura moderna*, 1960) stemmed from an entirely different historiographical tradition, dealing with social factors and the reception of architecture by the public. For him the crucial fact was the Industrial Revolution, modernism emerging as a doomed effort at solving the problems of the expanding city. Later writers preoccupied with the crisis of industrialization such as Manfredo Tafuri and Francesco Dal Co (1976) or Kenneth Frampton (1980), built upon these foundations to articulate their own versions of a pre-history but with a greater awareness of the political and ideological contradictions of modern architecture (see Bibliographical Note, p. 690).

Here I must emphasize that the stress of this book is less on the theoretical roots of modern architecture than on its emergence and ensuing development. This is quite deliberate. For one thing I wish to insist upon a distinction between inherited theories and actual architectural ideas; for another it is the later (rather than the earlier) phases of modern architecture which have been neglected. It is now nearly three-quarters of a century since such seminal works as the Villa Savoye or the Barcelona Pavilion were created; but the past 45 years are still navigable only with the aid of a few treacherous maps distorted by fashionable tags and 'isms'. A comprehensive treatment of the post-Second World

War period is still impossible, but one can at least suggest a scheme which is not simply a one-way road towards some tendency or other of the very recent past. Moreover, history does not work like a conveyor belt moving between one point and another. A tradition may be ruled by dominant forms or governing principles, but it may also contain diverse strands, regional emphases, internal loops, disjunctions and continuities. In turn each artist develops a special relationship with the past. A personal language may crystallize features of its period and society, yet draw inspiration from several sources inside and outside architecture. Buildings of any depth occupy time on several levels, transmuting traditions near and far, transforming other realities in inner and outer worlds. It is misleading to treat them merely as parts or products of movements; the more interesting the individual creation, the harder it is to locate it in a particular chronological slot.

Thus the problem of origins is handled in the first part of this book, not through some hapless search for the first truly modern building (or something of the kind), but through the more fruitful approach of tracing the way inherited strands of thought come together in various individual minds in the last few years of the nineteenth century and the first few years of the twentieth, for it was then that *forms* were invented to express, simultaneously, a revulsion against superficial revivalism, and confidence in the energies and significance of modern life. It was the era of Art Nouveau, of Horta, Gaudí and Mackintosh; of Wagner, Hoffmann and Loos; of Sullivan's and Root's Chicago skyscrapers, and Wright's early houses with their new sense of space; of Behrens's and Perret's attempts at employing new methods and materials in the service of sober ideas abstracting basic classical values. It was the era too of Cubist and Futurist experimentation in the arts. Pevsner justly described it as the 'pioneer' phase of modern design, and this seems fair enough so long as one is not tempted to write off its creations as mere 'anticipations' of what came later, and so long as one does not imagine that the path from this exploratory period to the 1920s to have been straightforward. The future 'modern masters' both rejected and extended their immediate predecessors as they steered their way through a legacy of nineteenth-century dilemmas:

how to reconcile old and new, mechanical and natural, utilitarian and ideal? In turn they grappled with the contradictions of the industrial city and with conflicts between national and international definitions of culture. Most of them were exposed to regionalist formulations or versions of classicism during their formative years, and these influences were gradually absorbed into their work through a process of abstraction.

The second part of the book concentrates upon the crystallization of modern architecture between the wars. One does not have to be an advocate of the notion of 'classic moments' in art to single out the 1920s as a remarkable period of consolidation, particularly in the Netherlands, Germany, France, the United States and the Soviet Union. In retrospect this has been called the 'heroic period' of modern architecture; during it Le Corbusier, Mies van der Rohe, Walter Gropius, Erich Mendelsohn, Gerrit Rietveld, Konstantin Melnikov, Rudolph Schindler and Richard Neutra (to mention only a few) created buildings of such innovatory force that they dislodged the hold of previous traditions, laying down new definitions of architecture for the future. It is precisely because this decade has been endowed with epic significance that one must be wary of over-selective treatments of it. In reality several ideals and definitions of 'the modern' coexisted in the 1920s, sometimes overlapping, sometimes conflicting: the functionalism and 'new objectivity' of Hannes Meyer; the lofty idealism of Le Corbusier; the controlled expressionism of Erich Mendelsohn; the primitivism and nature worship of Wright. To find the right balance between period concerns, personal style and the intentions of individual works, it is necessary to probe beyond appearances to the level of spatial organization and generating ideas.

The modern movement was a revolution in social purpose as well as architectural forms. It tried to reconcile industrialism, society and nature, projecting prototypes for mass housing and ideal plans for entire cities (e.g. Wright's Broadacre City or Le Corbusier's Ville Radieuse). But there were several ideological roots to these Utopian aspirations and efforts at reform, and they were in turn implicated in a wide range of political agendas. The middle part of the book analyses the problematic relationship between ideology and modern

architecture in the Soviet Union of the 1920s, as well as totalitarian reactions against modernism in the following decade. It also considers the transformation of classicism in Fascist Italy and in social democracies like Finland and Sweden, and the interweaving of nationalism, internationalism and regionalism in several parts of the Mediterranean, Asia, Latin America and Africa. The conflicts of this period constitute much more than a battle of styles: modernism challenged the status quo, articulated new social visions and suggested alternative ways of life; it played an active role in the process of modernization.

Once a tradition has been founded it is transformed as new possibilities of expression are sensed, as values change, or as new problems are encountered. Moreover, new individuals inherit the altered principles and cultural definitions implicit in the prototypes and extend these in their own directions. By the outbreak of the Second World War branches of the modern movement had been founded in places as diverse as Finland and Britain, Brazil and South Africa, Mexico and Japan. A 'second generation', including figures such as Alvar Aalto, Berthold Lubetkin, Giuseppe Terragni and Oscar Niemeyer, modified seminal ideas to fit new intentions and to deal with entirely different climates, cultures, traditions. Meanwhile the originators themselves pursued their researches, reacting to the political and economic crises of the 1930s with less dogmatic versions of machinism, and with more accommodating versions of the 'natural', the vernacular and the 'primitive'. No single tag such as the 'International Style' will do justice to the range and depth of modern architecture produced between the wars.

The third part of the book examines the global dissemination of modern architecture from the 1940s to the late 1970s. Here we come face to face with problems attached to the phenomena of transplantation (as modernism was grafted into cultures quite different from those in which it began), devaluation (as symbolic forms were gradually emptied of their original polemical content, and cheapened by commercial interests or state bureaucracies), and regeneration (as basic concepts were re-examined or rejected, and as new expressive territories were opened up). As well as the late works of the ageing 'masters' of modern

architecture, this part of the book considers the gradual modification of earlier Utopian models of urbanism; the emergence of groups seeking a less absolutist approach to planning, such as Team X; the development of new 'strains' of modernism in diverse national cultures (e.g. Spain, Australia, India, Japan); general themes such as 'regionalism' and the reading of urban context; adaptation to local climates and cultures in developing countries; building types, like the high-rise apartment block and the glass-box skyscraper; and individual designers such as Louis Kahn, Jørn Utzon, Luis Barragán, Aldo van Eyck, Carlo Scarpa, Alejandro de la Sota, José Antonio Coderch and Denys Lasdun.

In the 1960s and 1970s crises and critiques occurred both inside and outside the modern movement, suggesting a more overt reliance on the past and on lessons to be learned from the traditional city; the progressive ethos of the 'modern project' also came under attack. Theoretical writings of the period encouraged a return to historical examples, through the manipulation of signs and references, or through the abstraction and transformation of long-established urban types. By the end of the 1970s it was fashionable to suggest that the way forward lay in going back. 'Postmodernism' emerged with its arbitrary recipes and quotations, and was soon accompanied by a collection of revivalisms and mannerisms in which any period of the past was game. When the Introduction to the first edition of this book was written in 1981 it stated: 'Modern architecture is at present in another critical phase, in which many of its underlying doctrines are being questioned and rejected. It remains to be seen whether this amounts to the collapse of a tradition or another crisis preceding a new phase of consolidation.'

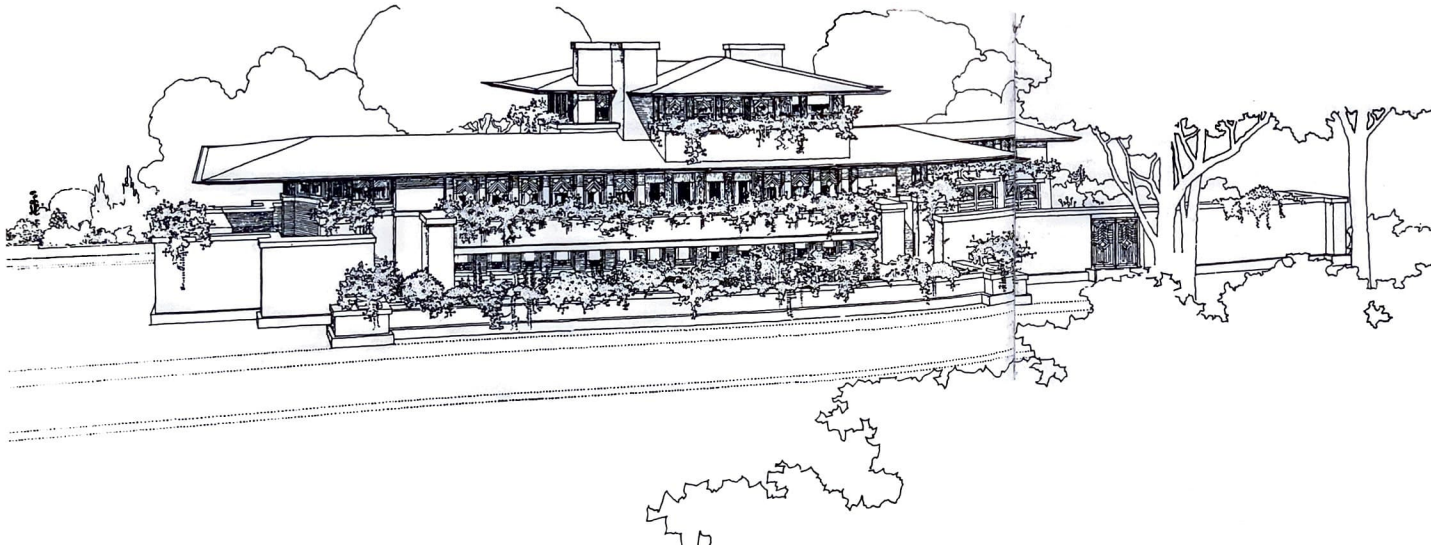
Despite the rhetoric about the 'end of an era', postmodernism proved to be ephemeral. In reality there was yet another reorientation in which certain core ideas of modern architecture were re-examined but in a new way. For the third edition (1996) a fourth part has been added which deals with the complex development of world architecture since around 1980. This avoids standard critical postures and largely fictional 'movements' and tries to single out buildings and tendencies of lasting value. The net is cast wide and includes the Third World as

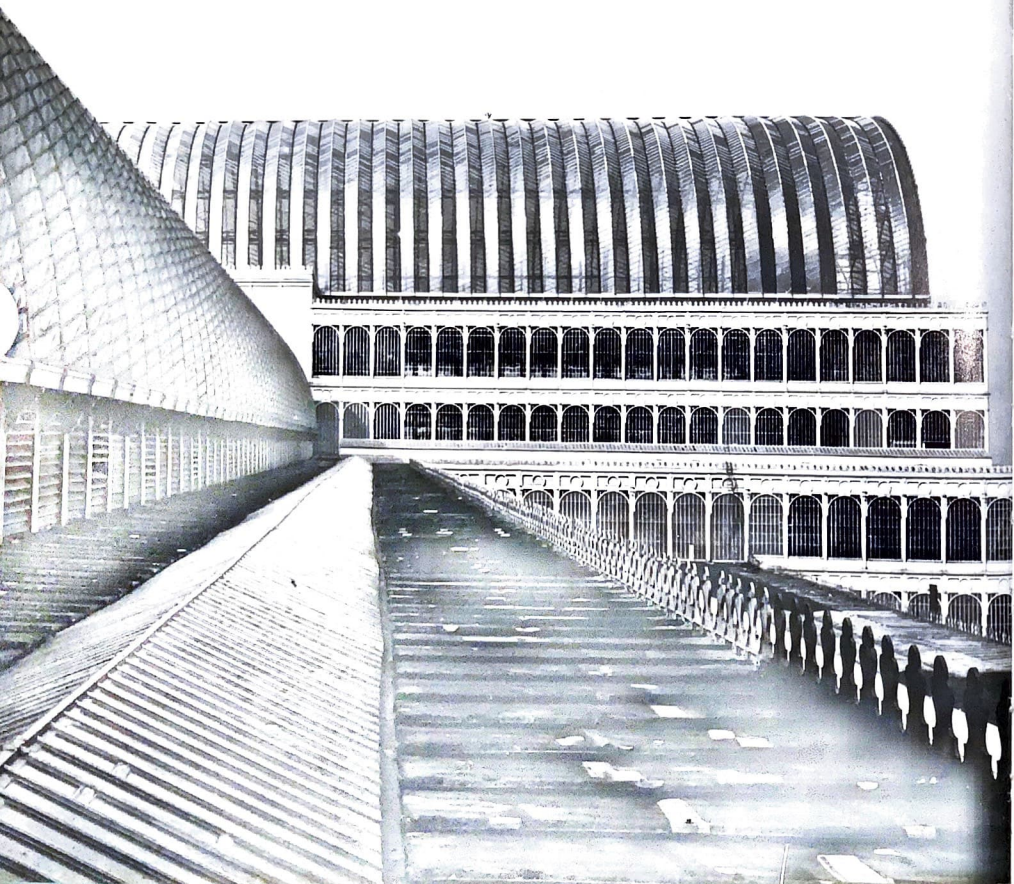
well as the First. Examples are drawn from places as diverse as Spain and India, Finland and Australia, France and Mexico, the United States, Switzerland and Japan. It seems that there are several 'cultures of modernity' in the recent past, and that these blend together long-term patterns and agendas with contemporary problems and preoccupations. Increasingly, architectural ideas are crossing frontiers, and this part of the book is concerned with the intermingling of new and old, local and universal. It postulates the idea of a modern tradition with several strands and considers diverse ways in which ideas generated earlier in this century are being cross-fertilized and transformed in response to context and cultural memory as well as to rapidly changing social and technological conditions. The backdrop here is the exploding 'information' metropolis, a system of visible and invisible networks which is demolishing old definitions of country and city, and which is requiring a new scale of thinking somewhere between architecture, urbanism, landscape art and territorial planning.

It is through the close analysis of individual works of high intensity – their guiding ideas, their spatial structure, their societal myths, their responses to culture, technology and nature – that one may begin to sense the deeper currents of a period. If the last part of the book singles out buildings like Juan Navarro Baldeweg's Congress Hall in Salamanca, Spain (1985–92), Norman Foster's Hong Kong and Shanghai Bank (1979–85), Balkrishna Doshi's studio 'Sangath' in Ahmadabad, India (1979–81), Juha Leiviskä's Myrskylampi Church, near Helsinki, Finland (1984–7), or Tadao Ando's Chikatsu-Asuka Museum, in Japan (1989–93), it is not just because they are outstanding recent achievements judged in purely architectural terms. It is also because they are among the recent buildings to draw meaning from their respective places and societies, while contributing to a global architectural culture of substance. They remind us that modernism in the late twentieth century possesses a complex identity; continuing to aspire to a certain universality, even as it reacts to different territories and traditions; stimulating radical innovation even as it reactivates its own generating principles; inspiring new visions for the future, even as it transforms the past.

Perhaps it is inevitable that, as the book draws towards the present, the author will fall into some of the pitfalls of his predecessors in championing some aspects, and chastising others of the contemporary situation. I can at least say that it has been my aim to present a balanced picture, maintain a long historical perspective, and make the basis of any judgements clear. We live in a confused architectural present which views its own past through a veil of myths and half-truths (a number of them manufactured by historians) with a mixture of romanticism, distortion and bewilderment. A freedom of choice for the future is best encouraged by a sensible, accurate and discriminating understanding of one's place in tradition. This book was written partly with the idea that a historical bridge might be built across the stream of passing intellectual fashions to a more solid philosophical ground, partly with the hope that this might encourage a return to basic principles. But such aims have been secondary: the first thing a historian ought to do is to explain what happened and why, whatever people may now think of it.

part 1 the
formative
strands
of
modern
architecture





1

the idea of a modern architecture in the nineteenth century

Suppose that an architect of the twelfth or thirteenth century were to return among us, and that he were to be initiated into our modern ideas; if one put at his disposal the perfections of modern industry, he would not build an edifice of the time of Philip Augustus or St Louis, because this would be to falsify the first law of art, which is to conform to the needs and customs of the times.

Eugène Viollet-le-Duc,
1863

1 Joseph Paxton, Crystal
Palace, London, 1851

There is a tidy and misleading analogy between history and human life which proposes that architectural movements are born, have youth, mature, and eventually die. The historical process which led to the creation of the modern movement in architecture had none of this biological inevitability, and had no clear beginning which can be pinpointed with precision. There were a number of predisposing causes and strands of ideas, each with its own pedigree. Although the critical synthesis began around the turn of this century, the idea of a *modern* architecture, in contrast to a revived style from some earlier period, had been in existence for more than half a century.

But this notion of a 'modern' architecture was in turn rooted in developments of the late eighteenth century, in particular the emphasis on the idea of progress. For basic to the conception was a sense of history as something which moves forward through different 'epochs', each with a spiritual core manifesting itself directly in the facts of culture. From this intellectual standpoint it was possible to speak of the way a Greek temple or a Gothic cathedral had 'expressed their times' and to assume that modern buildings should do the same. It followed that revivals should be regarded as failures to establish a true expression. Destiny therefore required the creation of an authentic style 'of the times', unlike past ones, but as incontrovertible, as inevitable-seeming, as they. The question was: how could the forms of this 'contemporary' style be discovered?

Related to the birth of progressive ideals was another eighteenth-century development that left its legacy to the nineteenth: the loss of confidence in the Renaissance tradition and the theories which had supported it. This erosion was caused, in part, by the growth of an empiricist attitude which undermined the idealistic structure of Renaissance aesthetics, and by the development of history and archaeology as disciplines. These brought with them a greater discrimination of the past and a relativist view of tradition in which various periods could be seen as holding equal value. The notion of a single point of reference, 'Antiquity', thus became increasingly untenable. The situation has been characterized as 'the loss of absolute authority' of Renaissance norms. A vacuum of sorts was created into which numerous temporary stylistic

dictatorships would step, none of them with the force of conviction, or with the authority, of their predecessor. A point would eventually be reached in the nineteenth century when a revival of a Greek, a Renaissance, an Egyptian or a Gothic prototype might seem equally viable in the formulation of a style.

Another major force in the creation of the idea of modern architecture was the Industrial Revolution. This created new patrons, generated new problems, supplied new methods of construction (e.g. in iron), and suggested new forms. A split of sorts was created between engineering and architecture, with the former often appearing the more inventive and responsive to contemporary needs. At a deeper level still, industrialization transformed the very patterns of life in country and city and led to the proliferation of new building tasks – railway stations, suburban houses, skyscrapers – for which there was no obvious convention or precedent. Thus the crisis concerning the use of tradition in invention was exacerbated by the creation of novel types of building with no certain pedigree.

Moreover, industrialization disrupted the world of crafts and hastened the collapse of vernacular traditions. Machine work engendered a split between hand, mind and eye in the creation of utilitarian objects, and standardization brought with it a loss of vital touch and impulse. Mid-nineteenth-century moralists such as A.W.N. Pugin, John Ruskin and William Morris felt that mechanization was bound to cause degradation in all compartments of life, at the smallest and largest scales of design. They therefore advocated a reintensification of the crafts and a reintegration of art and utility. Their aim was to stem the alienation they felt grew automatically from the disruptive effects of capitalist development. Those who were later to formulate the ideologies of modern architecture felt that this was too nostalgic and tried instead to co-opt the potentials of mechanization by infusing them with a new sense of form. This drama was to remain basic to the twentieth century: in essence the question was how to evolve a genuine culture in the face of the more brutish aspects of mass production.

Industrialization also created new economic structures and centres of power. Where the patronage of architecture in eighteenth-century

Europe had relied principally on the Church, the state, and the aristocracy, it came increasingly to rely on the wealth and purposes of the new middle classes. As always, élites found in architecture a means to authenticate their own position. The multiple reuses of the past which characterize the nineteenth-century cultural landscape cannot be dissociated from the need to create and perpetuate entirely new institutions such as museums, opera houses, libraries, parliament buildings, banks, casinos, lawcourts, prisons and centres of colonial authority; these were in addition to the new instruments of commerce such as the factory, the mill, the railway station, the market hall, the department store and the skyscraper. Historical references might be manipulated to evoke connections between the current cultural condition and past 'golden ages'. The neo-classical monuments created by Karl Friedrich Schinkel in Berlin in the 1820s were to reiterate a Greek ideal for the modern state of Prussia. The neo-Gothic Palace of Westminster in London (designed by Charles Barry and A.W.N. Pugin a decade later) was to recall, if not re-create, the moral tone, national integrity and high civilization supposedly represented by the English Perpendicular Gothic style of the fifteenth century. By the later decades of the nineteenth century the new technologies in iron and glass had developed their own iconographical capacity to express notions of progress or national ascendancy in science, as may be seen, for example, in the Eiffel Tower constructed for the 1889 Paris Exhibition (Fig. 15).

In turn, mechanization remoulded the lower orders of society, made inroads on the form of the city, and transformed the surrounding countryside into a wider field of industrial production. The infrastructures of railways and steamship lines modified relations of space and time, changed the whole concept of place, and permitted new divisions of labour. The mining of raw materials, the manufacture of objects, the management of processes, and the marketing of products could now be separated from each other by great distances. These changes in the economic order relied upon technological inventions which overran both rural and urban traditions. Local vernaculars were gradually invaded by standardized systems in iron,

2 The nineteenth-century dilemma of style: Thomas Cole, *The Dream of the Architect*, 1840. Oil on canvas, 53 x 84 in (134.7 x 213.4 cm). Toledo Museum of Art, gift of Florence Scott Libbey



glass and (at the end of the nineteenth century) steel. Old relations and hierarchies in the city were exploded through the impact and incision of routes of circulation and drastic increases in size and scale. Machine production absorbed the peasant into the city, but the price paid for leaving rural poverty and joining the money economy was only too often unsanitary and dangerous living and working conditions. The contrast between rich and poor, between the splendid city centres with their monuments to consumption and cultural display, and the squalid factories, slums and tenements on the fringes was dramatic and destabilizing.

Once again, architecture was affected, not only by the status quo to which it had to cater, but also by the emergence of moral and political critiques of these monstrous social conditions. A major theme of modern architecture in the early twentieth century would be the reform of the materialist city, and its replacement by a supposedly more humane and harmonious order enriched through contact with 'nature'. The roots of these positions lay in religious, revolutionary or Utopian thought, of which several strands wove their way through the nineteenth

century. Among these was a type of Christian radicalism (represented by Pugin and Ruskin, for example) which rejected the fragmentation and brutality of the modern world, and posited instead images of the supposedly 'integrated' societies of the late Middle Ages. But there were also Utopian socialists like the Frenchmen Charles Fourier and Henri Saint-Simon who looked forward, rather than back, towards a resolution of conflicts in a 'rational' social order. The latter point of view stemmed from the Enlightenment, and combined a progressive idea of history with a commitment to universal liberation from obsolete authority. Echoes of this futurist fervour and this moralizing standpoint would be found in Utopian city projects of the early twentieth century. The search for alternative social and urban structures would lie close to the driving ethos of later modern architectural endeavour.

The very conception of a 'modern architecture' implied a frank engagement with the new social and technological realities brought about by industrialization. It also implied the rejection of superficial imitations of past forms, and a more 'direct' or 'honest' portrayal of the contemporary

world, if not a vague anticipation of a better future. Here there lurked several basic difficulties – who was to say which ‘facts’ in the present were the most significant? Were they to be found in the emerging social order, in new materials, in the forces of the great metropolis? And even if there could be a consensus about such things, there was no automatic step from a particular set of conditions to a particular set of forms. The architect, as always, needed a language and a set of conventions through which to make his reading of the situation visible. Given the flux of conditions in the industrial city, and the deterioration of earlier metaphysical foundations of architectural meaning, it is not surprising that there should have been a nagging uncertainty about what the true content of architecture should be. Thus there was a tendency to locate the ideal in some compartment or other of the past, or else to dream of some hazy, ill-defined future as an alternative to a grimy, unconsoling present.

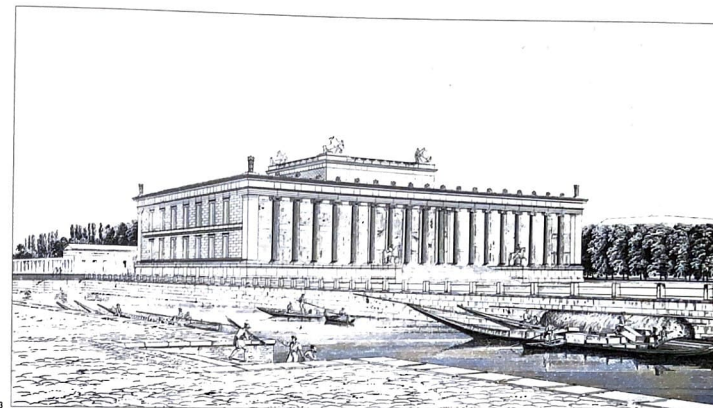
Arguably the concept of a modern architecture preceded by several decades the conditions that would make the fact of modern architecture a probability, if not a necessity. The idea itself relied upon a ‘historicist’ view of world development stemming from philosophers like Hegel, who conceived the facts of culture as direct expressions of an evolving historical ‘spirit’. This notion was interwoven with another, according to which a modern style might be a ‘direct’ expression of function and structure. As early as 1828, the German theorist Heinrich Hübsch had put forward the case for forms based upon need: ‘a strictly *objective skeleton* for the new style’. In the 1830s, Schinkel broadened the idea of expressing construction directly without stylistic filters, but shied away from functionalism on the grounds that it lacked ‘the historic and the poetic’. When dealing with the past, Schinkel was quite clear that the imitation of old forms was insufficient, that a ‘new element’ should enter on the high level of the guiding architectural idea, and that there should be a profound transformation. Similar dilemmas resurfaced in the writings of the French theorist César Daly and the German Gottfried Semper towards the middle of the century. Both were preoccupied with defining the relationship between construction, craft and architectural language in the past, and with the theoretical basis of a possible

language for their own time. Semper was sceptical about the idea of jettisoning precedent (he complained of ‘futurists and schematists’), but was also wary of slavish imitation. He took a long-term view of the history of forms, considering the ways in which basic ‘types’ might be reinterpreted in fresh ways period by period; he worked towards a definition of the present by drawing parallels with the past.

Writing in the 1860s and 1870s, the French architect and theorist Eugène Viollet-le-Duc formulated a model of architectural history linking the frank expression of building construction and materials to the progressive march of history. Viollet-le-Duc was increasingly aware of the impact of new materials like iron and plate glass, and felt that the nineteenth century must try to formulate its own style by finding forms ‘appropriate’ to the new techniques, and to altered social and economic conditions. This was fair enough in theory, but the question still remained: where should the forms of this new style be found? To this there were a number of possible answers. At one extreme were those who believed in great individual leaps of invention; at the other were those who thought the matter would somehow look after itself if architects just got on with solving new problems logically and soundly. There was relatively little admission that even a ‘new’ architecture was likely, ultimately, to be assembled out of old elements, albeit highly abstracted ones.

The very notion of a modern architecture contradicted traditionalist views of design which relied upon an overt use of past models in the genesis of forms. In one version of revivalism, some historical styles were regarded as intrinsically superior to others, partly on aesthetic grounds but also because some historical periods were seen as culturally superior to others. By imitating the chosen style it was lamely hoped that one might also reproduce its supposed excellences and attendant moral virtues. But, there was the obvious danger that one might copy the externals without reproducing the core qualities, and so end up with tired academicism or pastiche. Moreover, the question naturally occurred: if a set of forms had been right for one context (be it Greek, Gothic, Egyptian, or Renaissance), could it possibly be right for another?

3 Karl Friedrich Schinkel, Altes Museum, Berlin, 1824–8



There was quite another way of handling the dilemmas and opportunities provided by a wider perspective on the past. Rather than aiming at the supposed values of a single style, this position advocated that one should evolve a language based upon the qualities of several. Here the hope was to fuse precedents and to create new combinations out of diverse lineages. This position was known as ‘eclecticism’ and it permitted some of the most absurd, but also inspired some of the richest, nineteenth-century buildings. At its worst it could lead to superficial and bizarre concoctions of elements without underlying integration. At its best it could lead to works of dense meaning combining, say, classical disciplines in plan, Gothic clarity in structure, Romantic effects in silhouette, and inventive uses of modern materials. Eclecticism provided no automatic rules for combination, and supplied no obvious linkage between function and form, but if a real transformation could be effected it was a powerful instrument for extracting lessons from history. The eclectic method was well characterized by one writer who spoke of ‘the tireless mind of the designer’ which ‘having attained a great many ideas bearing on the subject, melts these very ideas in the crucible of the imagination’.

The problem of revival could not really be considered apart from the question of appropriateness in the present; here it was hard to avoid looseness because there were few guiding conventions binding functions, meanings and forms. It was all very well for the English architect A.W.N. Pugin to have argued with such deep moral fervour in the 1830s that Gothic was the most spiritually uplifting and the most structurally rational of styles; but counter-arguments of a similar kind in favour of classical forms could just as easily be made. Intellectual gambits were thus often used to post-rationalize what were really intuitive preferences. The lure of determinist arguments was strong because they seemed to bring certainty to a situation of extreme flux. If one could claim (and possibly believe) that one’s forms were ordained by the predestined course of history, the national spirit, the laws of nature, the dictates of science, or some other impressive entity, then one could temporarily assuage doubts concerning arbitrariness in the choice of an architectural language.

Within the confused pluralism of the ‘battle of styles’, it tended to be forgotten that the lasting qualities of architecture were liable, as ever, to transcend obvious features of style, such as the use

of columns in one instance, or pointed arches in another. The nineteenth century had its share of masterworks which were not categorizable by their stylistic uniform or by their allegiance to a particular historical camp ('neo-classical', 'neo-Gothic', 'neo-Romanesque' or whatever). The outstanding architectural quality of Henri Labrousse's Bibliothèque Ste-Geneviève in Paris of 1843–50 (Fig. 17) was not, after all, so much a function of its reliance upon this or that edifying classical prototype, as it was a result of an extraordinarily deep synthesis of form and content attuned to the culture, technology and institutional ideals of its place and period. Similarly, the architectural feebleness of Sir George Gilbert Scott's Foreign Office in London (1857–63) was traceable not to the use of inferior sources, but to an inability on the part of the architect to transform his sanctioned examples (medieval in his first project, Renaissance in his final one) into a cogent new expression. The major architectural talents of the nineteenth century – one thinks of figures such as Schinkel, Labrousse, or Henry Hobson Richardson – were able to probe the *principles* of past styles (not just to parrot their effects), then to translate these into authentic vocabularies of their own and achieve a prodigious imaginative unity in their results. One reason they were able to do this was that they possessed an intuitive vision of what was most appropriate to the social state of their time.

Beyond the outer conventions of historical styles it might be possible to discover a more elemental level of continuity, and to reinterpret these 'essential' values in present-day terms. Schinkel seemed to acknowledge this when he wrote, 'If one could preserve the spiritual principle of Greek architecture, [and] bring it to terms with the conditions of our own epoch ... then one could find the most genuine answer to our discussion.' At the same time he insisted that: 'Each work of art, of whatever kind, must always contain a new element, and be a living addition to the world of art ...' Tradition was to inspire invention, but invention was also to keep tradition alive.

Another way of approaching the past was to construct myths of 'origins' and to suggest that one might achieve the most authentic results by returning to 'beginnings'. Known as 'primitivism', this position emerged in the mid-eighteenth century,



4 Eugène Viollet-le-Duc, project for a concert hall in iron, from *Entretiens sur l'architecture*, vol. 2, 1872

5 Marc-Antoine Laugier, the 'primitive hut', from *Essai sur l'architecture*, 1753

particularly in the writings of the Jesuit monk, Abbé Marc-Antoine Laugier. Following a Vitruvian tradition, he conceived of the beginnings of architecture in an archetypal 'primitive hut' from which, it was held, the more ornate elements of the classical system had evolved. But in his case the 'primitive' was valued more highly than the later, more 'artificial' elaborations. It tended to be implied that simpler also meant better, and that the further back one went the more authentic the form was bound to be. However, Laugier's 'primitive hut' had little basis in archaeology, and only a slight basis in texts which had speculated on the beginnings of architecture, and his version of the prototype reflected an essentially classical bias. Thus primitivism could all too easily end up as a battle of the styles simply played out on a more abstract plane. In effect, it reinforced an old ideal: the notion that architecture should 'imitate' nature.

Laugier denied that there were absolute rules in architecture and spurned mere educated taste, arguing instead that the best forms were rooted in functional or structural demands. This so-called 'Rationalist' doctrine would re-emerge under various guises in the nineteenth and twentieth centuries. It underlay the materialistic and

systematic views on architecture espoused by Jean-Nicolas-Louis Durand soon after 1800, and was further nourished by the disciplined (though by no means unintuitive) methods of engineers. At its most extreme, Rationalism tended to lead to the dubious proposition that beautiful and appropriate forms would arise automatically if only problems were analysed 'on their own merits' instead of through the filter of precedent. There were a number of fallacies in this position, such as the notion that forms might arise from functional analysis alone without the intervention of some *a priori* image, but it was still a weapon with which to attack the whimsies of the most arbitrary revivalists.

Viollet-le-Duc's viewpoint belonged, broadly speaking, in this 'Rationalist' tradition, but unlike Laugier he tended to value medieval examples over classical ones on the grounds that they presented evidence of a more 'honest' expression of materials and construction. He was disturbed by the inability of the nineteenth century to find its own style and felt that the answer must lie in the creation of forms

'true to the programme and true to the methods of construction'. In his *Entretiens sur l'architecture* of 1863–72 (translated as *Discourses on Architecture*, 1877–81) he declared:

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 fulfill, 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.

Viollet-le-Duc remained a little vague on the nature of these 'truths' and tended to assume (probably erroneously) that the conspicuous excellence of great past works was due mainly to their capacity for expressing the programmatic and structural 'truths' of their own time. Thus while he was committed to an indistinct vision of some new architecture, he none the less believed that the past could have its uses in discovering this new style; he even imagined a situation in which one of the designers of the great Gothic cathedrals had been resuscitated and confronted with a modern building problem and modern means of construction. He argued that the result would not have been an imitation Gothic building, but an authentically modern one based on analogous intellectual procedures. The past must not be raided for its external effects, then, but for its underlying principles and processes.

It is quite likely that many architects of note in earlier periods had always known that the past must be understood for its principles, but they had still had the guidance of a prevalent style phase, a shared architectural language, in which to incorporate their findings. Viollet-le-Duc outlined a probing method for the intellectual analysis of precedent but could still do little to supply the essential 'leap to form'. His imagination was not as strong as his intellect, and the buildings and projects which he left behind him were uneven combinations of old images and modern constructional means, usually reflecting his underlying taste for medieval structures (Fig. 4). There was little of that sense of 'inevitable unity' – of part linking with part in an ordered yet intuitive system – which distinguishes the true sense of style.

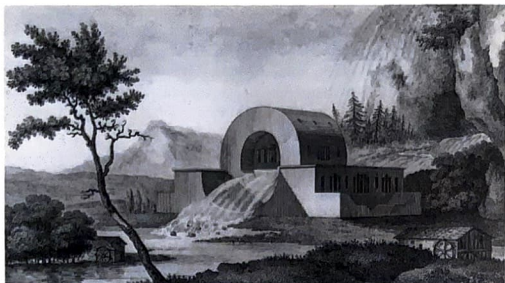
If Viollet-le-Duc's forms did little to solve the problem of a modern architecture, his ideas lived on and were destined to have a major influence upon



the 'pioneers' of modern architecture who came to maturity in the decades either side of 1900. He gave new status to vernacular forms and encouraged the study of pre-Renaissance examples which were often perceived, in the late nineteenth century, as indices of 'true' national or regional identities. He also supplied a strong counter-tendency against the worst excesses of Beaux-Arts teaching, which he accused (not always fairly) of erring in the direction of academicism. Most importantly, Viollet-le-Duc gave currency to the idea that the great style of modern times would somehow emerge on the basis of new constructional techniques – not through some merely personal formal experiment – just as the great styles of the past had done.

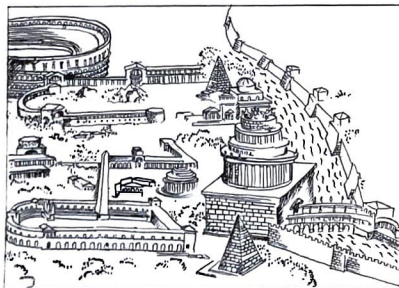
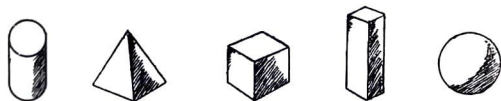
Viollet-le-Duc's historical parallels supplied further scaffolding to the idea of a modern architecture, but the question still remained: what should this modern architecture look like? From where should its forms be derived? Obviously tradition could not be rejected completely, otherwise there would be no forms at all; the notion of an entirely new architecture was simply illusory. Perhaps, then, it might be possible to abstract the essential lessons of earlier architecture in such a manner that a genuinely new synthesis would be achieved? Indeed, if one jumps forward to the first decades of the twentieth century and examines the pioneering works of the modern movement, one finds that they relied on tradition in this more universal sense. One is struck by the confidence of architects such as Frank Lloyd Wright, Le Corbusier and Mies van der Rohe that they had, so to speak, unearthed the central, abstract values of the medium of architecture itself; that they had created not so much a new style, as the quality of style in general – a quality central to all outstanding works of the past.

This universalizing view of the history of architecture, this notion that the important features of past buildings lay in their proportions, their arrangement, their articulation of formal themes, their basic ideas (and the like) rather than in their use of stylistic elements, may itself have had some basis in earlier tendencies towards simplification. One thinks in this instance of schematizations of the past implicit in the geometrical visions of Claude-Nicolas Ledoux and Étienne-Louis Boullée in the late eighteenth century, or of the reduction of



6 Claude-Nicolas Ledoux, proposal for a sluice house over the River Loue, from *L'Architecture considérée sous le rapport de l'art, des mœurs et de la législation*, 1804

7 The abstraction of fundamental lessons from the past: Le Corbusier, sketch of primary geometrical solids alongside a view of ancient Rome, from *Vers une architecture*, 1923



structure to the most elemental piers and beams in the sketches of Friedrich Gilly around the same time. The idea of reading tradition for its supposed 'universal' formal values was given extra weight in the late nineteenth century by art historians such as Heinrich Wölfflin and Adolf Hildebrand, who rejected literary values in art in favour of underlying architectonic qualities, and who described past styles in terms of formal and spatial patterns. It is no accident that this way of perceiving the past should have coincided so closely with the emergence of abstract art: as we shall see, both this manner of viewing precedent, and the new language of space and form visualized by painters and sculptors, were to have an eventual influence on the creation of modern architecture.

Equally it was possible to think of the history of architecture, less as a sequence of styles, than as a series of transformations of basic types stretching back far in time and arising from a few archetypal elements and configurations. Writing at the beginning of the nineteenth century, the French theoretician Antoine-Chrysostome Quatremère de Quincy suggested that 'nothing whatsoever comes from nothing' and that 'the act of building is born out of a pre-existing germ'. For him a 'type' was 'a sort of kernel around, and in accordance with, which the variations that the object is susceptible to, are ordered'. According to this view, several inventions of different style and period might rest upon the same typological pattern, and share a common root. For example, Schinkel's Altes Museum of 1824–8, Asplund's Woodland Chapel of 1918–20 and Le Corbusier's Parliament Building in Chandigarh of 1951–63, although varying in function, material and style, might none the less all be seen as transformations of the same basic idea, portico and dome – a type exemplified most clearly in antiquity in the Pantheon in Rome of the second century AD.

The notion of type was inherited by Gottfried Semper who, writing in the mid-nineteenth century (and influenced by the evolutionists Lamarck and Darwin) could not resist linking it to the idea of natural species:

Just as nature is ever thrifty of motifs, even in her endless abundance, constantly repeating her basic forms, but modifying them in a thousand different ways according to the condition of her creatures and their mode of life ... so art lies within the scope of a few Norms

or Types, that derive from old tradition, each constantly reappearing in diverse forms ...

Semper considered that the later symbolic forms of architecture such as column and entablature were elaborations of fundamental structural ideas such as post, beam and frame. Guided by knowledge of real peasant huts (rather than just mythical ones), he even posited the idea of four basic elements in architecture: platform, hearth, roof and enclosure. His own buildings were not so inspired or inspiring, but his ideas would be of great interest to those trying to find the best form for new 'species' like skyscrapers, or for new devices such as the steel frame or the concrete skeleton. Semper's message to the nineteenth-century architect was clear enough. Confronted by the 'mode of life' of his own time, and by the need to give appropriate form to new types, he should rely upon genetic recombinations of old ones. A version of natural adaptation was crossbred with an idea of historical progress.

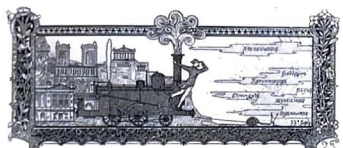
While evolutionary and functionalist theories sometimes relied upon analogies with natural processes, there was a parallel line of thought which descended from Romanticism and from the writings of Ruskin, whereby nature was regarded as being the physical evidence of God's creation and laws, and thus as being a primary source of inspiration and of moral reflection. Traces of this outlook may be discerned in the thought of several major twentieth-century architects, notably Frank Lloyd Wright, Le Corbusier and Alvar Aalto who, far from being just 'materialists', had a lofty vision of 'nature' as a counterforce to banal mechanization. Natural phenomena might provide analogies and metaphors in design, or serve as the basis for abstractions and conventionalizations of form. They might also yield up general principles for guiding technology, architecture and urbanism. It was in this more general sense that Aalto could declare: 'Nature, rather than the machine, should serve as the model for architecture.'

With the 'loss of authority of the classical norms', ideas of nature were sometimes invoked as a supposed bedrock of certainties beyond the merely artificial and transient. Louis Sullivan and Frank Lloyd Wright tended to see the matter in this way, and each of them evolved 'generative grammars' based upon metamorphoses of natural forms that



8 Charles Garnier, Opéra, Paris, 1861: Beaux-Arts classicism in the grand manner that was rejected in the early twentieth century by the avant-garde

9 'La Recherche du Style Nouveau', from the *Revue des Arts Décoratifs*, 1895: the slow progress towards a new style



became 'microcosms' of a kind. Something like this procedure was already suggested in Owen Jones's *Grammar of Ornament* of 1856, in which the author argued that the ornamental systems and vocabularies of the past were based upon the geometrical idealizations of local plant forms. The Egyptian column, for example, was traced to the lotus and papyrus plants of the Nile valley. The appeal of such ideas to the designers who pioneered the tendrils and vegetal curves of Art Nouveau should be obvious, but the notion of penetrating nature for its underlying lessons had longer-range implications and would recur within several frames of reference. Analogy has always played a part in the genesis of architectural forms, and in the late nineteenth century 'natural' analogies joined with 'mechanical' ones to supply a model of perfectly embodied function. In the twentieth century, ideas of nature took on different guises in the work and ideas of individual architects, sometimes with reference to structure, sometimes with reference to poetic perceptions of underlying order, sometimes

in the context of 'organic' models of culture.

Thus, in finding forms to fit the emerging aspirations towards a modern architecture, the architects of the end of the nineteenth century and the beginning of the twentieth drew upon a rich fund of theories and ideas when formulating their task. They also drew repeatedly on both nature and tradition when grappling with the problem of style. But they looked upon these recurrent and ever-evolving sources of inspiration in quite new ways that were at variance with their immediate predecessors, for their method involved a greater degree of abstraction. In that respect their quests for new forms were not unconnected with avant-garde developments in the other arts, which dispensed with representation and relied upon basic formal structures for expression. It can even be argued that some of the most drastic innovators (one thinks, for example, of Sullivan, Root, Gaudí, Mackintosh, Perret, Wright and Behrens in these decades) were also, in some basic way, 'traditionalists'. While they certainly hoped to create vocabularies entirely in tune with modern circumstances and means, they also wished to endow their results with a certain universality: they sought to create architectural languages with the depth, rigour, and range of application of the great styles of the past.

So it was not tradition that was jettisoned, but a slavish, superficial, and irrelevant adherence to it. The rogue in all these respects was frequently (and often inaccurately) identified as the École des Beaux-Arts in Paris which was lampooned as the symbol of all that was tired and retardative. This caricature of academe aside, it is essential to see the vital developments of the 1890s against a backdrop of confusion and caprice in which the problem of style was much discussed but rarely resolved. To the young architectural minds which were to pioneer the skyscraper, Art Nouveau and the substantial new developments up to the First World War, writers like Viollet-le-Duc, Ruskin and Semper were powerful catalysts. The architects of the fin-de-siècle had little to stand on in the immediate past except facile revivalism and eclecticism, and therefore sought a new direction by going back to basics and forward to new inspirations simultaneously. In sources they were abundant; the question was how to forge these into a new synthesis appropriate to modern conditions.