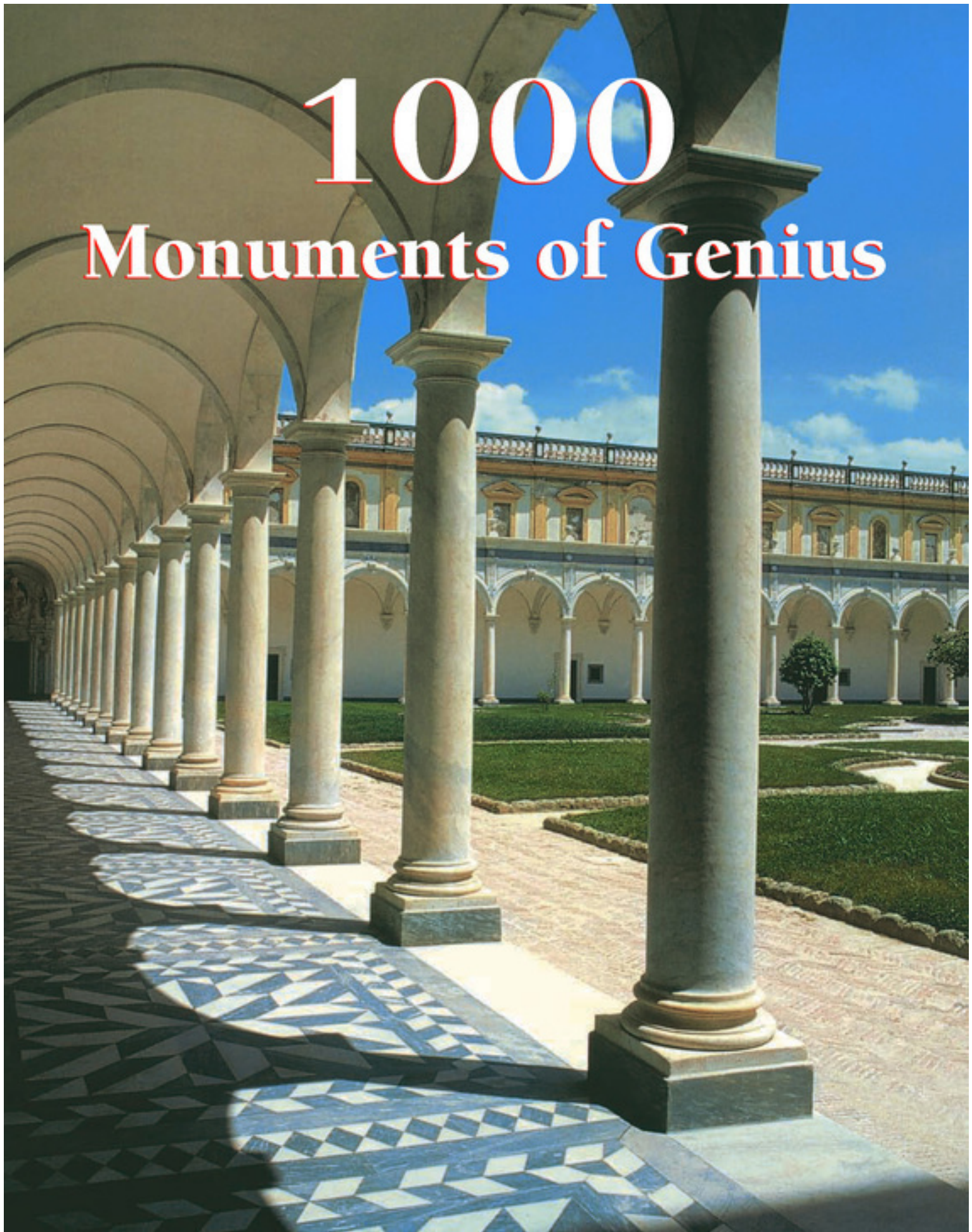


1000 Monuments of Genius



The Book

Christopher E.M. Pearson
1000 Monuments of Genius

«Parkstone International Publishing»

Pearson C.

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Since the mythical Tower of Babel, humans have continuously tried to erect monuments to match their oversized egos. With ancient ziggurats, the Taj Mahal, or the Empire State Building, man has for centuries demonstrated his force by raising structures for purposes both religious and profane. As international cultural statements without words, symbols of a people's values – devotion, patriotism, power – symbols of a civilisation's grandeur, these monuments still fascinate and attract an ever-growing public who is captivated by the creativity and ingenuity of these architects and stonemasons. Their historical message goes far beyond mere art history, for they tell us of the lives and evolution of the peoples of the past, as does the Parthenon in Athens, many times destroyed, rebuilt, reused, attacked, pillaged and restored once again today. This work, featuring 1,000 monuments chosen from around the globe, retraces human history, the techniques, styles and philosophies necessary for the construction of so many splendours over the centuries, providing a panorama of the most celebrated monuments while evoking the passion of their makers. The reader can explore the changing values of humanity through the edifices it has built and understand these structures as triumphs of humankind.

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Christopher E. M. Pearson

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Introduction

What is Architecture?

Among the major visual arts, architecture has always had something of a reputation for being difficult to appreciate. This is not solely because it would seem to require a large degree of professional skill both to design and to understand, at least in a technical sense. Unlike a painting or a sculpture, a building does not tell an easily decipherable narrative or attempt to ‘represent’ some aspect of reality in artistic terms. Rather, the nature of architecture is at least in part utilitarian, serving to shelter various human activities. At the same time, architecture dignifies our daily actions by giving them a distinctive public presence in the form of a building envelope or façade, one that in the case of many historical edifices may present us with a bafflingly complex articulation. In this sense, the busy external appearance of, say, Chartres Cathedral or the Pompidou Centre may indeed prove intimidating to the visitor who encounters them for the first time. In many cases, the means of creation of a given building, including its structural techniques and even its materials, may not be immediately evident or easily comprehended by the casual viewer. Its stylistic, historical and iconographic points of reference may be obscure and unfamiliar. Should one know, or care, for example, that the colossal Ionic columns fronting the 19th-century British Museum are based on those of the Temple of Athena Polias at Priene from the 4th century BCE? What insight might such an observation give us into the nature of the later edifice? Moreover, the very function of a building may often be inaccessible from a purely visual inspection, especially if its original purpose has been forgotten or has changed over time: what was Stonehenge used for, and what does one do inside a basilica, a pagoda or a martyrium, for instance? On the other hand, unlike our encounter with a work of art in a museum, we generally experience architecture in a state of distraction: as the German philosopher Walter Benjamin once noted, we do not see and appreciate buildings so much as we simply use them or walk past them or through them. Buildings become invisible to us. This points, however, to the major reason why the study of architecture should never be daunting to the beginner: it is the art we all use every day, and each of us has a lifetime of experience with it. In this sense, as we move from home to office to shopping mall to museum to hotel, we are all architectural experts, formed by a quotidian process of the visual assessment, navigation, tactile engagement and habitation of three-dimensional spaces that have been designed by professional builders or architects.

Most of the structures in this book, however, could not be described as everyday. Rather, they are exceptional for various reasons, and on these grounds could be designated as ‘monuments’. (The term ‘monument’ in this context does not refer simply to those constructions of a largely symbolic or commemorative character – the Washington Monument, for example, or London’s Monument to the Great Fire of 1666 – but to any building of fundamental architectural distinction.) Here we are largely concerned with edifices that required much time, money, labour and ingenuity in their creation. The architectural historian and theorist Geoffrey Scott wrote that civilisation ‘leaves in architecture its truest, because its most unconscious record’, and it is a truism worth repeating that architecture is inevitably an index of power – secular, religious and economic. Architecture, by this definition, is represented by large, formal buildings, often of a showy appearance, crafted of permanent materials and dedicated to high purposes. A Greek temple, a Gothic cathedral or a palatial residence like Versailles, the Alhambra or White Heron Castle might come to mind. It is clear that the planning and construction of such impressive structures only become feasible with the emergence of large concentrations of wealth and influence, whether in the hands of a single ruler or a ruling caste. The resulting monuments, whose enduring nature has allowed them to far

outlive their designers, patrons and originating cultures, bespeak an ability to marshal and deploy dozens or perhaps even thousands of workers over long periods of time, using forced, salaried or (most rarely) volunteer labour. This is as true of the Great Pyramids of Giza as it is of the latest awe-inspiring skyscraper in Beijing or Dubai. Architecture, like history, is created on behalf of those who have prevailed through the wielding of power, those who are able to command the spoils of war and to reap the profits of commerce. As with all such manifestations of power, the great monuments of the world are in this sense more often than not the products of despotic rule, inhumane value systems or an unfair division of resources, and could certainly be condemned as such. The Victorian art critic John Ruskin, for example, could even launch a contrarian attack on the ancient Greek temples – erstwhile symbols of fledgling democracy, humanistic culture and refined aesthetic sensitivity – as oppressive and dehumanising. Ruskin particularly objected to the Classical buildings’ demand for monotonously repetitive carved ornament (such as mouldings, dentils or capitals), the manufacture of which would seem to have demanded a machine-like subservience on the part of the stonemasons. Even today a visit to the Colosseum in Rome or the great Mesoamerican pyramid-temples (n° 814; n° 821; n° 823) may well arouse uneasy thoughts of the mass slaughter that occurred there over the centuries, if not the backbreaking labour that went into their creation. The world’s largest church, the Basilica of Our Lady of Peace (1985–90) in Yamoussoukro, Côte d’Ivoire, is generally seen as a self-indulgent folly on the part of that impoverished country’s onetime president rather than as an architectural masterpiece of the first order. More often than not, however, and especially in the case of the venerated relics of older civilisations, we have an understandable tendency to set aside the questionable morality of their patronage and simply to appreciate the splendour, mystery and ingenuity of their built creations. With the passage of time, even the survivals of Nazi architecture, those morally repugnant but undeniably impressive reminders of recent atrocities, have gone some distance towards being the subject of dispassionate academic interest and even a measure of professional (rather than political) admiration from some practising architects, who see in them the evidence of a continuing European debt to the still-relevant legacy of Greece and Rome. Ideologically offensive regimes, it can easily be demonstrated, do not automatically produce either good or bad results in architecture, and from a purely aesthetic or technical standpoint the question of politics might even be left out of the discussion altogether – a rationalisation that continues to allow some contemporary architects to work for politically suspect patrons. More generally, as the Maltese architect Richard England has observed: ‘When all is said and done there remains the building.’

Perhaps a more basic – though equally unsatisfactory – aspect of the ‘elite’ definition of architecture lies in its inherent bias towards monumentality: what about those cultures that, for whatever reason, chose not to build durable or extravagant monuments? Would not this definition exclude the extraordinarily skilful but often small-scale or impermanent structures of many Native American, Oceanic or African tribal groups, the domestic buildings of the ancient Greeks, or any number of localised traditions making use of fragile materials or given to humble, everyday uses? This perhaps unrealistic discrimination lies behind architectural historian Nikolaus Pevsner’s famous comparison of a cathedral and a bicycle shed in his *Outline of European Architecture* (1943): the former was held to represent ‘architecture’ (perhaps even with a capital A) with distinct ‘aesthetic appeal’ while the latter was seen as mere ‘building’ of a strictly functional character. As this example suggests, the question is at the same time complicated by the professional divide between architecture and engineering (and indeed building and contracting). Can purely utilitarian structures, whatever their technical merits, be seen as architecture? The success of the modern movement in deliberately merging or blurring the parameters of both fields has perhaps rendered the question less pressing in the present day, but the status of ancient shelters, barns, warehouses and the like has yet to be dealt with.

Having laid out this series of caveats, we can now see that this book presents a selection of monuments that fits a more traditional definition of architecture. (The number of houses included in the later sections, reflecting a growing theoretical interest in the dwelling over the last few centuries, may represent a countercurrent.) Illustrated here are some of the most prominent examples of historical architecture to have survived above ground. Eschewing monuments that have vanished without a trace or which have left only scanty remains on the surface, the guiding principle has been to choose buildings that are still visible, even in mutilated or partial form, and which can be serviceably represented by a photograph. Apart from the fact that increasing world population and affluence over the last century has dramatically increased the sheer amount of monumental (or at least large-scale) architecture being erected, this editorial decision may help to explain why relatively few pre-medieval structures appear here while the number of buildings from after 1900 is so great. In consequence, this book cannot give a full account of, say, Hellenistic architecture, many of whose masterworks – like the Mausoleum at Halicarnassus or the Pharos of Alexandria – have disappeared from view almost entirely, leaving only a few scattered stones and shattered statues to evidence their onetime existence.

The definition of architecture also raises the question of the classification and sequencing of monuments. Older texts on architecture tended to simplify the process of historical classification by creating only two basic categories: ancient and modern. This has long been overlaid by the historiographical investigations of the last two centuries, and has further been complicated by a growing understanding of non-Western building traditions. A complete global chronology of architecture, though highly complex, can now be established. The beginning student of Western art and architecture soon learns that a great number of specialised terms – ‘Renaissance’, ‘Neo-Palladian’, ‘Churrigueresque’, ‘Postmodern’ and so on – are used to describe historical buildings. (Similarly, the study of non-Western architectural cultures demands the assimilation of another set of historical labels, such as the Heian period in Japan, the Qing dynasty in China, or the Umayyad dynasty in Muslim countries.) These pigeonhole terms are at once chronological, regional and stylistic in character. But in any modern text on architecture, the introduction of such terms is immediately followed by qualifications: none is absolute, and their value lies primarily in their usefulness rather than their innate truth or accuracy. The chronological division between the Middle Ages and the Renaissance, for example, is notoriously difficult to gauge with any degree of accuracy: classicising tendencies can be traced far back into medieval thought and practise, while medieval building traditions continued long into the 17th century in many parts of Europe. The Baroque, which is generally held to run from the later 1600s to about 1750 in Europe and the Americas, is untidily overlapped on either end by the Renaissance and the Neoclassical age, and indeed can even be held to define a stylistic tendency toward exuberant formal experimentation that cuts across historical or cultural divisions: it is quite possible to talk of ‘Baroque’ tendencies in late Roman provincial architecture or in Japanese shrines of the early Edo period, for example. It is therefore wise to see such labels as indicating relatively loose architectural affinities rather than as airtight categories in the manner of botanical taxonomy.

Structure and Materials

The earliest buildings that have been revealed by archaeological investigation are relatively simple shelters of mud, stone, wood and bone – well suited, indeed, to William Morris's primal definition of architecture as 'the moulding and altering to human needs of the very face of the earth itself' (1881). Perhaps the most interesting aspect of many of these prehistoric buildings is the intimation that practical concerns played only a secondary role in so many of them: just as the magnificent but largely inaccessible cave paintings at Lascaux and Altamira may appear to have served no immediate ends in terms of basic survival, the great monolithic constructions of Stonehenge and Carnac – which clearly demanded inordinate amounts of sheer physical labour – were intended purely for ritual usage. Many elaborate tomb structures would also fit this definition. Even domestic space, as suggested by foundations excavated in the very ancient Neolithic city of Çatalhöyük in Anatolia, is often indistinguishable from spaces of a sacred character. This observation perhaps serves simply to underline that a putative distinction between those activities associated with day-to-day existence and those connected with spirituality and the supernatural was by no means as clear in earlier times as it may seem to be today.

The mud ziggurats and palaces of the Mesopotamian civilisations set the precedent for the more durable stone architecture of ancient Egypt. This, in turn, was to inspire the limestone and marble temples of the Greeks, who evolved that elegant and aesthetically sophisticated mode of building that we have come to term the Classical. Based on the basic building unit of the column and making use of a complex and finely-tuned canon of proportions and ornaments, the Classical system of design that was first evolved by the Greeks for the articulation and embellishment of their religious buildings proved irresistibly appealing to later generations. The Classical Orders – Doric, Ionic, Corinthian and a few other variations – thus established their architectural pre-eminence in the West, and have been endlessly imitated by later cultures in Europe and the Americas. That the initially arbitrary or culture-specific nature of the Classical system – one attuned to the ritual needs of a particular religion focused on offering animal sacrifices to a pantheon of nature-related deities – was soon to be obscured by an impenetrable wall of unquestioned authority is largely due, of course, to the Romans, who imitated the Greek manner of building as they did most aspects of Greek culture. From the Romans, the Classical legacy was then taken up and reinterpreted intermittently throughout the Middle Ages, re-embraced actively in the Italian Renaissance, and thence handed down to the modern world. The Greeks thus bequeathed a legacy of Classical building that has lasted some two and a half millennia and still shows signs of life in the 21st century.

The enduring nature of the Classical system, which is almost entirely based on the principles of masonry construction, may again serve to underline the fact that until the last two hundred years builders could rely only on naturally-occurring materials to construct durable shelters. (Concrete, requiring the sourcing, preparation and admixture of such specialised materials as ash and quicklime, may be a partial exception.) Here the list of serviceable substances is a short one: earth (tamped, mixed with water, dried or baked), sand (for foundations), stone, wood, and – more rarely – animal parts (bone, leather) and various organic materials that are susceptible to weaving (reeds, twigs, bark). Wood has the advantage of being both relatively easy to process into framing units and relatively sturdy, though it is always vulnerable to rot, fire and insects; few ancient buildings using timber construction survive today. As the following pages will confirm, it is stone, because of its durability and great compressive strength, which has remained the material of choice for monumental buildings over many thousands of years. (And it might even be argued that concrete, which has supplanted stone in almost all modern constructions, presents itself simply as a more liquid, and hence more easily malleable, form of stone.) The most conservative method of masonry construction, as in a conventional load-bearing wall or the Egyptian pyramids, is simply

to lay brick on brick or stone on stone; this can be done to some height before the foundations are crushed by the increasing weight. If the building is of multiple stories, however, this simple technique tends to demand extremely thick walls with small openings, allows little or no scope for useable internal space, and is wasteful of materials and labour. The driving technical question through much of architectural history has therefore been: how can we come up with a structural method that will allow a stone building to have both larger openings and spacious interiors? The greatest liability of stone is its heaviness and brittleness, and much ingenuity has been spent trying to find methods to get stone to span greater and greater distances without the danger of collapse. Likely drawing on now-vanished timber prototypes, one early solution was *trabeation*, the structural basis of Classical architecture: in conjunction with solid wall construction for the inner sanctuary, Greek temples relied almost exclusively on a simple post-and-beam method. The greatest danger here is in proposing bays of excessive length; i.e., leaving too much space between upright supports, which risks cracking the horizontal members that are made to span them. In large rooms, the low tensile strength of stone necessitates the use of either a grid of vertical supports (posts or piers) to hold up the ceiling, or a lighter timber superstructure, though the latter will again be subject to fire or other hazards. Preferentially, therefore, roofs and ceilings were often to be built using masonry, and various methods of vaulting were developed. An early technique, known as *corbelling*, simply extends each successive layer of stone slightly beyond the one below until a ceiling of tapered section is formed. The true arch, making use of a semicircle of *voussoirs* (individual blocks of trapezoidal form) and secured on top by a keystone, was much used by the Romans in both honorific and utilitarian contexts. The extension of an arch in a single direction in space results in a semicircular barrel vault (a half-cylinder), while its rotation through 360 degrees creates a hemispherical dome. Such forms provided the best method of vaulting into the early medieval period, though they often required the use of lighter materials (usually brick) and heavy buttressing in order to counteract the lateral thrust that was thrown onto the external walls. It remained for the master masons of the Gothic period to perfect a more daring and effective form of stone vaulting, one which took the material to the limits of functionality. Making use of a pointed arch for both arcades and interlacing rib vaults, as well as a series of flying buttresses to provide lateral stability, the Gothic builders were able to realise elegantly skeletal constructions that made minimal use of load-bearing wall construction and soared to unprecedented heights.

The story of architectural technique from the late 18th century through the present day is largely one of the increasing mastery of metallic construction. Following the innovations of the Industrial Revolution, first iron and then steel were pressed into use for utilitarian structures: warehouses, factories, stores and other commercial buildings could be erected quickly and cheaply, using cast-iron elements for internal framing and external cladding. Increasingly, iron framing also began to be used for larger public buildings, notably the new Houses of Parliament in London, but these were inevitably clad in a veneer of stone or terracotta to give the impression of traditional load-bearing construction, thus catering to genteel notions of how architecture was supposed to look. This was also true of the early skyscrapers of Chicago and New York, whose façades did not begin to make clear formal acknowledgement of their internal steel frame construction for some decades. Later in the 19th century the first experiments began to be made with reinforced concrete, which optimally combined the tensile strength of iron or steel rebar with the compressive strength of concrete. At the same time, the development of such new building technologies introduced a vexing split into architectural practise: the field of engineering was now emerging as a specialised discipline in its own right, and techniques and aesthetics thus became estranged. A telling comparison might be made between two prominent buildings erected in Paris after the mid-19th century: Charles Garnier's new Opera house (1861–1875) and the Eiffel Tower (1889). The Opera, designed by an academically trained architect, epitomised the French belief that Paris was the centre of world culture, and that its major opera house should exemplify the grandest formal

design and the most sophisticated and allusive veneer of sculptural and painted ornamentation, both inside and out. Stylistically, the Opera synthesises over two thousand years of Classical architecture, drawing on the formal vocabulary of the Greeks and Romans as filtered through the Renaissance and Baroque, and thus presented itself as a summation, if not an apotheosis, of the European cultural tradition. The Eiffel Tower, on the other hand, designed as a temporary structure for a world fair, had aims that were technical and commercial rather than strictly cultural in nature, namely: reaching an unprecedented height, minimising weight and wind resistance, and making a dramatic demonstration of the new techniques of iron construction that had been developed by French engineers. Obedience to historical precedent or accepted canons of taste played no part in this venture, and upon its erection the tower was roundly condemned as a brutal monstrosity by a coalition of prominent French artists and writers. The question seemed clear: was architecture to be a matter of good design in the humanistic tradition, or was it instead to be a technologically-driven search for scale, economy and efficiency?

It was left to the ideologists of the Modern movement in the early 20th century to attempt to forge a reconciliation between art, architecture and industry. The key ingredient, as it turned out, was modern painting and sculpture, which provided architects with a new language of abstract form and space creation that seemed suited both to the Fordian and Taylorian exigencies of modern industry and to the increasingly collective (i.e., anti-individualistic) nature of contemporary society. This is not to say that modern architecture was conceived as simply cheap, functional, expedient or anonymous, but rather that it evinced a carefully considered ‘machine aesthetic’ that was seen to be in tune with the modernist *Zeitgeist* of mass production, standardisation and collectivism. At the same time, modern architects made great inroads into the creative deployment of newer materials – notably glass, steel and reinforced concrete – to fashion envelopes and spaces of compelling beauty and originality. In the work of contemporary modernists like Norman Foster or Santiago Calatrava, the line between technology and art has been completely effaced, and whether a given architectural element can be seen to have a technical or aesthetic motivation within the building as a whole necessarily becomes a moot question. What can also be said with certainty is that architecture has reformed a vital partnership with engineering that has allowed tectonic forms of unprecedented complexity and irregularity to be realised. In recent years this process has been accelerated to blinding speed by the introduction of computers into the design, construction and costing processes, and the expressionist fantasies of a Frank Gehry or a Daniel Libeskind can now be achieved within reasonable parameters of time and expense.

Architecture as Theory

Architecture, as distinguished from building, might further be characterised by its reliance on written theory rather than on established folk traditions. In this light, the history of architecture is as much a matter of texts as it is of actual structures. It may not be coincidental that the emergence of formal, monumental architecture in the Fertile Crescent of Mesopotamia was accompanied by the development of the first writing systems, and architecture is in this sense always a product of literate cultures. The composition of self-consciously theoretical manuals on architecture is at the same time a record of the growing status and social aspirations of the architectural profession. Such texts are rare before Roman times, and the first real landmark we have in this field is the famous treatise written by the Roman architect Vitruvius in the 1st century BCE. Though largely technical in nature, incorrect or obscure in certain passages and often rather dull, Vitruvius' *De Architectura* is the lone survivor of the architectural texts of antiquity, and as such necessarily remained a touchstone for practise in the West for some two thousand years. Vitruvius covered the basics of construction, the correct plans and proportions of public and religious buildings, and set out the details of the Classical orders. The organisation and subject matter of Vitruvius' text set the precedent for the Renaissance treatises of Alberti (*De Re Aedificatoria*, 1442–52), Cesariano (*Di Lucio Vitruvio Pollione de Architettura*, 1521), Serlio (*Tutte l'opere d'architettura et prospettiva*, 1537 and later), Vignola (*Regola delli cinque ordini d'architettura*, 1562) and others. European architectural theory at this time tended towards promulgating refinements to the Classical system rather than mounting any serious challenge to its hegemony, and we further begin to sense a growing divide between practise (on-site constructional expertise) and theory (the essentially intellectual or antiquarian debates underpinning the study and practise of Classical architecture). Ultimately, the most influential of all Renaissance architectural texts was that of the Venetian Andrea Palladio. His *I Quattro Libri dell'Architettura* of 1570 had the advantage of clear woodcut illustrations showing the details and proportions of the Orders, reconstructions of Roman buildings, and numerous villas and city buildings of his own design. Notable for his characteristic addition of Roman-style temple fronts to the façades of relatively modest domestic buildings, Palladio bequeathed to amateurs, architects and common builders a simplified but elegant version of Classicism that could be applied to many different typologies with minimal expense. The Palladian legacy was to persist throughout the eighteenth century and beyond in both Europe and America.

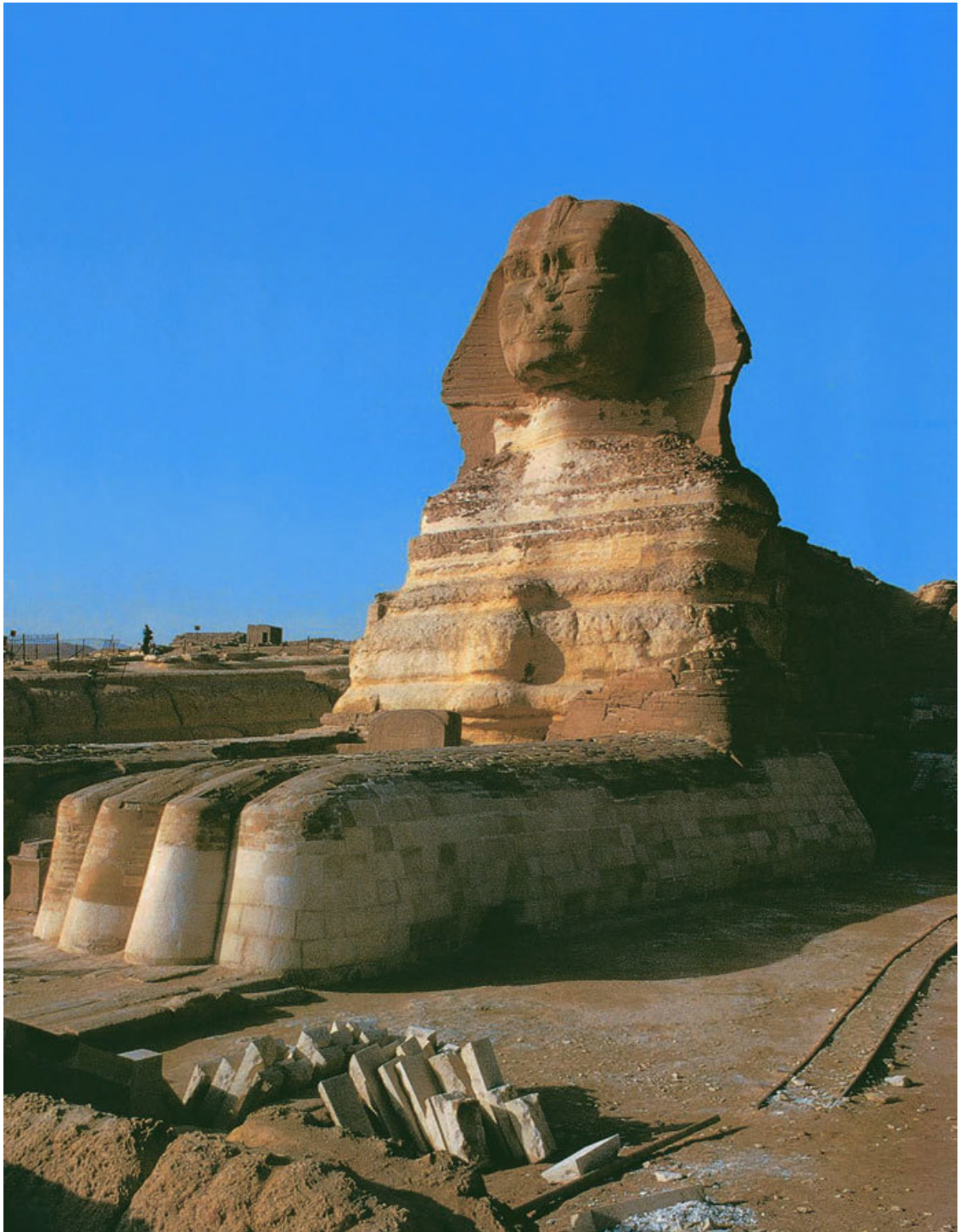
The Enlightenment saw the emergence of a new kind of architectural treatise in Europe, one that was less technical and more theoretical or speculative in nature, and which attempted to reconcile the new faith in reason with the traditional reliance on Classical precedent. Most notable here is the *Essay on Architecture* (1753) of Abbot Laugier, who put forward the idea that the Classical system derived from the most ancient building type, a hypothetical construction of tree trunks which has often been termed the 'primitive hut'. This entirely conjectural proposal served to anchor Classicism in both reason and nature, thus ensuring its continuing intellectual attractiveness. Other writers of a Neoclassical persuasion continued to subject Classicism to the new forces of reason, a process which nevertheless acted only to reinforce its supremacy. This was further confirmed by the many folio volumes of etchings put out by the Venetian architect Giovanni Battista Piranesi, who aimed to demonstrate the superiority of Roman architecture solely on the basis of its great size, complexity and engineering prowess. Almost unwittingly, however, Piranesi's unforgettably dense and moody depictions of the monumental ruins of Rome also served to affirm that Classical architecture could be turned to ends of pure emotion rather than strict rationalism, thus laying the ground for the Romanticism of Soane, Ledoux, Boullée, Schinkel and others.

The 19th century nevertheless witnessed new challenges to the Classical monopoly from architects who espoused a return to medieval building practises. This initiative was taken, as often as not, on the basis of moral or religious principles rather than on technical grounds. John Ruskin, who had no professional or technical training in building whatsoever, proposed that the most important aspect of architecture was its ornamentation, which could engage the uncoerced and creative talents of a variety of people in society. His model was the Gothic churches and cathedrals of Europe, and most particularly the highly ornate and colourful version of Gothic to be found in Venice. As laid out in his *Seven Lamps of Architecture* (1849) and *The Stones of Venice* (1851–1853), Ruskin's emphasis on the dignity of the craft traditions was soon to inspire many writers and practitioners of the Arts and Crafts school, led by the socialist philosopher William Morris. Their goal was to recapture the timeless vernacular building traditions of a given region, which automatically foregrounded an appreciation of the inherent beauty of simple, natural materials. This idealistic line of thinking was ultimately to serve as the foundation of Frank Lloyd Wright's personal conception of an 'organic' architecture, one that drew inspiration from natural growth, responded directly to the nature of materials and the structures and forms they suggested, and which took root in a distinct region and socio-cultural environment – in this case, American capitalism, individualism and democracy. A rather different stream of thought, though one equally indebted to the precedent of the Middle Ages, was represented by the voluminous writings of the French architect and architectural restorer Eugène Viollet-le-Duc, who asserted that the true lesson of the Gothic cathedrals was to be found in their innovative construction techniques, and that these might even be applicable to modern constructions in cast iron.

The true literary proponents of the Industrial Revolution in architecture, however, were only to make an appearance after the turn of the twentieth century. The writings of Walter Gropius, Sigfried Giedion, and above all those of the Swiss-French architect Le Corbusier, set the basic agenda for the modern movement: the harmonisation of art, design, industry and architecture. Taking cues from modern art as well as the rational and calculating attitude of the engineer, Le Corbusier proposed that architecture should make use of the abstract language of geometry, eschewing all historicising forms in favour of a fresh and unbiased approach to the fundamental questions of building; e.g., what is a house? Le Corbusier's famous response was that a house is, in essence, a 'machine for living in', just as a sewing machine is a machine for sewing, an airplane a machine for flying in, and so forth. At the same time, Le Corbusier's discourse could often veer off into unexpectedly idealistic or mystical territory, proposing that the visual effect of finely handled geometrical volumes transcended the merely aesthetic to access realms of emotion and even spirituality. Le Corbusier's thought – provocative, engaging and fundamentally dialectical in nature – was to prove inspiring to generations of modern architects, and to this day the most-thumbed volumes in architectural libraries are usually those of the eight volumes of his *Oeuvre complète*. A perhaps unexpected by-product of Le Corbusier's polemical success was the reactivation of the architectural treatise as an instrument of philosophical reflection, as well as a means by which architects could make their mark in the profession without the necessity of actually building anything. Following in the wake of Le Corbusier, the next most important body of writings was arguably that of the American Robert Venturi and his associates, whose ironic and self-consciously 'complex and contradictory' take on building design was informed by an academic familiarity with historical buildings as well as an appreciation of contemporary Pop Art. The larger trend that eventually took wing from these ideas came to be known as Postmodernism, and from its origins in architecture it came to permeate all of the creative arts and Humanities through the 1980s. More recent architectural theory, though not infrequently hermetic to the point of incomprehensibility, has tended to be less cohesive and single-mindedly polemical in nature, and the idea of establishing a particular avant-garde school or position presently seems to have fallen by the wayside. This may in part be attributable to an understandable fatigue with tracing the

putative rise and fall of categorical ‘movements’ in architecture, but also to the increasing tempo of electronic media, which barely allows readers the time to absorb a new design concept before it is replaced by an even newer one. Perhaps for this reason, contemporary architectural treatises, such as those of Rem Koolhaas, tend to rely just as much on dense layerings of photographic or computer imagery than on pure text. This, in turn, again calls into question our definition of the architectural monument: in a time when the computer threatens to dematerialise the most stable social traditions, architecture, too, appears to be moving into a virtual phase, one in which the previously inert and (literally) concrete products of architectural design may soon become indissociable from the flow of digitised information and the unending manufacture of virtual realities. The prospects for the future of monumental architecture are indeed dizzying, not to say disorienting, for all boundaries have become fluid. Perhaps even more than we realise, traditional architecture has provided the existential matrix for our lives, the reliability of four solid walls granting us a sense of belonging, stability and orientation in a world of change and apparent chaos. As we contemplate the great building achievements of past civilisations and the exhilarating but often bewildering presentiments of the future represented by contemporary practise, we might do well to recall Walter Gropius’s reminder that ‘there is no finality in architecture, only continuous change.’

Africa and the Middle East



1. *The Great Sphinx*, Giza, c. 2530 BCE (Egypt)

It may seem curious that monumental architecture was first developed in a land that was so poor in such building resources as timber and stone. But from the 4th millennium BCE a series of diverse and warring civilisations residing in the 'Fertile Crescent' between the Tigris and Euphrates Rivers succeeded in inventing both writing and urban society, including mankind's first

essays in architectural building on a monumental scale. That these Mesopotamian cultures were able to accomplish this using only sun-dried mud bricks is remarkable, and is perhaps a testament to the extreme degree of social control wielded by their rulers. The exact sequence of peoples who inhabited and fought over this region over many hundreds of years constitutes a notoriously complex historical patchwork, yet archaeology has revealed a recognisable consistency among them, especially in regard to architectural and urbanistic form.

The monumental architecture of the ancient Sumerians, who established a series of city-states near the Tigris-Euphrates delta, was largely religious in nature. The Mesopotamian temple soon came to assume a standardised arrangement, consisting of a taller central chamber (cella) flanked by lower spaces. As the older mud temples crumbled and were replaced by new ones on the same foundations, these shrines came to be set on tall hills, and these, ultimately, took on the form of stepped pyramids, or ziggurats – the real-life inspiration, in fact, for the Biblical Tower of Babel. Lifting the holy sanctuary as close to the sky as possible, the profile of ziggurats was further meant to recall that of a mountain, a vertical axis by which the supernatural realm could be accessed. After the Akkadian conquests of the mid-3rd millennium BCE, we find early (though limited) use of the round arch, the dome and the vault. Perhaps just as importantly, there also appear the first aesthetic impulses in monumental building: the external appearance of temples, whose simple, load-bearing masonry construction meant that they were necessarily massive, cubic and closed, came to be modulated by the addition of evenly spaced pilasters or decorative buttresses, thus creating a sculptural sense of strength and an attractively regular patterning of light and shade in the strong sunlight. In societies ruled by god-kings, in which little distinction was made between secular and religious powers, temples came to form larger precincts with royal palaces and administrative buildings. Much of this architecture was defensive in function and appearance, though often clad with fired or glazed terra-cotta tiles for both aesthetic and practical reasons. Individual domestic buildings, such as those comprising the city of Ur on the Euphrates, were again inwardly focused, and consisted of an inner courtyard surrounded by smaller rooms, thus serving as a prototype for Middle Eastern and Mediterranean houses for millennia to come.

From the 9th through the 7th centuries BCE the warlike Assyrians built palaces of immense size at their successive capital cities of Nimrud, Khorsabad and Nineveh. The fortified citadel of Khorsabad, erected during the 8th century BCE by Sennacherib, consisted of some 25 acres of palaces, courtyards, temple chambers and a tall ziggurat. Technically, the Assyrians made no great strides beyond their Sumerian predecessors, but their temples became increasingly large, lavish and colourful. The last great surge of monumental building in Mesopotamia took place after the fall of the Assyrians, with the erection of Nebuchadnezzar's great city of Babylon in the 7th century BCE. Its palaces and temples, their external walls decorated by glazed terracotta tiles of animals and mythological beasts, were arranged along a great processional way. In the following century the accomplishments of the Assyrians would come to be rivaled by those of the neighbouring Persians, as epitomised by the great royal palace at Persepolis, built atop a broad terrace of native rock. Every element of architecture and relief sculpture here served to glorify the ruler, and the great audience chamber (apadana, or hypostyle hall) and nearby throne hall were notable for their numerous tall stone columns set in grid formation, some topped with addorsed bulls' heads.

While the Sumerian culture was rising, further to the west the pharaohs were consolidating their power in Upper and Lower Egypt. Here an architecture of extraordinary monumentality and stability emerged, founding a tradition that was to last almost three thousand years. Though favouring structurally conservative techniques, the Egyptians created the world's first large-scale buildings in finely carved stone, and developed stonemasonry to a peak of skill that has rarely been surpassed. It has nevertheless been demonstrated that Egyptian honorific architecture was to a large extent modelled on the forms and building materials of their much more modest domestic constructions of mud, timber and papyrus, and traces and reminiscences of these

older techniques can be discovered in many temple structures. Most monumental buildings were religious and/or funerary in character, beginning with the great pyramid of Djoser at Saqqara and the unprecedentedly colossal Old Kingdom pyramids at the edge of the desert at Giza, both dating from the mid-3rd millennium BCE. There was a relative lull in monumental construction during the Middle Kingdom period (1991–1650 BCE), but from the beginning of the New Kingdom (1570 BCE) the freestanding temple again came to the fore and assumed a standardised typology, rarely departed from afterwards: as at Luxor, a central axis leads through a monumental gateway (pylon), a forecourt and a columned hall towards a smaller sanctuary in which the cult image was kept, inaccessible to all but a handful of upper-caste individuals. Egyptian tombs, like the pyramids, were inevitably associated with nearby temples. One of the most notable temple-tombs is that of Queen Hatshepsut in the 18th Dynasty, which was partly set on ramped terraces and partly cut into a stone cliff. Cult temples, which usually took shape gradually over many centuries, were places of holy dread, for they were seen as the literal dwelling place of the Egyptian deities. In all cases the desire of Egyptian architecture was to evoke a sense of religious mystery and awe, an effect heightened by the necessarily thick walls and dark interiors. A secondary aim, as in the Pyramids, was to foil tomb robbers through the inclusion of internal portcullises, false chambers and corridors and the like, though such strategies almost always proved ineffective and virtually all Egyptian funerary architecture has long since been looted. The Egyptians apparently felt little need to expand their interior spaces, and large enclosed areas were only made possible, as in the great hypostyle hall at Karnak, by the insertion of a closely-spaced forest of thick columns to support the roof. Externally, walls were often battered (canted inwards) so as to give a greater effect of strength, and could be covered with large areas of intricately incised hieroglyphics and low-relief scenes, thus leaving us a vivid record of the beliefs and everyday life of Egyptians of all classes. With only a little exaggeration one might say that down through the millennia Egyptian architecture was to remain essentially unchanged, mirroring – if not a lack of intellectual curiosity or desire for innovation – the underlying stability of social life and religious belief. The Egyptians built for eternity, and their architecture is correspondingly massive, stable and timeless.

Until recently the study of the historical architecture of sub-Saharan Africa was largely the province of the anthropologist rather than the architectural historian. This is because few of the building traditions of the continent's innumerable ethno-linguistic groups matched Western notions of monumentality. Even by this rather limited definition of architecture, however, sub-Saharan Africa has produced some remarkable but still lesser-known architectural masterpieces. In early times we find traces of skilled stonemasonry being practised in Ghana, by the Kush civilisation in Sudan, and in the Ethiopian kingdom of Aksum. In the medieval period the spread of Islam produced major monuments throughout East and West Africa, most notably the Great Mosque of Djenné in Mali. And in southern Africa, the curvilinear stone walls of Great Zimbabwe make up the largest medieval city of sub-Saharan Africa. The Royal palaces at Abomey, Benin (1625–1900) constitute one of the most historic sites in West Africa; built over many years as part of the capital of the ancient kingdom of Dahomey, the elaborately decorated edifices record the history and religion of their builders. Although such international bodies as UNESCO have taken up the cause in recent years, it has to be said that much remains to be done in the archaeological investigation, scholarly study, and popularisation of African achievement in architecture, and historical preservation has now become a pressing need at many sites.

Moving once again to the east, we encounter in the Arabian Peninsula the birthplace of the Islamic religion, which began its remarkable expansion through the Middle East, Asia, Africa and Europe from the 7th century. As a largely tribal and nomadic people, the first Muslims had few real architectural traditions of their own, but took over local building forms and techniques in every country they conquered. The Muslim house of worship, or mosque, can be found in its most essential form as early as 622, when the Prophet's own mosque was built in Medina. Here, based

around an extensive colonnaded courtyard with a central fountain for ritual cleansing, we find the basic elements of Islamic typology: the large prayer room, the mihrab (prayer niche indicating the direction of Mecca), the minbar (elevated stand), the muhajar (balustrade), the pulpit, the midha (purification room) and one or more minarets (tall towers from which the call to prayer is made, a feature originally derived from converted church towers in Syria).

Islam's first great ruling dynasty, the Umayyads, were based in Damascus, and oversaw the creation of some of the most enduring monuments of Islam, including the Dome of the Rock (technically a sanctuary or shrine rather than a mosque) and the Al-Aqsa Mosque in Jerusalem, as well as the Great Umayyad Mosque at Damascus, which incorporated a Classical temple that had since been converted into a church. Typically Islamic building features, such as the horseshoe arch and barrel-vaulted masonry tunnels, as well as a love of rich ornamentation, emerged here. At about the same time, the Tulunids in Cairo initiated a great program of mosque-building in that city, and by the 9th century monumental mosques were being erected across North Africa. The Seljuks in Persia introduced several innovations in mosque design at the start of the second millennium, notably the incorporation of a huge iwan (giant arch) on each side of the courtyard, a feature taken from the earlier Sassanian culture. The extraordinarily beautiful mosques at Isfahan, Iran, built from the 11th century, exemplify the Islamic genius for colourful and geometrically complex tilework. In the meantime the last of the Umayyads, expelled from the east, had taken up residence in Spain, and the Great Mosque of Córdoba, with its famous forest of arcaded columns, was built and rebuilt from the 8th century. In conquered Constantinople, now renamed Istanbul, the Muslims took the church of the Hagia Sophia as the pre-eminent prototype for new mosque design, and the 16th-century structures of the architect Sinan, which draw clear lessons from Byzantium, are among the most masterful and attractive of all mosques. In terms of domestic architecture, the Alhambra palace in Granada, Spain, bears eloquent witness to the high level of Muslim architecture and taste in the last century and a half before their expulsion. Another important Muslim typology, dating back at least to the 12th century, is the madrasa, or religious school, consisting of a large central courtyard surrounded by the students' rooms. Recent study of traditional Islamic architecture, as carried out by Hassan Fathy and others, has revealed a wealth of practical knowledge regarding ventilation, heat regulation, economy and social aptitude, factors which can only become increasingly relevant in an energy-conscious future. And as particularly seen in Saudi Arabia and the wealthy states of the Persian Gulf, Islamic architecture continues to grow and evolve, even to the extent that Western architects (like the American firm of Skidmore, Owings & Merrill) have been hired to take charge of religious buildings, and modern aesthetics and construction techniques have comfortably found their place in mosques of ever-increasing scale, comfort and sophistication.



2. *Pyramid of Djoser, Saqqara, c. 2750 BCE and later (Egypt)*



3. *Funerary Temple of Mentuhotep, Deir el-Bahri, c. 2061–2010 BCE (Egypt)*



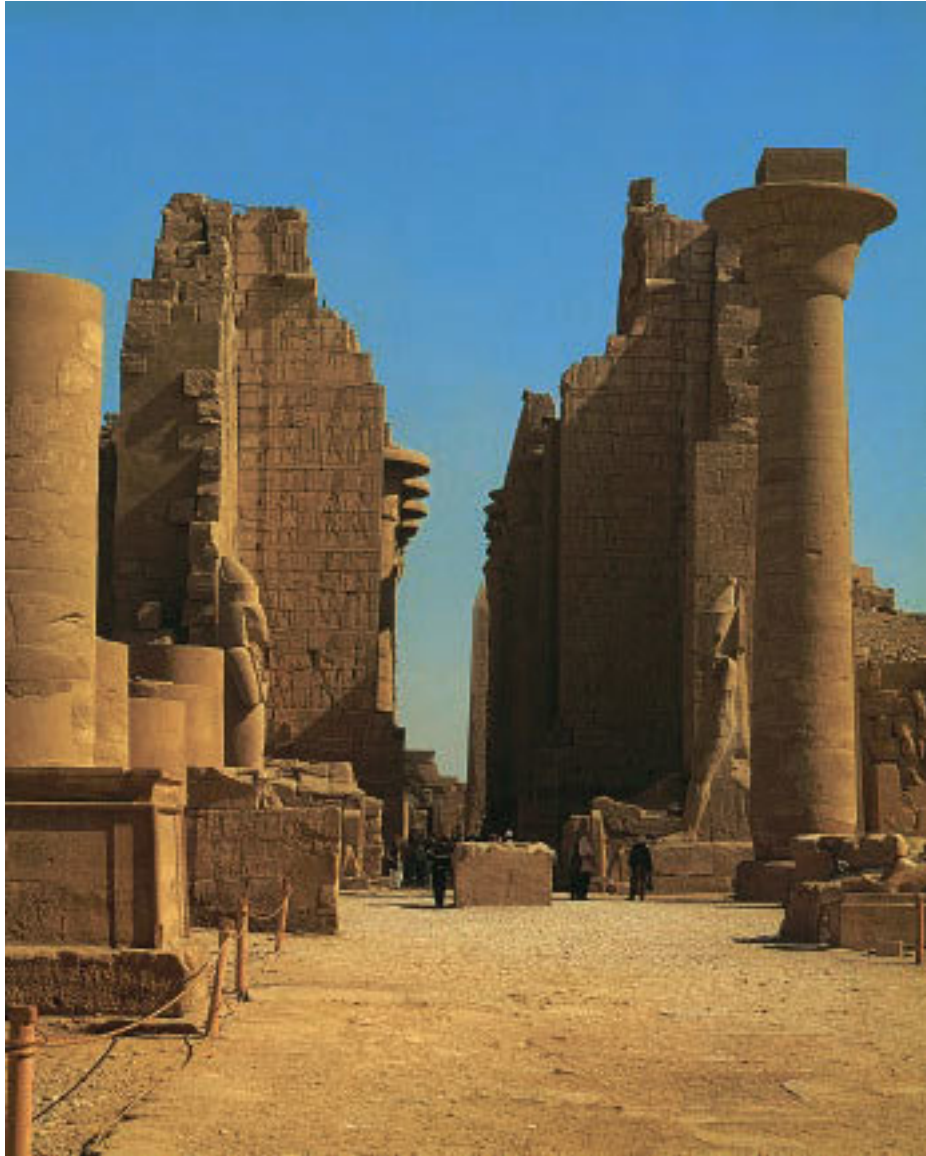
4. *Great Pyramids of Giza, Giza, c. 2600 BCE and later (Egypt)*

Khufu, like his successors, was concerned to supervise the construction of his own funerary monument during his lifetime. Each pyramid was originally connected to a temple on the banks of the Nile, where the body of the dead ruler would be held before burial. In the long and labour-intensive construction process, blocks of rough stone were unloaded from arriving boats, shaped on the riverbank, then hauled up huge temporary ramps to add a new layer of masonry to the rising structure. With their angles aligned to the cardinal directions, the pyramids betray a geometrical precision that confirms the Egyptian mastery of calculation. Weighing more than 5 million tons and comprising some 2 million stone blocks, the Great Pyramid of Khufu is the largest of all Egyptian

pyramids, and the only surviving 'Wonder' of the ancient world; it was, in fact, the tallest building on earth for a period of almost 4000 years. The pyramids' present appearance is very dilapidated: they would originally have had a veneer of smooth limestone, and the Great Pyramid had sheets of gold covering its summit. Ironically, no trace of Khufu's mummy was ever found in the Great Pyramid, and only one image of him is known to exist.



5. *Great Ziggurat, Ur, c. 2100 BCE (Iraq)*

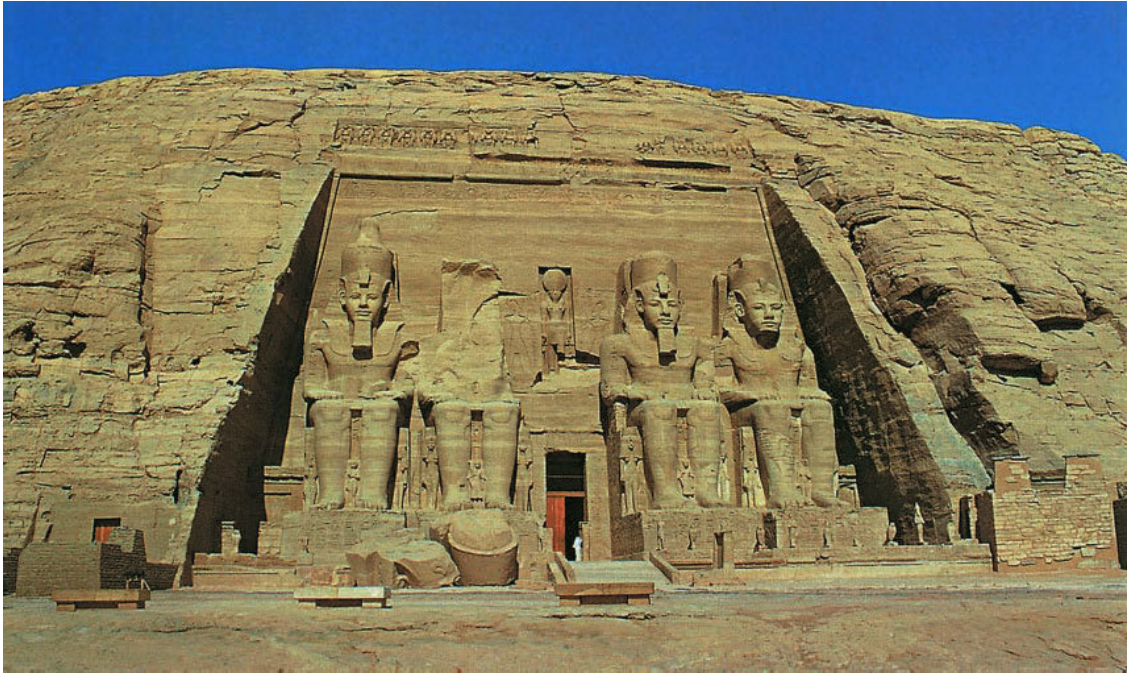


6. *Great Temple of Amun*, Karnak, c. 1550 BCE and later (Egypt)



7. *Funerary Temple of Queen Hatshepsut, Deir el-Bahri, c. 1473–1458 BCE (Egypt)*

This great tomb-temple dedicated to the sun god Amun dates from the 18th dynasty, the first of Egypt's New Kingdom, but it continues an older Middle Kingdom tradition of rock-cut tombs. The general typology of Hatshepsut's monument was borrowed from the earlier and smaller temple-tomb of Mentuhotep, which is immediately adjacent. The visible part of the temple consists of three superimposed terraces fronted by rows of square piers; backed by fluted round columns, these are often interpreted as predecessors of the Doric Order that would later be developed by the Greeks. Accessed by ramps, the terraces were once irrigated and the site of lush plantings of scented trees. The temple is partly carved into the rocky cliff behind. As with earlier rock-cut tombs, the actual grave of the Queen was located on the far side of the mountains, in the Valley of the Kings; this step was taken as part of the never-ending battle against grave robbers. This is one of the few ancient monuments for which we have the name of a specific builder: its design is sometimes attributed to Senmut, a courtier, and also to Hatshepsut herself, making her history's first known woman architect.



8. *Temple of Ramses II*, Abu Simbel, begun c. 1280 BCE (Egypt)



9. *Temple of Amun*, Luxor, Thebes, c. 1408–1300 BCE (Egypt)



10. *Temple of Isis, Philae, 500–164 BCE (Egypt)*



11. *Temple of Horus, Edfu, 237–57 BCE (Egypt)*



12. *Palace complex at Persepolis, 6th-5th century BCE (Iran)*



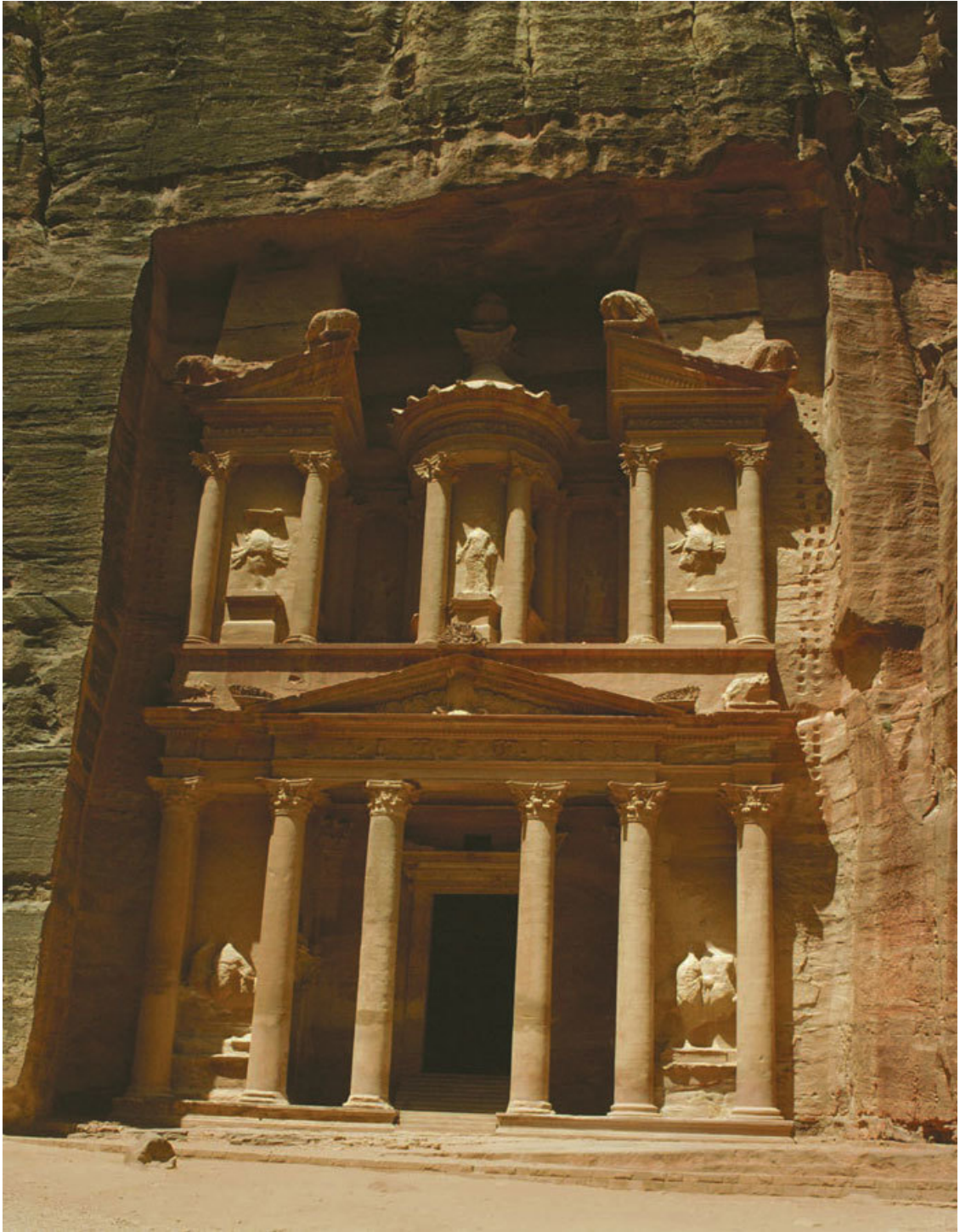
13. *Ishtar Gate, Babylon (now in the Pergamon Museum, Berlin), c. 600 BCE (Iraq)*

Rising from the banks of the Euphrates and covering some 10 square kilometres, Babylon was the capital of a sprawling empire. The city was extensively rebuilt in the reign of Nebuchadnezzar II, who is mentioned in the Bible. This fortified gateway, some 12 metres high, is constructed of mud bricks. It has a veneer of fired and glazed ceramics featuring many bas-relief images of stylised lions, bulls and mythological creatures; the latter, with their scaly bodies, snake heads, scorpion tails, front legs of a cat and rear legs of a bird, are associated with the god Marduk, to whom the city's great ziggurat temple – likely the inspiration for the Tower of Babel – was dedicated. Named

for the Babylonian goddess of love and war, the Ishtar Gate originally guarded the entrance to the main processional way of Babylon, some 800 metres long, which ran past the famous Hanging Gardens. Babylon was later conquered and largely destroyed by the Persians. The Ishtar Gate was discovered during German archaeological campaigns from 1899–1917 and reconstructed in Berlin. Partly restored under the regime of Saddam Hussein, the site of Babylon in modern-day Iraq has since been damaged once again under the American occupation.



14. *Gymnasium*, Cyrene, 5th century BCE and later (Libya)



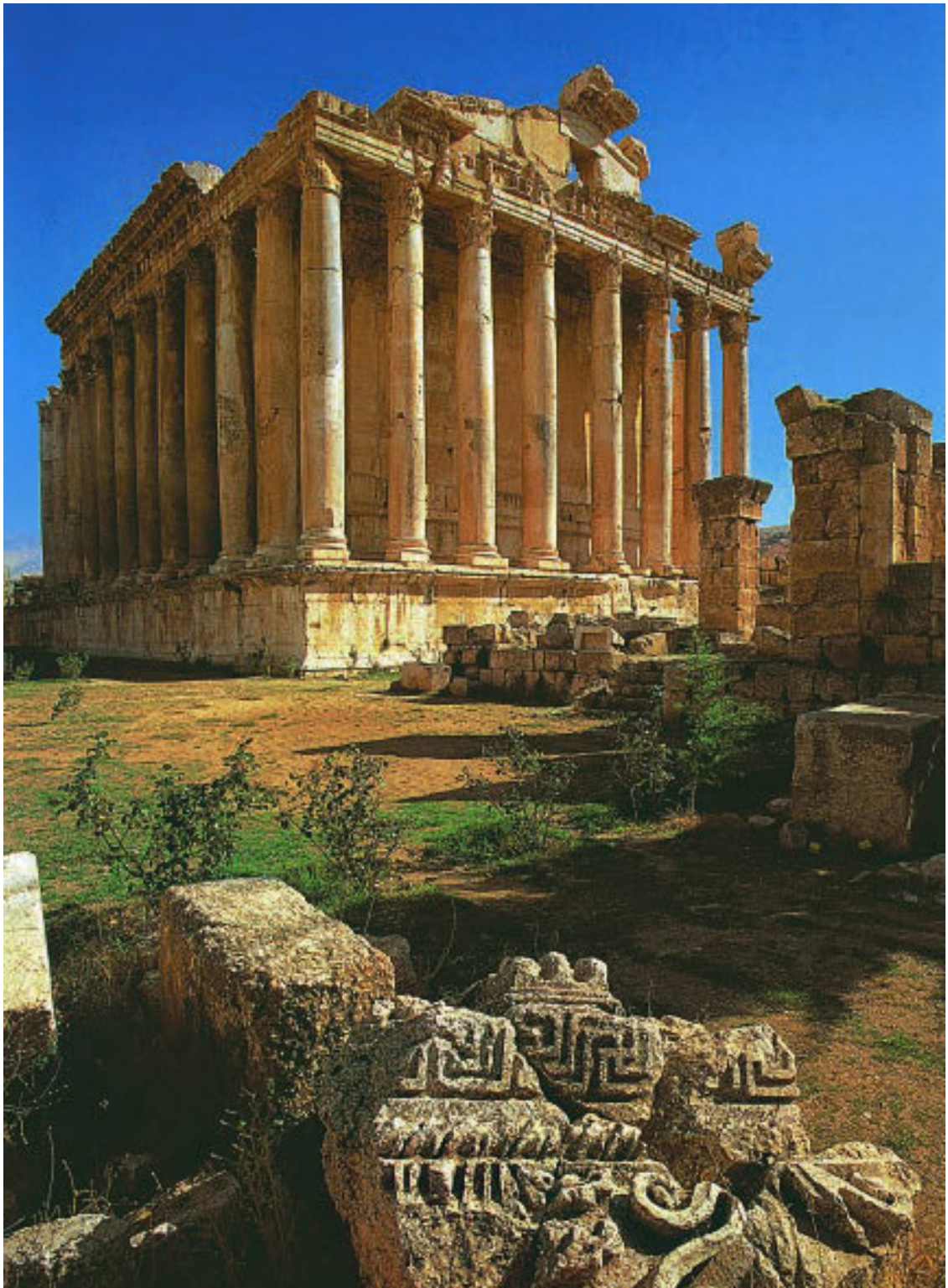
15. *The Treasury*, Petra, c. 60 BCE (Jordan)



16. *City of Timgad*, founded c. 10 °CE (Algeria)



17. *Temple of Bel*, Palmyra, 32 CE (Syria)



18. *Temple of Bacchus*, Baalbek, c. 15 °CE (Lebanon)



19. *Temple of Jupiter Heliopolitan*, Baalbek, c. 20 °CE (Lebanon)



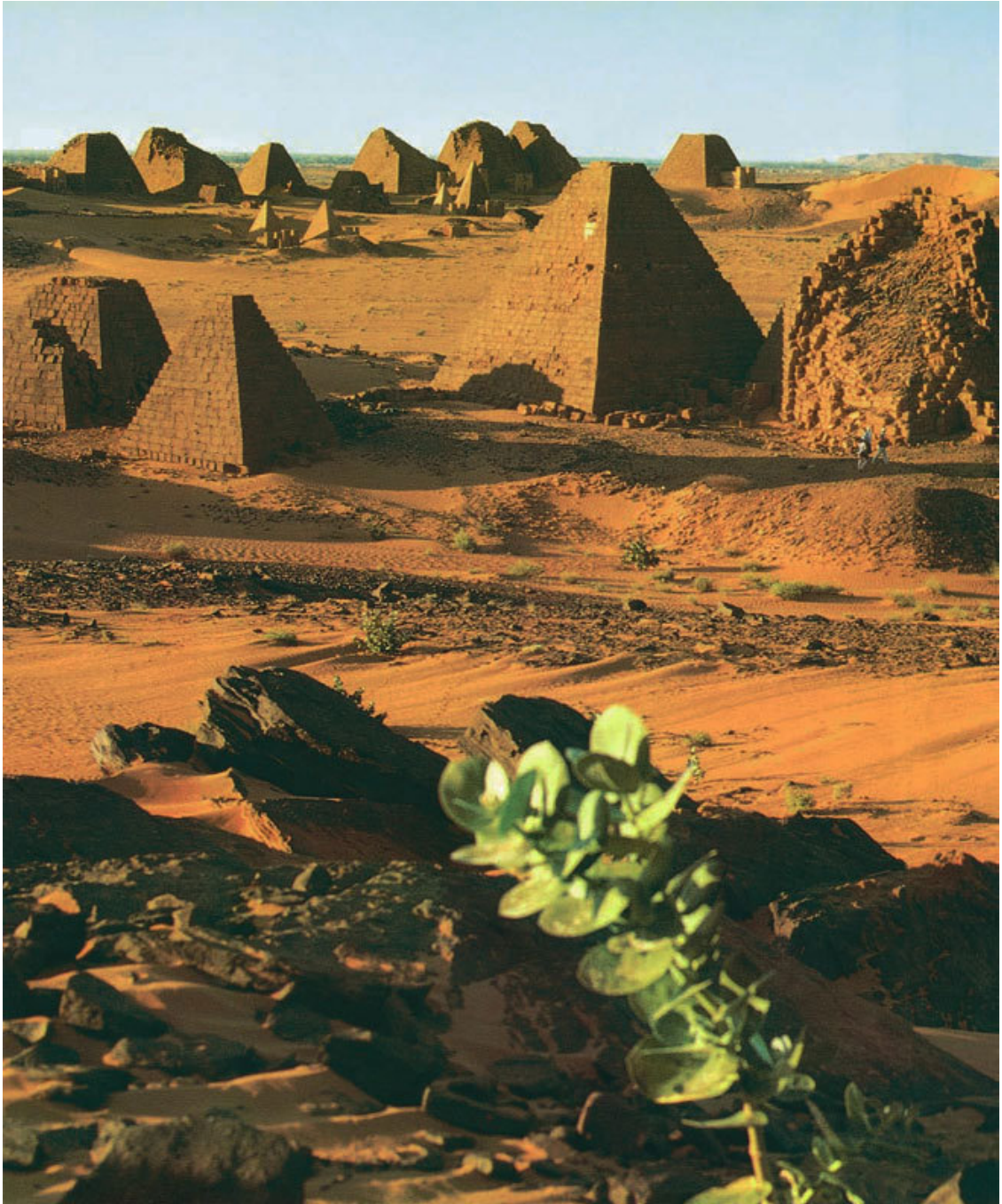
20. *City of Leptis Magna*, 2nd-4th century CE (Libya)



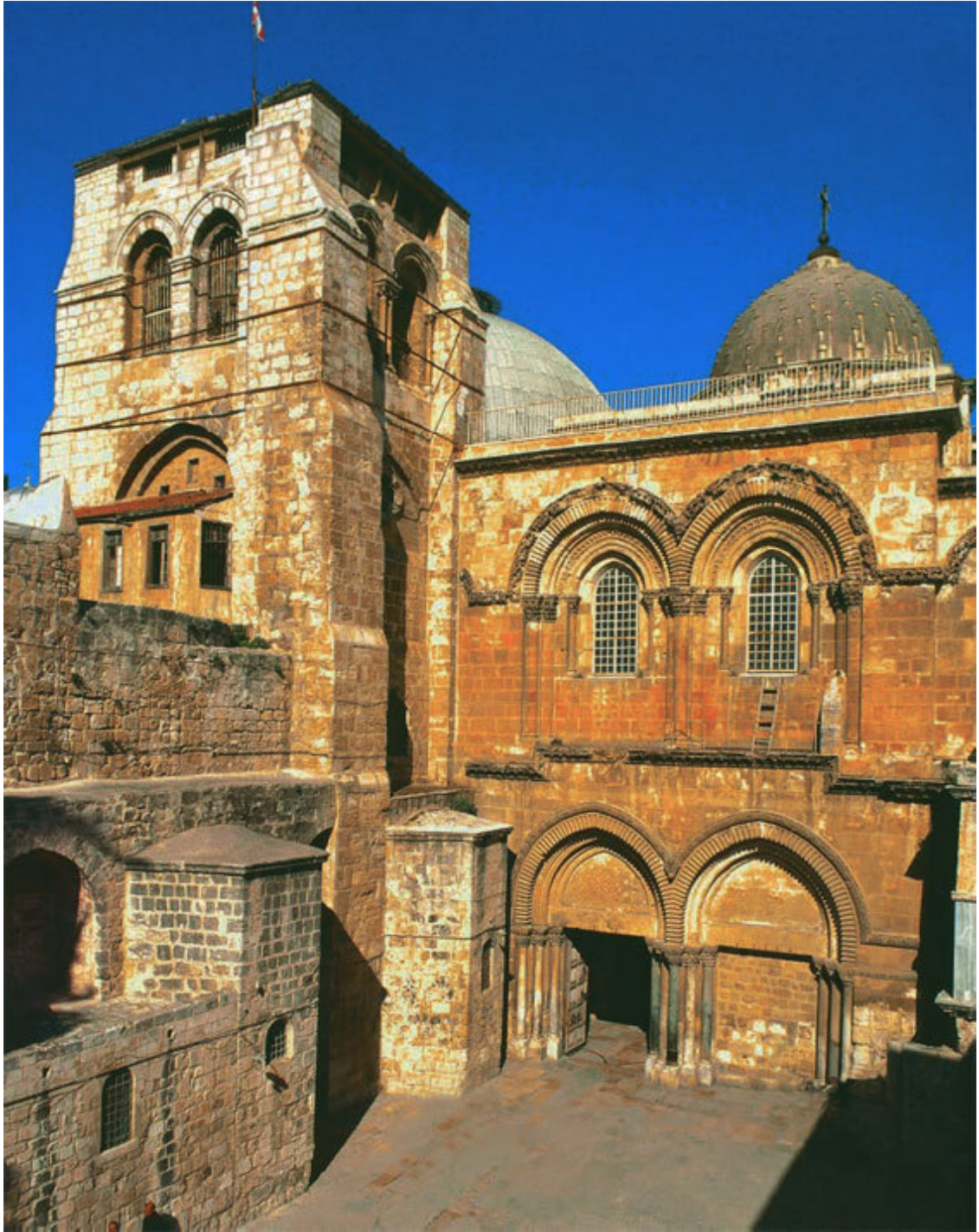
21. *City of Sabratha*, 2nd-4th century CE (Libya)



22. *Palace of Ctesiphon*, near Baghdad, c. 6th century (Iraq)



23. *Nubian pyramids at Meroë*, Meroë, 300 BCE-30 °CE (Sudan)



24. Church of the Holy Sepulchre, Jerusalem, begun c. 325 with many later rebuildings (Israel)

This famous church, the ultimate goal of Crusader zeal, has been many times destroyed and rebuilt. Since it is supposed to have been erected on the actual site of Jesus' Passion and Resurrection, the Church of the Holy Sepulchre is of central importance to Christianity: among several other holy areas which are reputed to be contained within its walls is the Hill of Calvary, where the Crucifixion took place, as well as the rock-cut tomb of Christ. In its original form, a large rotunda covered the latter site, a feature that was often imitated in later European churches. The location of the building is said to have been determined by the Empress Helena, mother of the Emperor Constantine, who came to the Holy Land and miraculously discovered the True Cross lying discarded in a pile of rubbish. The present building is a patchwork of different styles and

historical periods, and the control of every square centimetre is fought over by a variety of Christian sects. For this reason, the keys to the Church have long been held by a prominent Muslim family of Jerusalem.



25. *Khirbat al-Mafjar palace complex*, Jericho, 8th century (Palestine)



26. *Qasr Amra desert castle*, c. 711–715 (Jordan)



27. *St. Catherine's Monastery*, Mount Sinai, 527–565 and later (Egypt)

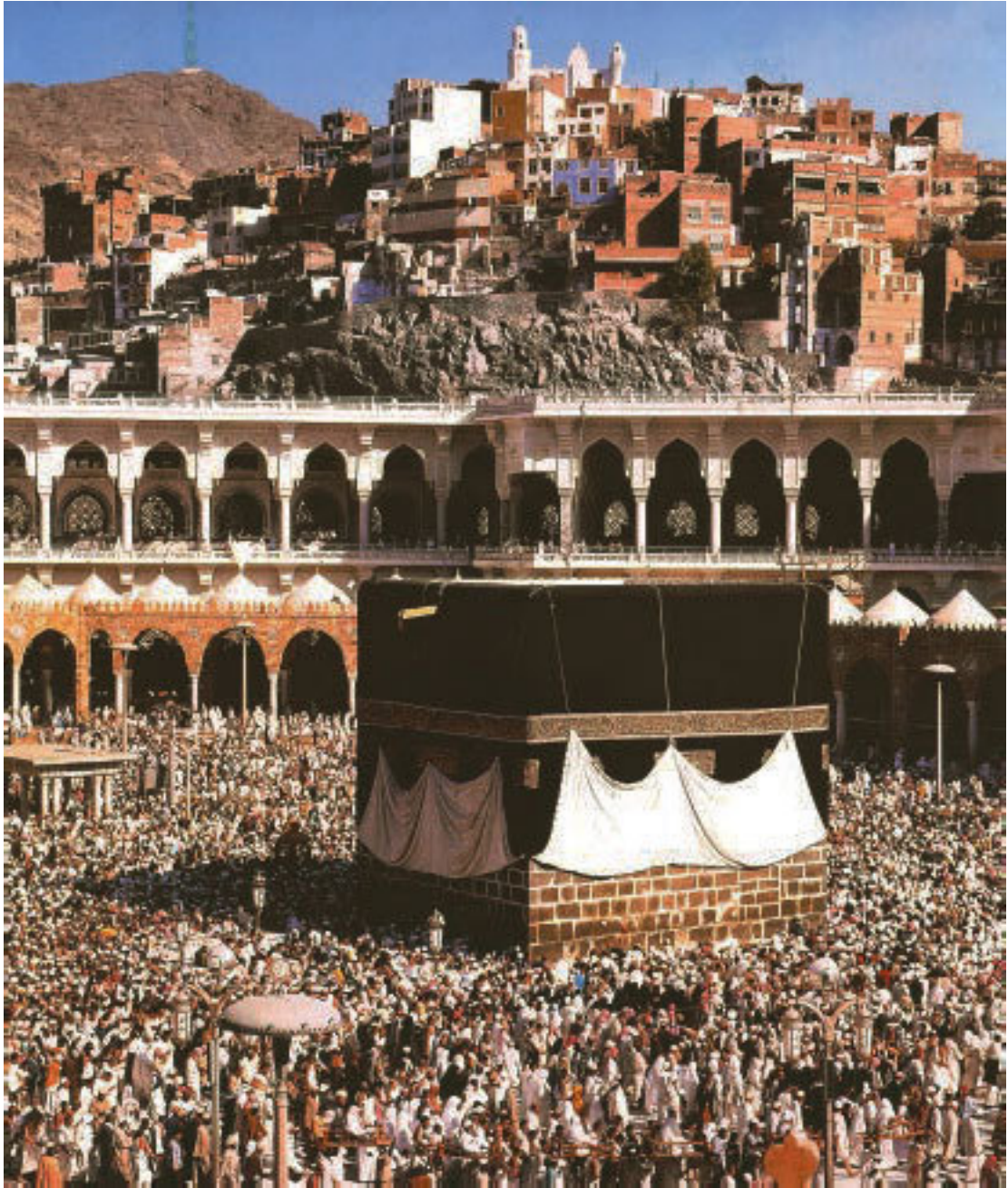


28. *Arg-e Bam (Bam citadel)*, before the 2003 earthquake, Bam, 5th century BCE-1850 (Iran)



29. *Dome of the Rock*, Jerusalem, c. 687–692 (Israel)

Often incorrectly called a mosque, this very early Muslim shrine was erected by the rulers of the Umayyad Caliphate atop the rock from which Mohammed is said to have ascended to heaven. Its location is in fact one of the most fiercely disputed pieces of territory in the world, for it sits atop the rocky bluff, Mount Moriah, where Abraham is said to have offered his son Isaac to God, and where the great Jewish temple was erected by Solomon and later rebuilt by Herod, only to be destroyed by the Romans. The centralised form of the Dome of the Rock was inspired by early Christian churches, perhaps the rotunda of the nearby Church of the Holy Sepulchre. Its octagonal plan, generated by geometrical means, is covered by a double-shelled wooden dome set on a tall drum. The interior, with its rich mosaic decoration, has a double ambulatory to allow easy circulation for pilgrims. The shrine was re-covered in multicoloured tiles in the 17th century, and its resplendent gold leaf-covered dome stands as a familiar landmark in the troubled cityscape of Jerusalem.



30. *Al-Masjid al-Haram*, Mecca, 7th century with later rebuildings (Saudi Arabia)



31. *Great Mosque, Córdoba, begun in 785–786 (Spain)*

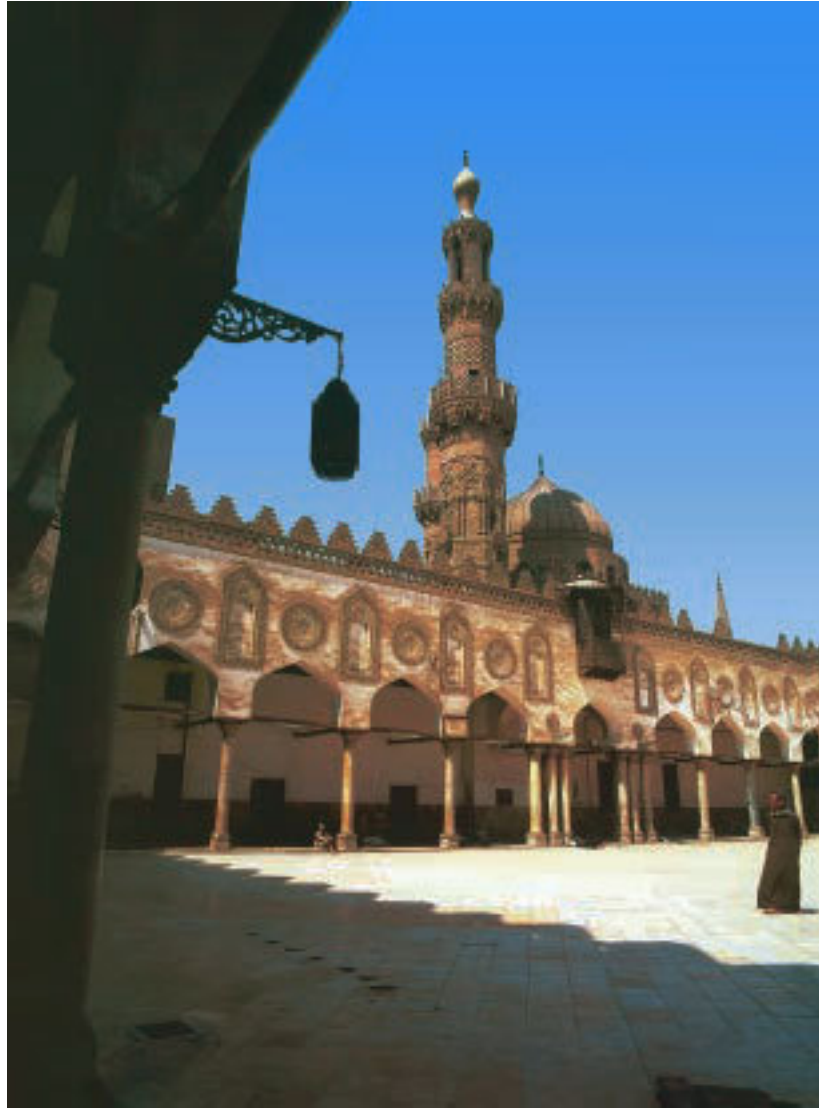
The Mezquita of Córdoba is one of the oldest mosques in existence, and bears eloquent witness to the early Islamic presence on the Iberian Peninsula. It was one of the first buildings erected in Spain by the Umayyad dynasty, which had been uprooted from its former stronghold in Damascus. Built over a 7th-century Visigothic church, the mosque was begun by Emir Abd ar-Rahman I. It was originally connected to the Caliph's palace by a raised walkway. At the time of its construction, this was the second-largest mosque in the world. Fronted by an open courtyard, the huge prayer hall is supported by a forest of columns in various stones, many taken from older Roman buildings. These support polychromatic double arches, which are horseshoe-shaped below and semicircular above; this was a structural innovation that helped to carry the high ceiling. Elsewhere in the building are complex vaulted and ribbed domes, likely showing the influence of Persian architecture. The mosque has an unorthodox orientation, with the mihrab facing south. After the Spanish reconquest of Córdoba in 1236, the mosque was turned into a Catholic church.



32. *Umayyad Mosque*, Damascus, 706–715 (Syria)



33. *Mosque of Al Mutawakkil (Great Mosque of Samarra)*, Samarra, 847–851 (Iraq)



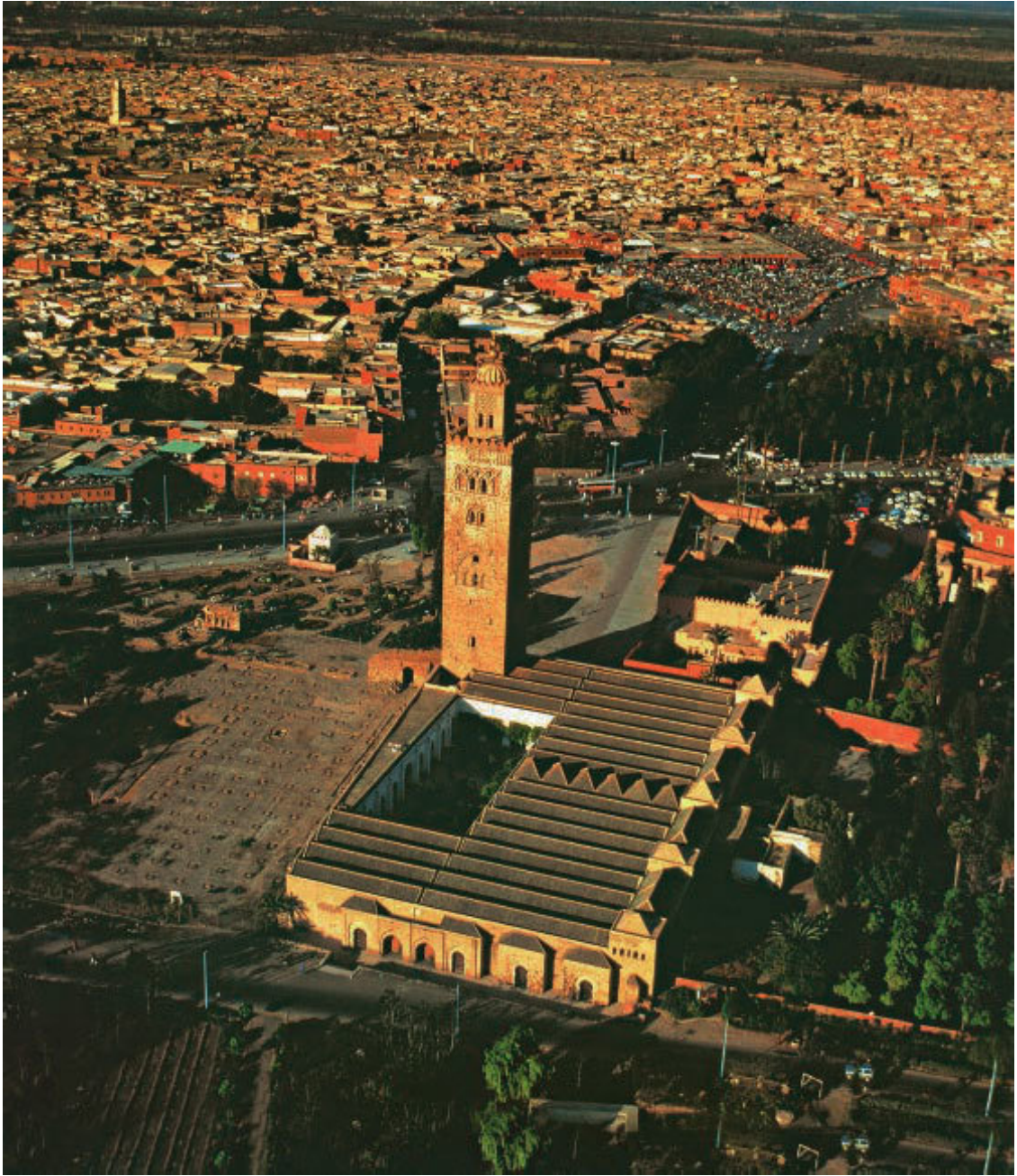
34. *Al Azhar Mosque*, Cairo, 970–972 (Egypt)



35. *Mosque of Uqba*, Kairouan, 670 (Tunisia)



36. *Al Hakim Mosque*, Cairo, 990–1013 (Egypt)



37. *Kutubiya Mosque*, Marrakesh, 1158 and later (Morocco)



38. *Friday Mosque*, Isfahan, rebuilt after 1121–1122 (Iran)



39. *Al-Aqsa Mosque*, Jerusalem, rebuilt 1033 (Israel)



40. *Krak des chevaliers, Qalaat al Hosn, c. 1100–1200 (Syria)*

Greatest of the Crusader fortresses in the Holy Land, Krak des chevaliers, or the “fortress of the knights,” served as the headquarters of the Knights Hospitaller. T. E. Lawrence found it to be “perhaps the best preserved and most wholly admirable castle in the world.” One of several such strongholds that formed a huge defensive ring around the territory that had been conquered and controlled by the Crusaders, Krak des chevaliers was erected on top of an older Muslim fortress on a hill overlooking the main route to the Mediterranean. The Hospitallers greatly expanded the original fortress to reflect the latest French ideas on fortification. The main building, surrounded by two ranks of thick walls with twenty towers, had extensive storage facilities, stables, a chapel and a meeting hall. Water cisterns allowed it to withstand long sieges, perhaps up to five years. At its height, the castle housed a garrison of some 2000 men. After a series of unsuccessful sieges through the 12th century, it was eventually taken by Sultan Baibars in 1271, forcing the Knights to depart for Rhodes. The interior features rare frescoes from the Crusader period. It is now owned by the Syrian government and was made a UNESCO World Heritage Site in 2006.



41. *Citadel of Saladin*, Cairo, 1183 and later (Egypt)



42. *Bahla Fort*, Oasis of Bahla, 12th-15th century (Oman)



43. *Great Mosque, Djenné, 13th century (rebuilt in 1907) (Mali)*

Djenné, which was converted to Islam in 1240, was a major city in the Mali and Songhai Empires. Built on the site of an earlier palace, this huge religious complex eloquently reflects the incursion of Islam into West Africa. The mosque is constructed largely of bricks of sun-dried mud coated with mud plaster, and as such is the largest adobe building in the world. The rounded appearance of its envelope reminds many people of a giant sand castle. As with all such structures, its thick walls serve to regulate the temperature, protecting the interiors from heat during the daytime and radiating stored warmth at night. Ostrich eggs, symbols of purity and abundance, provide a covering for its towers and spires. The prayer hall is supported by 90 wooden columns. Because of regular flooding the mosque is built on a raised platform. The present structure dates from a rebuilding of 1907. Its custodians have resisted any modernisation, allowing only the installation of a loudspeaker system. The mosque is kept in good condition by means of an annual festival, in the course of which any damage is repaired. It was declared a UNESCO World Heritage Site in 1988.



44. *Citadel of Aleppo*, Aleppo, 1230 (Syria)



45. *Stelae and capitol of Aksum*, Aksum, 0–1250 (Ethiopia)



46. *Ruins of Kilwa Kisiwani, Kilwa, 13th-16th century (Tanzania)*



47. *The Great Enclosure and other stone ruins at Great Zimbabwe, c. 1200–1440 (Zimbabwe)*

The mysterious stone ruins at Great Zimbabwe are some of the oldest and most impressive monuments of southern Africa. Great Zimbabwe, or the “house of stone,” is an extensive area containing hundreds of such structures. Archaeology has shown this to have been an important trading centre, with a network of contacts stretching across the continent. The Enclosure may have held as many as 18,000 inhabitants at its height. The ruins are notable for their eschewal of rectilinearity: their walls form a series of fluent and elegant curves. Most impressive of all the sites is the Great Enclosure, whose walls extend for some 250 metres and reach 11 metres in height. The first Europeans to see the ruins were Portuguese traders in the 16th century. During the subsequent imperialist era, the notion that the structures were the work of Africans was widely discredited for racial and political reasons, but excavations have since proved that they were indeed an indigenous production, probably built by a people belonging to the Bantu linguistic family. It is unclear why the settlements were abandoned, but drought, disease or a decline in trade are current theories. The modern-day nation of Zimbabwe is named for the ruins.



48. *Madrasa Al-Firdaws*, Aleppo, mid-13th century (Syria)



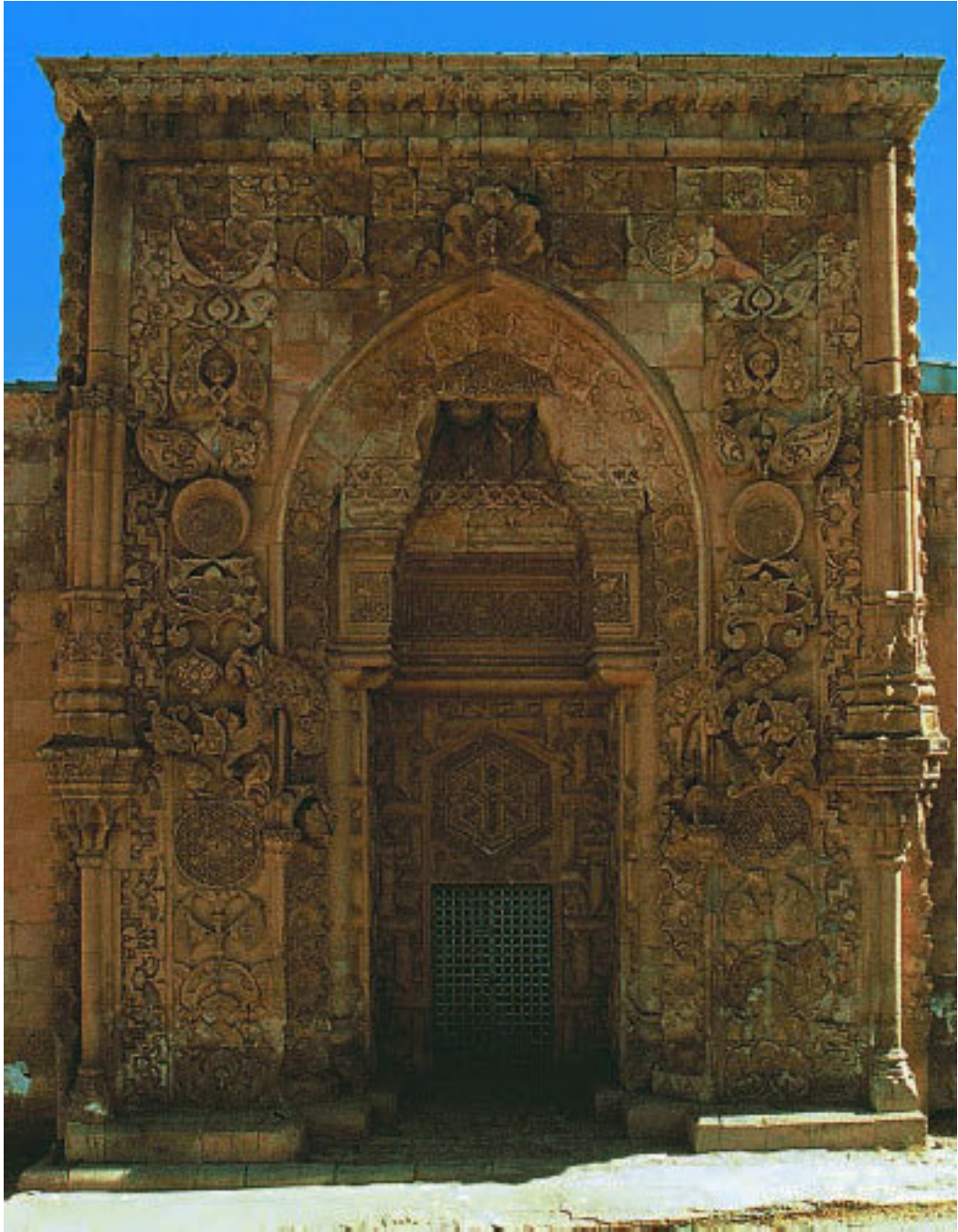
49. *The Alhambra*, Granada, 13th-14th century (Spain)

The royal citadel of the Alhambra was the centre of Muslim power in southern Spain. It was begun in the 13th century by Muhammad I Ibn al-Ahmar and added to piecemeal over a number of decades. The Alhambra comprises both a great fortress with 23 towers as well as a cool and luxurious retreat for the Caliphs, with many spacious rooms, courtyards and gardens.

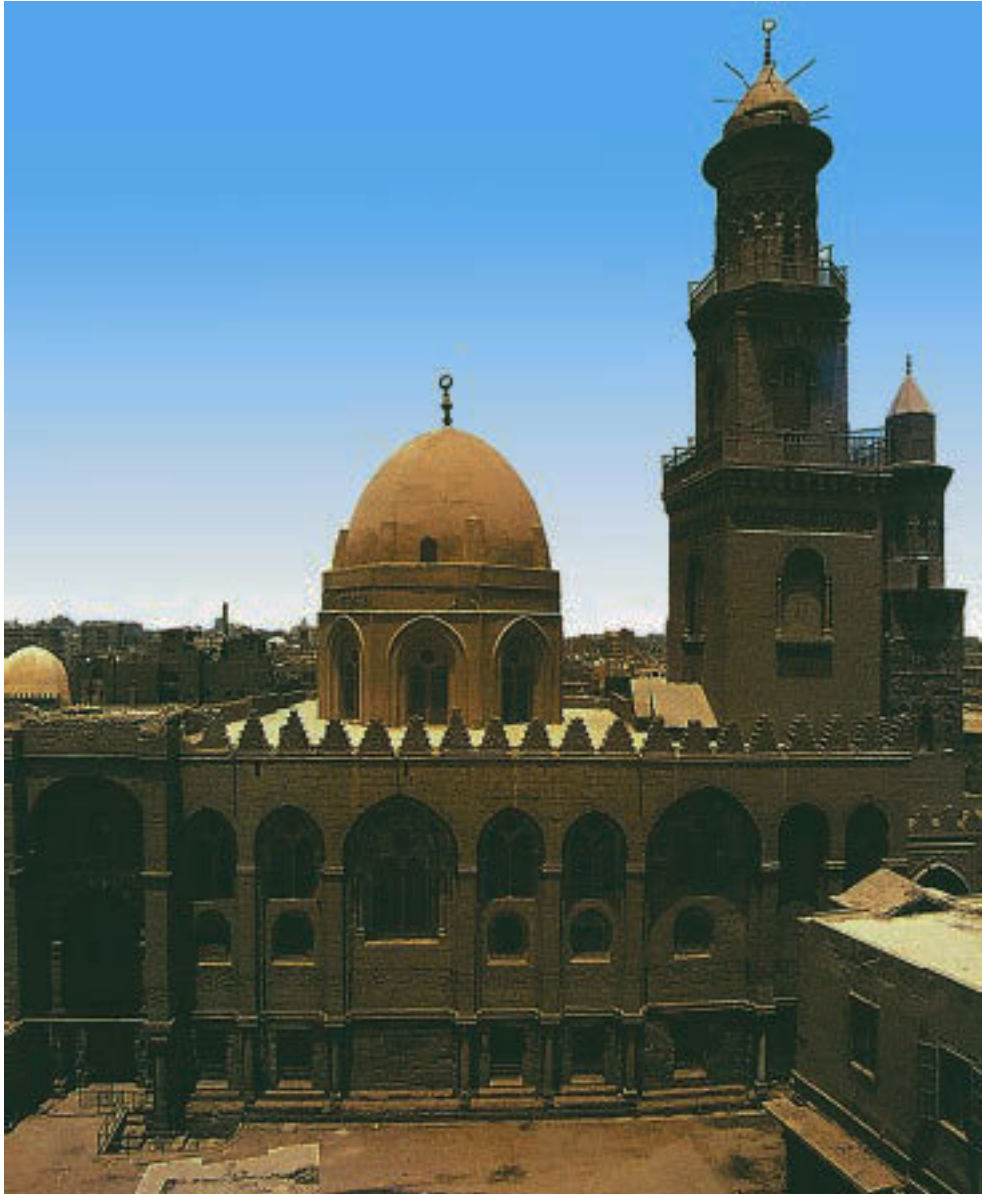
A variety of media, including stucco, colourful mosaic tiles, marbles and bas-relief sculpture, was used to ornament its walls. In many of the Alhambra's interior spaces we find muqarnas vaulting, a decorative ceiling treatment in carved plaster that has a purely visual rather than a structural function. The most famous of the Alhambra's outdoor spaces is the gracefully arcaded Lion Court: with its central fountain and four sunken water channels it is said to represent an earthly manifestation of paradise. Some of the complex was destroyed and built over when the Christians retook the region in 1492, but much remains. The Alhambra's name means "red" in Arabic, referring to the colour of the bricks of its outer defensive walls.



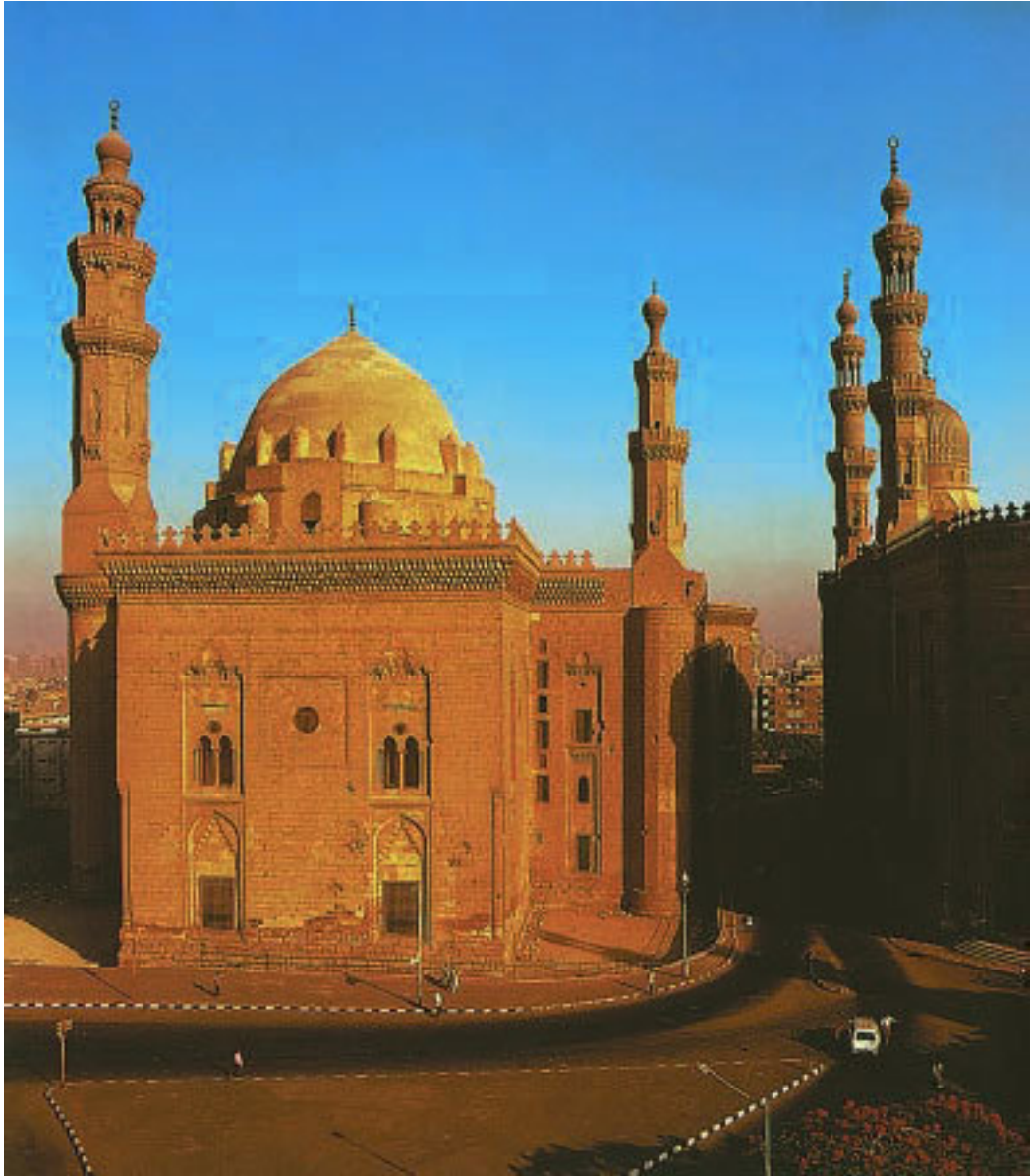
50. *The Church of St. George, Lalibela, c. 1250 (Ethiopia)*



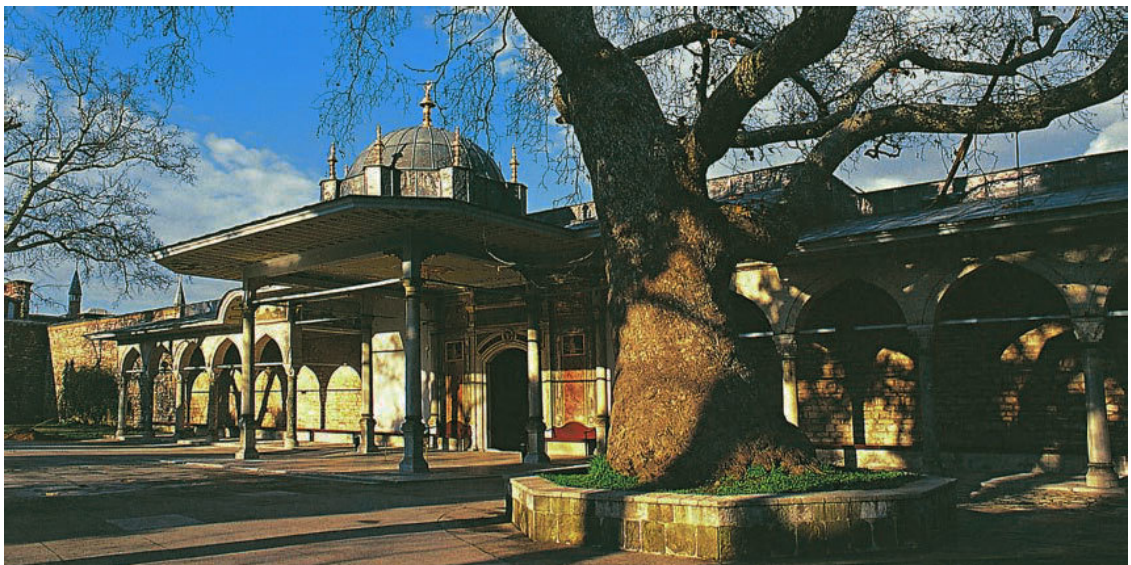
51. *Great Mosque of Divrigi*, Divrigi, c. 1299 (Turkey)



52. *Sultan Qala'un funerary complex*, Cairo, c. 1285 (Egypt)



53. *Mosque-Madrassa of Sultan Hassan, Cairo, 1356–1363 (Egypt)*



54. *Topkapi Palace*, Istanbul, 1459 and later (Turkey)

This immense palace, which served as the official residence of the Ottoman Sultans from 1465 to 1853, is set on a prominent point overlooking the Golden Horn. Built on the site of the ancient Greek city of Byzantium, it was begun shortly after the conquest of Constantinople by Sultan Mehmed II. Insulated from the outer world, the palace was largely self-sufficient, having its own water supply, cisterns and kitchens. As many as 4000 people lived here at its height. Its plan is roughly rectangular, organised around four main courtyards, but frequent extensions and alterations resulted in an asymmetrical complex of hundreds of rooms, interspersed with gardens. Life in the palace was carried out according to strict ceremony, and speaking was forbidden in the inner courtyards. The innermost spaces were the private and inviolable sanctum of the Sultan and his harem. In 1921, with the end of the Ottoman Empire, the Topkapi Palace was turned into a museum. Its name, which dates only from the 19th century, means “cannon gate,” after a portal once located nearby.



55. *Chinli Kiosk*, *Topkapi Palace*, Istanbul, 1473 (Turkey)



56. *Fortress city of Fasil Ghebbi, Gondar, c. 16th-17th century (Ethiopia)*



57. *Bayezid II Mosque, Istanbul, 1501–1506 (Turkey)*



58. *Tomb of Askia*, Gao, c. 1550 (Mali)



59. *Sankore Mosque (University of Sankore)*, Timbuktu, 1581 (Mali)



60. **Mimar Koca Sinan ibn Abd al-Mannan**, also known as **Sinan**, *Mosque of Sultan Suleiman the Magnificent*, Istanbul, 1550–1558 (Turkey)

This spectacular mosque, which occupies a prominent location near the harbor, is only one part of a larger religious complex featuring a cemetery, madrasas, shops, a caravanserai and many social services. Typical in many respects of Ottoman religious buildings, it is one of the masterworks of the architect and engineer Koca Sinan (c. 1490–1588). Though Sinan was not Muslim by birth, he was trained as a Janissary and served as the official court architect to the Sultans of Constantinople for half a century. The mosque was visibly inspired by the nearby Byzantine church of Hagia Sophia (532–537), which had been converted into a mosque after the Muslim conquest of 1453. Following its prototype, the great prayer hall of the mosque is covered by a large dome and buttressed by two lower, half-domed spaces, though Sinan's plan simplifies and streamlines that of the earlier building. Four needle-sharp minarets rise at the corners. The mosque is preceded by a large arcaded courtyard, while Suleiman is buried in an octagonal mausoleum in the cemetery behind. Sinan kept a modest residence for himself at the northern corner of the site.



61. **Sedefkar Mehmet Aga**, *Mosque of Sultan Ahmed*, also known as *The Blue Mosque*, Istanbul, 1609–1617 (Turkey)



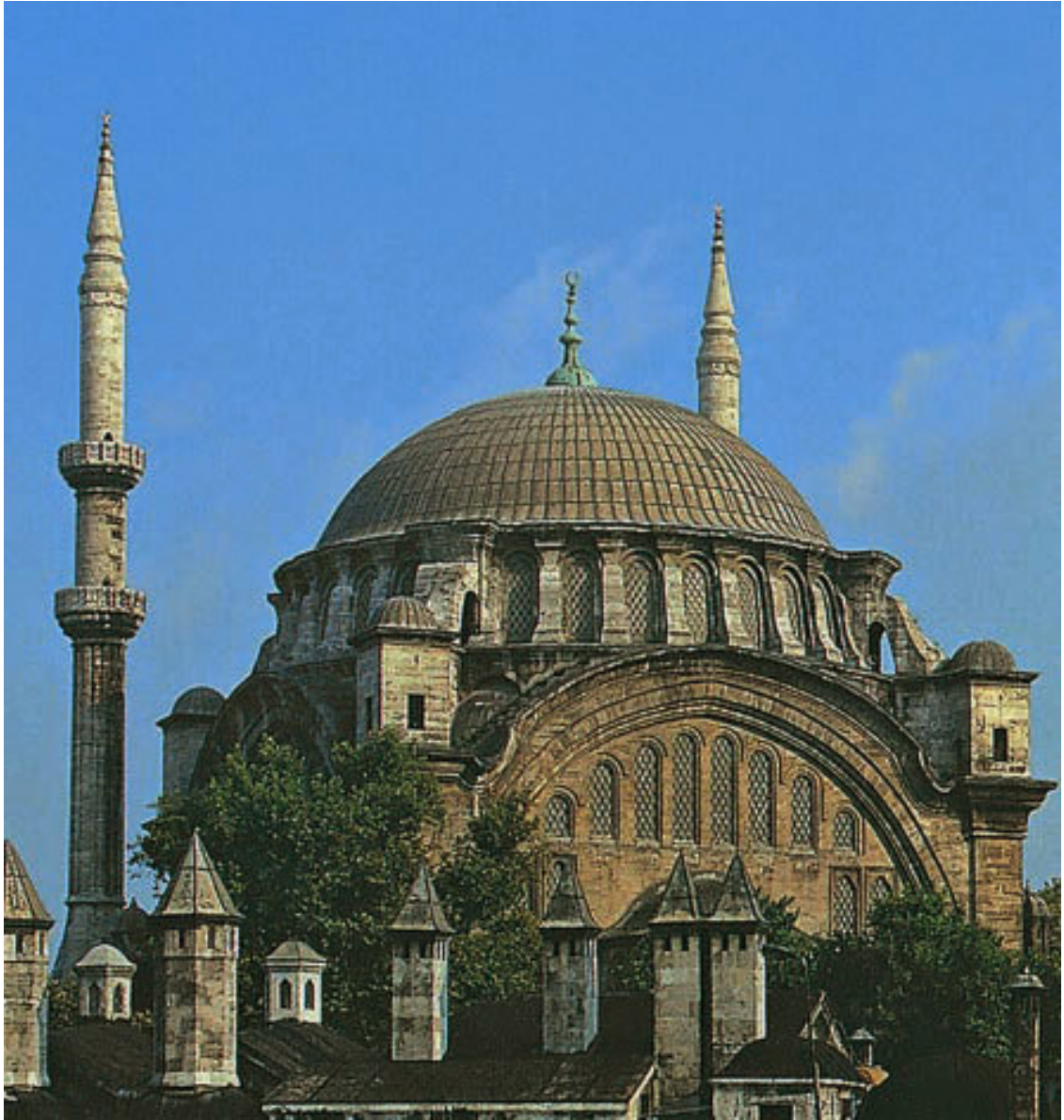
62. *Sultan Qansuh al-Ghuri Caravanserai*, Cairo, 1504–1505 (Egypt)



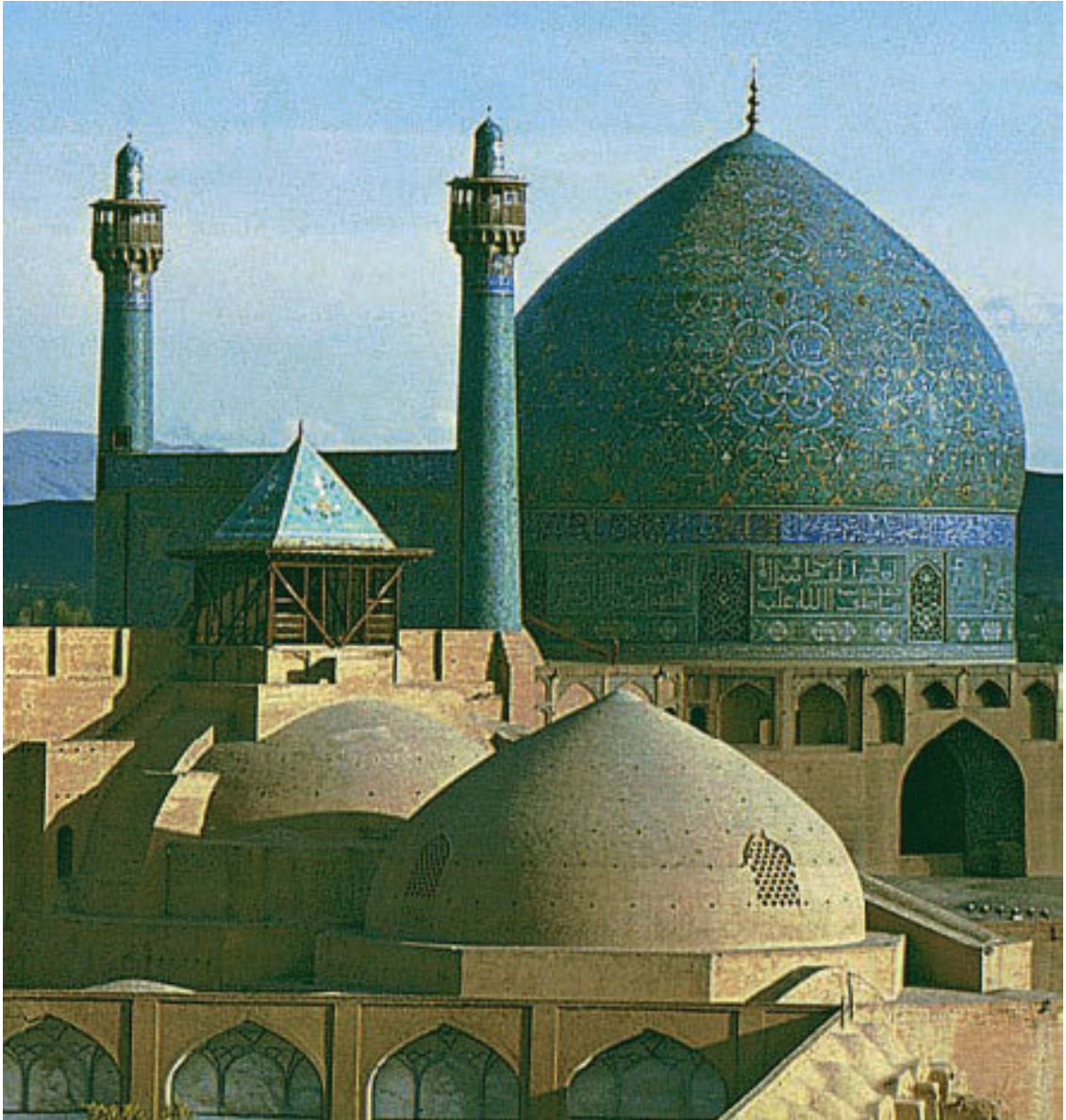
63. **Mimar Koca Sinan ibn Abd al-Mannan**, also known as **Sinan**, *The Selimiye Mosque*, Edirne, 1568–1574 (Turkey)



64. **Mimar Koca Sinan ibn Abd al-Mannan**, also known as **Sinan**, *Shehzade Mosque*, Istanbul, 1545–1548 (Turkey)



65. *Nuruosmaniye Mosque*, Istanbul, 1748–1755 (Turkey)



66. *Shah Mosque*, Isfahan, begun in 1611 (Iran)



67. *Tower Houses*, Sana'a, 8th-19th century (Yemen)



68. **Sir Herbert Baker**, *Union Buildings*, Pretoria, 1910–1913 (South Africa)



69. **Hassan Fathy**, *New Gurna*, near Luxor, 1948 and later (Egypt)



70. **Fareed El-Shafei**, *Mausoleum of the Aga Khan*, Aswan, 1959 (Egypt)



71. **Arthur Erickson**, *Etisalat Tower*, Dubai, 1986 (United Arab Emirates)



72. **Henning Larsen**, *Ministry of Foreign Affairs*, Riyadh, 1982–1984 (Saudi Arabia)

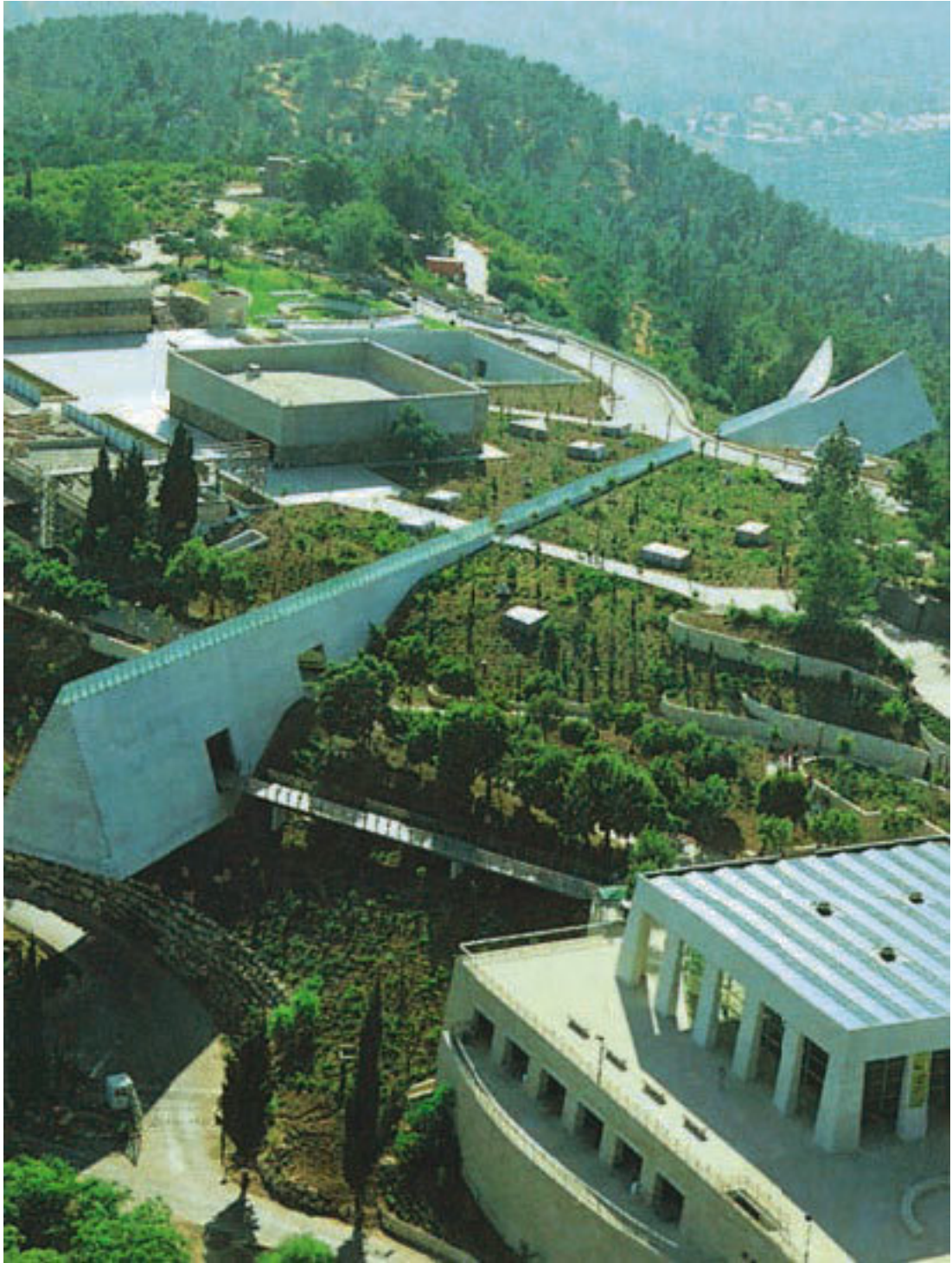


73. **Michel Pinseau**, *Hassan II Mosque*, Casablanca, 1986–1993 (Morocco)

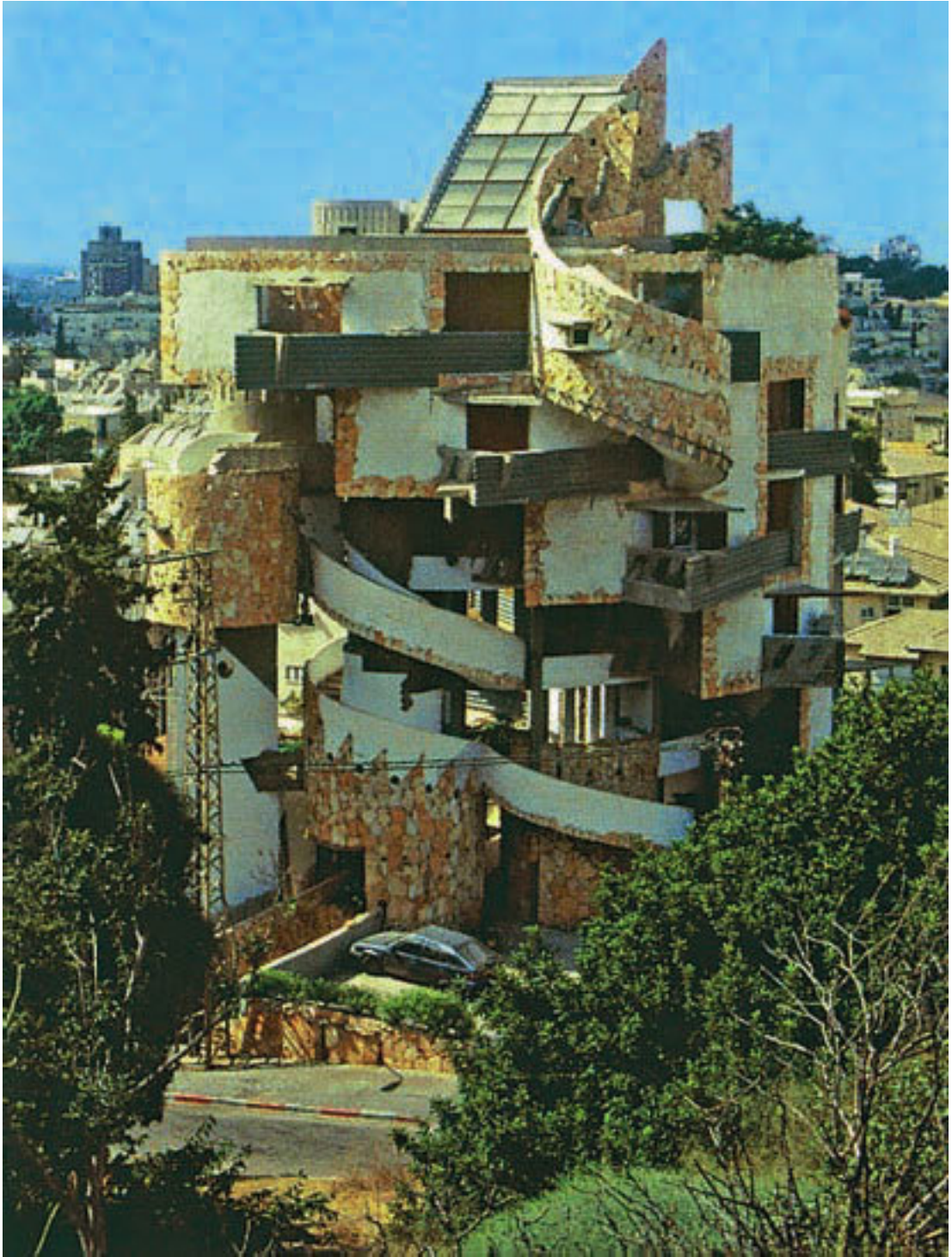


74. **Snøhetta**, *Bibliotheca Alexandrina*, Alexandria, 1995–2002 (Egypt)

This great new library, repository of knowledge for researchers from Egypt and neighbouring Islamic countries, deliberately recalls the illustrious precedent of the Library of Alexandria, which was utterly destroyed in ancient times. In 1974, the University of Alexandria decided to build its library on a site close to where the original building once stood. An international effort spearheaded by Egyptian President Hosni Mubarek and supported by UNESCO was launched, and a design competition was held in 1988. From over 1400 entries the Norwegian firm Snøhetta was chosen to build the new library. In plan, the major building is circular, while in profile it features 11 staggered levels that cascade down to the Mediterranean. The main reading room is lit by a glass-paneled roof some 32 metres above the floor. The walls are of Aswan granite, engraved with characters from 120 languages. Though the library has shelf space for 8 million books, it is far from full, relying mainly on donations from foreign countries to build up its holdings; it houses, however, the only copy and external backup of the Internet Archive.



75. **Moshe Safdie**, *Yad Vashem Holocaust Memorial*, Jerusalem, begun in 1953 (new buildings 1993–2005) (Israel)



76. **Zvi Hecker**, *Spiral Apartment House*, Ramat Gan, 1984–1990 (Israel)



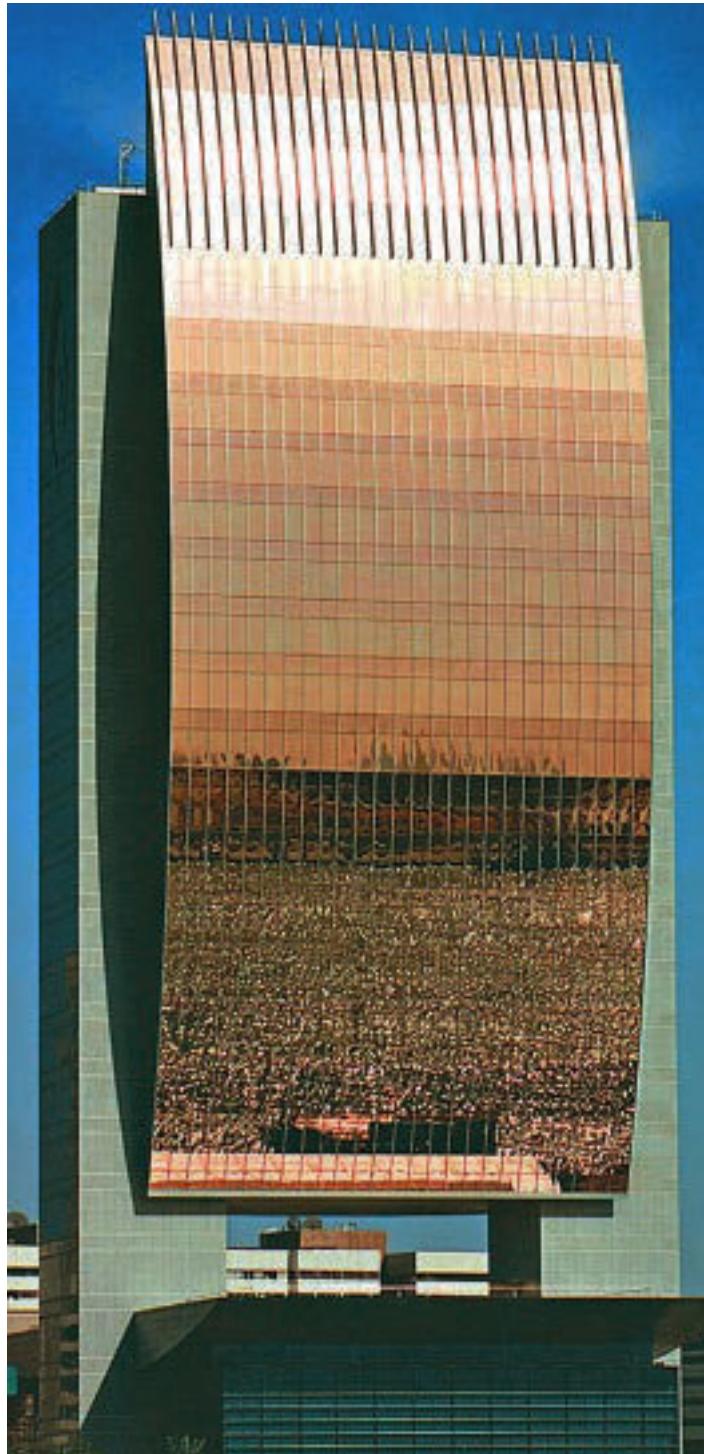
77. **Peter Barber**, *Villa Anbar*, Dammam, 1992 (Saudi Arabia)



78. **Norman Foster** and **Buro Happold**, *Al Faisaliyah Tower*, Riyadh, 2000 (Saudi Arabia)



79. **Ellerbe Becket**, Omrania & Associates, *Kingdom Centre*, Riyadh, 2000 (Saudi Arabia)



80. **Carlos Ott**, *National Bank of Dubai*, Dubai, 1996–1998 (United Arab Emirates)



81. **Skidmore, Owings & Merrill (SOM)**, *Burj Khalifa*, also known as *Burj Dubaï* or *Dubaï Tower*, 2004–2010. Height: 828 m. Dubaï (United Arab Emirates)

The tallest building on earth even before it was completed, the Burj Dubai skyscraper was designed by Adrian Smith, who worked with the American architectural firm SOM until 2006. The anticipated height of the tower was left vague during its construction, but it is expected to top out at over 800 metres. Containing offices, luxury residences and a hotel, it is part of the larger “Downtown Dubai” project meant to attract visitors and investors to this small but very wealthy emirate. The tower consists of a central core surrounded by three tall elements that form a series of spiraling setbacks as they rise: in this respect it generally resembles the bundled tube form of the Sears Tower in Chicago, also by SOM, as well as Frank Lloyd Wright’s proposal for a ‘Mile-High’ tower of the 1950s. The building’s three-lobed footprint is said to be derived from floral patterning in Islamic architecture. Its lower part has a frame of special pressure-and heat-resistant reinforced concrete; during the construction process this was mixed with ice and poured at night to allow even curing. The tower’s budget and construction methods have been a source of controversy, costing over 4 billion dollars.



82. **Tom Wright**, *Burj al Arab hotel*, Dubai, 1993–1999 (United Arab Emirates)

Asia and Oceania



83. *The Great Wall of China*, begun in 221 BCE (China)

India and Southeast Asia

Little is known of the cultures that produced such prehistoric Indian cities as Harappa and Mohenjo-Daro, which flourished along the banks of the Indus from the 3rd millennium BCE. Laid out on a grid oriented to the cardinal directions, these settlements' advanced refinements – raised citadels on stepped terraces, sewers, running water for domestic use and large ritual baths – rival those of Sumerian cities of the time, though they are oddly lacking in large royal tombs or religious buildings. In general however, the architectural traditions of the Indian subcontinent – and indeed its surviving monuments – are largely religious in nature, focused on great temple complexes. Architectural style varied according to successive ruling regimes, who dictated the favoured religious system. Four major epochs can be discerned. The most ancient Indian culture, the forerunner of modern Hinduism, is sometimes termed Indo-Aryan, and lasted from about 1500 BCE until about 120 °CE. In the 3rd century BCE the great ruler Asoka imported skilled artisans from Persia to initiate a tradition of skilled stone carving. This period also saw the creation of the first Buddhist monuments, a religion that arose in the 6th century. Substantial Buddhist *stupas* (gated and domed mounds, serving as centres of pilgrimage), *chatiyas* (temples) and *viharas* (monasteries) can be found in southern India, and – as at Ajanta – often utilise natural caves or are cut into rock hillsides. The Kailasa Temple at Ellora (75 °CE), devoted to Hinduism, Buddhism and Jainism, is part of a great complex of rock-cut architecture at the site. Excavated out of a 2-km stretch of basalt cliff, it was begun by vertical excavation: carvers cut down through the living rock, removing some 200,000 tons of material to create a complex monolithic structure featuring tall monuments and multi-storied buildings with highly ornate wall carvings.

From the 7th century the Brahman culture erected monumental, free-standing temples, many of which still survive. Though varying by region, Hindu temples generally take the form of a walled compound enclosing a tall *vimana* (shrine), a hall of columns and lesser buildings. They are notable for their very rich, indeed overwhelming, profusion of decorative and representational carving, sometimes exhibiting erotic forms. (This relates largely to a Tantric belief that sexual activity can represent an ecstatic union of the human and the divine realms.) The Kandariya Mahadeva temple at the royal city of Khajuraho (c. 1050), for example, was lavishly funded and ornamented. Set on a tall plinth, it features a mountain-like arrangement of multiple towers positioned in successive order of height. Its upper levels are encrusted with densely-packed relief carvings.

India's second major period of architecture, which lasted from the 12th through the 18th centuries, was precipitated by the arrival of Islamic invaders from Afghanistan, who established a new capital at Delhi. While politically turbulent, this era witnessed a boom in monumental construction, especially with the rise of the Mughal dynasty from the 16th century. The Muslims introduced several new building types to India from the Middle East, notably the mosque with its vast prayer hall and minarets. Indian mosques consequently betray strong influence from Persian prototypes, and are notable for the increasing refinement of their masonry and decorative stone carving. This trend is most famously represented by the funerary complex known as the Taj Mahal at Agra (c. 1630–1653), though technically this is not a mosque. At the same time, the Muslims launched an extensive and long-lived campaign to convert or destroy all Hindu temples, with the result that the north of India is largely devoid of such structures, except in the remotest regions. The third and fourth major periods of Indian architecture, as discussed below, began with the British Raj, and saw widespread importation of Western styles and typologies into the subcontinent.

Moving further east, we see that Hinduism and Buddhism soon reached more southerly parts of Asia, including Burma, Indonesia and Indo-China, producing extraordinary temple complexes of unprecedented form and scale. The great 9th-century shrine at Borobodur, Indonesia, for example, is the largest Buddhist temple in the world. Its huge, symmetrical plan is oriented to the

cardinal directions, while its profile consists of a series of superimposed terraces that symbolically represents the successive stages of enlightenment of a Buddhist pilgrim. Another great temple, the 12th-century complex of Angkor Wat in Cambodia, again manifests a seemingly endless sequence of platforms, galleries, porches and towers, and is representative of the achievements of the Khmer civilisation.

China

Chinese civilisation arose along the valley of the Yellow River in the 2nd millennium BCE. Monumental architecture first began to appear in the 3rd century BCE under the Ch'ing dynasty, which united the country for the first time. Its greatest built legacy of this period is, of course, the Great Wall, which guards the northern border of the kingdom, though in the centuries since it has been rebuilt many times. In later periods Chinese cities were among the most advanced in the world. Yet little Chinese architecture dating from before the Ming period (1368–1644) survives. This is largely because most honorific buildings above the level of the stone foundations were constructed of pine or cedar wood, which has since decomposed. Stone vaulting was generally reserved for tomb structures or, later, city walls and gateways. Pagodas provide occasional exceptions: the Great Wild Goose Pagoda, for example, a very tall building erected during the Tang Dynasty (in the 7th century) as part of a monastery, was first built of rammed earth with a stone facing and later rebuilt in brick.

It was nevertheless China's innovations in timber construction that proved most influential throughout Asia, and its traditions changed little over the centuries. Simple trabeated constructions in wood can be found as early as prehistoric times in China, and it might be said that the column (rather than the solid wall) remained the basic unit of building over the centuries. Timber was nevertheless scarce in the central part of the country, and early wooden structures made use of relatively thin columns, wide bays and walls of light infill. Most Chinese utilitarian structures – houses, fortifications and military structures – were built of rammed earth or brick, while wood was used largely for honorific buildings. The repetitive bays of this framed wooden architecture necessarily relied on a simple modular grid system, and a set of standard proportions came to be codified for Imperial use in Li Chieh's Sung-era treatise *Methods and Designs in Architecture* (1103). The characteristic curving roof of the Chinese temple, with its wide eaves, terracotta tiling and increasingly complex systems of bracketing, became the focus of carpentry skill and decorative attention. A characteristic example might be the Temple of Heaven in Beijing (1406–1420 and later), whose circular superstructures of timber rest on a tall marble base. Chinese palaces were generally of one storey, and like temples, were rarely freestanding but incorporated into larger compounds of buildings and courtyards. Here one must look at the 15th-century Forbidden City in Beijing, a succession of vast halls and courtyards linked by marble balustrades. This was for almost five centuries the residence of the Chinese emperors. Based on a strict axial symmetry, its plan takes the form of a vast rectangle surrounded by a wide moat and a high wall. Its numberless buildings offer some of the best examples of Chinese palatial architecture, and it now constitutes the largest collection of ancient wooden structures in the world. Entering from Tiananmen Square, foreign ambassadors would have to pass through an intimidating sequence of huge gates and courts before arriving at the Hall of Supreme Harmony; this served as an audience hall for the emperor who received visitors while sitting on a tall dais.

Buddhist temples in China tended to follow the lead of Han dynasty palaces, but introduced a new architectural form of Indian origin: the pagoda. (Extensive underground sanctuaries also follow Indian precedent.) The oldest extant Chinese example dates from the 6th century, and – as noted above – tall and impressive structures in wood and brick from the Tang dynasty (618–906) and later are among China's oldest surviving monuments. Starting from a square or hexagonal base, the pagoda is formed of superimposed stories of diminishing width with decorative treatment of bracketing and roofs. Elaborate and colourful pagodas of this type continued to be built through the 19th century.

Japan and Korea

Some of Japan's oldest architectural monuments are its great Shinto shrines, notably those at Ise and Isumo. Chinese building practises, particularly the knowledge of timber construction, were carried with Buddhist missionaries to Korea and Japan in the 6th century. Many of the early temples at the capital city of Nara reflect such Chinese influence, and the complex at Horyu-ji is one of the oldest. The capital moved to Kyoto in 794, and the city is full of temples erected due to the patronage of the Emperor and his court. Among the other antiquities of Japan are the so-called 'keyhole tombs,' or tumuli (*kofun*), the most notable of which is that of the Emperor Nintoku (5th century). Located near Osaka, this monumental burial mound is 486 metres long and 35 metres high, consisting of a keyhole-shaped island in which one end is round and the other trapezoidal. Equally impressive is the later Japanese tradition of feudal castle construction, which was precipitated by the turbulent political situation of the 16th century: at Osaka, Himeji and other locations, tall multi-gabled towers set atop moated stone foundations dominate the landscape.

The 19th and 20th Centuries

The linked rise of imperialism and industrialism radically altered the architectures of Asia and Australasia, largely supplanting native traditions with Western styles and techniques. In India the British Raj of 1858–1947 saw the importation of European traditions for churches, railway stations and the offices and homes of colonial administrators in Madras, Calcutta and elsewhere. Towards the end of this period we need only look at the monumental governmental complex at New Delhi, designed by Sir Herbert Baker and Sir Edwin Lutyens in a Classical style inflected by Mughal traditions, to see the imperial machine in operation. A new period of Indian architecture opens up with independence and nationhood for India, Pakistan and Bangladesh, one that has witnessed attempts to come to terms both with the technical and aesthetic innovations of Western modernism as well as such pressing social realities as overpopulation and poverty. Even after independence, however, India has tended to look to the West for inspiration, and in the 1950s and 1960s it was the French-Swiss architect Le Corbusier who was chosen to design the new capital city of Chandigarh in the Punjab, and the American Louis Kahn who took charge of the government buildings of Dhaka, Bangladesh. In recent years, Indian architects such as Charles Correa and Balkrishna Doshi, though clearly influenced by their Western mentors, have worked to generate an appropriately hybrid modernism for their native country, one that can reflect both new approaches and traditional regional concerns.

With the exception of a brief incursion of the Italian Baroque through Jesuit influence in the early 18th century, China remained closed to foreign architectural trends until the early 20th century. Contrary to what happened in Japan, a subsequent period of hybrid Western-Asian building later gave way to an implicit adoption of modernist principles, and in recent years the opening of Chinese markets to the West has led to an extraordinary boom in highrise architecture in Beijing and other economic zones. Japan, after its opening to the West in the mid-19th century, has gradually assumed its position in the forefront of contemporary architecture. Foremost among 20th century Japanese architects was Kenzo Tange, who began his career by designing the Peace Centre in Hiroshima. Tange's primary influence – as was that of his teacher Kunio Maekawa (who worked in the master's Paris atelier) and many other later Japanese architects, including Tadao Ando – is that of Le Corbusier. Following Le Corbusier's Brutalist deployment of raw concrete in bold and striking forms, Japan continues to set the world benchmark of skilful and elegant concrete construction. Towards the end of the 20th century, the increasingly futuristic approach of some Japanese architects led to a kind of modernist 'Baroque' that has produced formally complex and expressive results.

A typically forward-looking monument of the present era in Asian architecture is represented by C. Y. Lee and Partners' Taipei 101 tower in Taiwan (1999–2004), a centre for international finance. Its 101 stories embody a fusion of Western technology and modernist aesthetics with Asian economic might and traditional iconography. Innovative engineering – including a huge steel pendulum suspended between the 92nd to the 88th floors as a giant tuned mass damper to offset deflection of the building in high winds – makes it an extremely stable structure, able to withstand earthquakes and typhoons. At the same time, an elaborate cosmological and numerological symbolism has been claimed for the tower, and the repeated segmentation of its envelope suggests a pagoda form.

Australia and Oceania

Over millennia the indigenous peoples of Australia and the South Sea islands developed timeless building traditions suited to local ecological conditions that nevertheless did not match Western expectations of what formal architecture should look like; their cultural productions were largely ignored by the first Western colonists. The first Western-style monumental architecture in Australia, dating from the early 19th century, evinced a late version of English Georgian Classicism when it aspired to formal elegance. Much building was necessarily utilitarian in character, though military and penal constructions could nevertheless assume a severe grandeur, and ornamental ironwork, as applied to balconies, came to characterise more upscale domestic architecture. Fuelled by the wealth generated by the Gold Rush, Australian cities soon came to display impressive examples of High Victorian-style architecture based on contemporary British modes and models. Foreign influence remained decisive through much of the 20th century, whether in the new capital city of Canberra (designed by Walter Burley Griffin, a onetime partner of Frank Lloyd Wright), or the famous Sydney Opera House (by the Danish architect Jørn Utzon, finished by others). Of native Australian architects, the late Harry Seidler remains the most prominent, though the buildings of Glenn Murcutt have recently aroused global interest among architectural professionals for their sensitive response to site and climate.



84. *Mahabodi Temple*, Bodh Gaya, Bihar, 250 BCE with later reconstructions (India)



85. *Ruins at Mohenjho-Daro*, Mohenjho-Daro, c. 2600–1900 BCE (Pakistan)



86. *Stupa III*, Sanchi, Madhya Pradesh, begun in the 3rd century BCE (India)

The Buddhist stupa typology evolved from domical earth mounds over the tombs of holy men, which were the focus of pilgrimages. Its form was standardised by the emperor Asoka, the first Indian ruler to be converted to Buddhism. The domical form of the building is often said to represent the vault of heaven. As here, a balustraded fence (harmika) typically encloses the stupa, symbolising the enclosed garden where the Buddha achieved enlightenment. This is further referenced by the stylised bodhi tree (a three-tiered, umbrella-like motif known as a chatra) on top of the mound, which at the same time emphasises the symbolic role of the stupa as an axis mundi, or vertical route of ascension to the heavenly realm. Four doorways, aligned roughly to the cardinal directions, represent the four winds. Monumental gateways, or toranas, covered with low-relief carvings of Buddhist imagery, provide access points. A short stairway on the south side leads to the circular walkway used by circumambulating priests. Like many other stupas, this important early example was attached to a monastery, of which only vestiges now remain.



87. *Ajanta caves*, Maharashtra, 2nd century BCE and later (India)



88. *Chaitya Hall*, Karli, Maharashtra, c. 150 BCE (India)



89. *Ise shrine*, Uji-Yamada, early 1st century CE with later periodic rebuildings (Japan)

Part of a larger complex with housing for pilgrims and priests, the Ise shrine is a major focus of Shinto worship in Japan. The inner shrine, dedicated to the sun goddess, is situated some kilometres from the outer shrine, which is dedicated to the goddess of agriculture and the earth. Built on a domestic scale, the inner shrine is regularly duplicated every 20 years on an immediately adjacent site in order to maintain it in a state of perfect preservation and cleanliness; the older building is then demolished. The central post of each reincarnation, however, is always retained in situ to provide a sense of continuity. The present building manifests forms and building techniques dating from the 7th century and earlier, thus preserving many archaic forms of timber construction

that would otherwise have disappeared, notably the crossed wooden members (chigi) of the gable ends and the stubby wooden billets (katsuogi) ranged along the roof ridge. Its form in fact seems to derive from early designs for raised granaries. Reflecting Shinto views on ritual purity, visitors are not allowed near the innermost precinct, where priests prepare a daily offering of food for the deity.



90. Mỹ Sơn, Quảng Nam province, 4th-13th century (Vietnam)



91. Yungang caves, Datong, late 5th century (China)



92. *Kailasa Temple, Ellora, Maharashtra, 750 (India)*



93. *Horyu-ji temple complex, Nara Prefecture, 7th century (Japan)*

Horyu-ji is the oldest surviving Buddhist temple in Japan, and one of the oldest extant wooden buildings in the world. This monastic complex dates from near the time of the introduction of Buddhism into Japan in the 6th century. It was built by Shotoku Taishi, an early convert to the new

religion. All the buildings are contained within an enclosed courtyard, though the colonnaded outer walls were added some time later. The plan, while essentially regular, evidences a subtle asymmetry in the placement and size of the buildings, giving a living, dynamic quality to the composition. The trabeated mode of building, upward curve of the roof eaves and complex system of bracketing are all essentially Chinese in origin. Typical of many later Buddhist temples in Japan, Horyu-ji features a multi-tiered pagoda housing symbolic relics of the Buddha, a monumental gateway, a lecture hall (kodo) and an image hall (kondo). A single wooden post serves as the 'heart' of the pagoda, rising from the floor to the uppermost finial, while its elegantly flared eaves are supported on 'cloud-pattern' bracketing.



94. *Great Wild Goose Pagoda, Ci'en Temple, Xi'an, Shanxi Province, 652 with later rebuildings (China)*

The Chinese pagoda typology visibly derives from that of the Indian stupa, and it remains one of the chief vehicles of Buddhist ritual throughout the Far East. One of the most ancient of such structures surviving in China, the Great Wild Goose Pagoda was erected during the Tang Dynasty as part of a monastery. It originally had five stories and was about 54 metres tall. This early version, built of rammed earth with a stone facing, collapsed within a few decades, but was rebuilt in 704. The second version, in brick, was damaged by a huge earthquake in 1556, which removed three of its ten stories, leaving it with the current seven. Now 64 metres tall, the pagoda was completely renovated in the Ming Dynasty and again in 1964. The exterior is simple and blocky in appearance, the sheer brick façades relieved only by decorative banding between levels and an articulation of shallow pilasters and small arched openings. The pagoda contains sutras and statuettes of the Buddha brought to China from India. It is related to the Small Wild Goose Pagoda, also in Xi'an.



95. *Pancha Ratha (The Five Rathas)*, Mamallapuram, Tamil Nadu, c. mid-7th century (India)



96. *Cave-temples at Longmen*, Luoyang City, Henan Province, 672–675 (China)



97. *Elephanta Island*, also known as *Gharapuri Island*, Mumbai harbour, Maharashtra, 9th century and later (India)



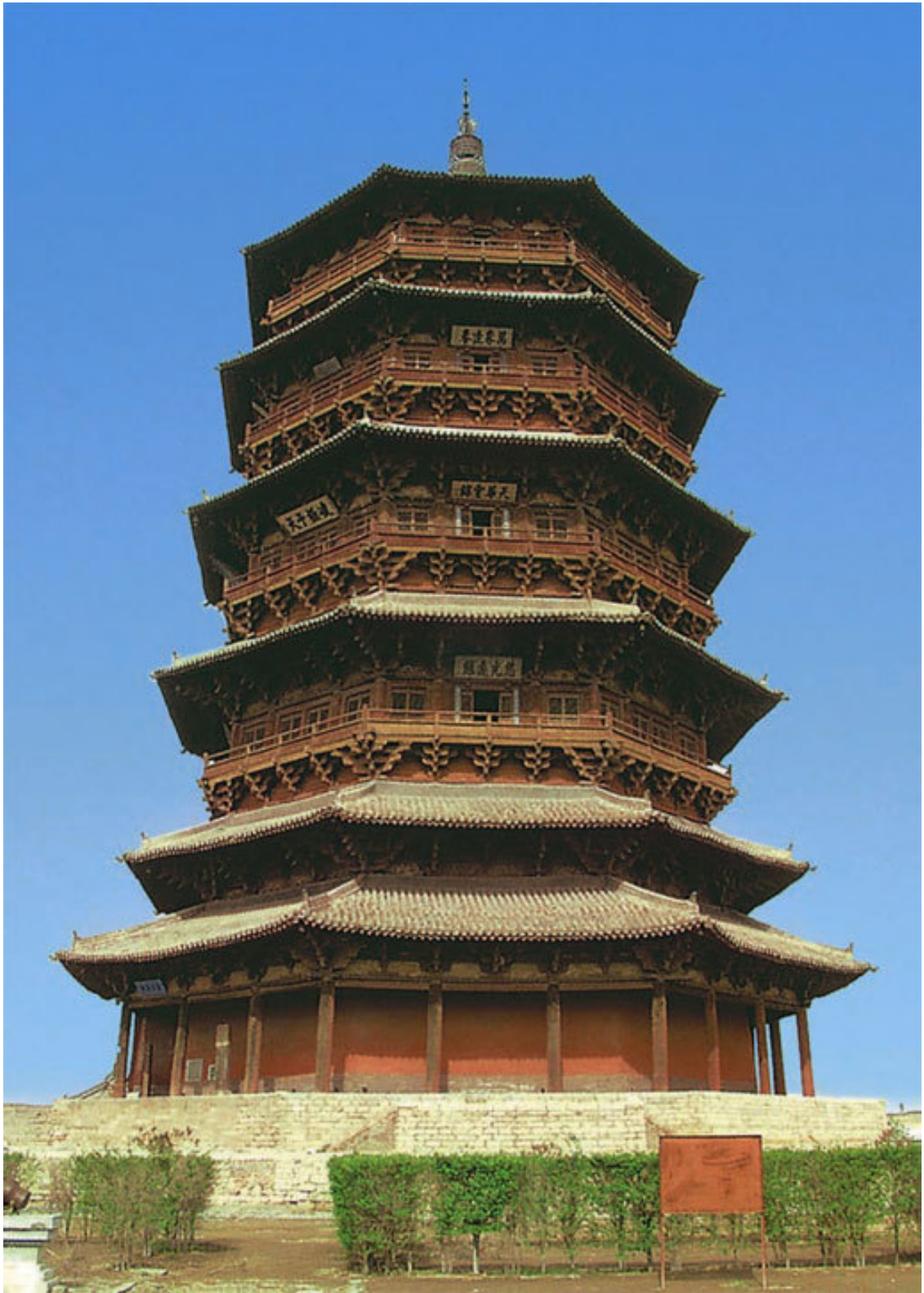
98. *Daibutsuden (Great Buddha Hall), Todai-ji, Nara, 738 with later rebuildings (Japan)*



99. *Great Kyz Kala, Merv, 651 (Turkmenistan)*



100. *Jotab-dong Pagoda*, Gyeongsangbuk-do, 750 (South Korea)



101. *Pagoda of Fogong Temple*, Yingxian, Shanxi Province, 1056 (China)



102. *Somapura Mahavihara*, also known as *Paharpur*, Naogaon, c. 800 and later (Bangladesh)



103. *Temple complex at Bagan*, Bagan, 10th-13th century (Myanmar)



104. Borobudur, Java, c. 800–850 (Indonesia)

Illustrative of the spread of Buddhism from India to Southeast Asia through the initiative of traveling merchants, the great complex at Borobodur is said to be the largest Buddhist temple in the world. With its roughly square base, the shrine's plan is symmetrical and oriented to the cardinal directions. There are access stairs at the centre of each side. The construction is of dark volcanic stone, built over a low natural hill to reach a height of 31.5 metres. In profile, the shrine comprises a series of terraces that symbolically represent the stages of enlightenment of a Buddhist pilgrim who moves from ignorance to illumination (nirvana). Visitors would walk for several kilometres around the perimeters of the first four tiers in succession. Along the way they would encounter a continuous sequence of low-relief stone friezes illustrating many aspects of Buddhist iconography. The three concentric circular tiers that crown the complex feature 72 small stupas in the form of perforated, bell-shaped domes, each containing a statue of the Buddha. The pinnacle is occupied by the Great Stupa shrine. Once in a neglected state, the entire site was thoroughly restored from 1972 under the auspices of UNESCO.



105. *Yunyan Pagoda*, also known as *Huqiu Tower*, Suzhou, 10th century (China)



106. *Prambanan temple compound*, Java, 850 with later reconstructions (Indonesia)



107. *Tomb of the Samanids*, Bukhara, c. 940 (Uzbekistan)



108. *Brihadishwara Temple*, Thanjavur, Tamil Nadu, 11th century (India)



109. *Kandariya Mahadeva Temple*, Khajuraho, Madhya Pradesh, c. 1050 (India)



110. *Lingaraj Temple*, Bhubaneswar, Orissa, 1000 (India)

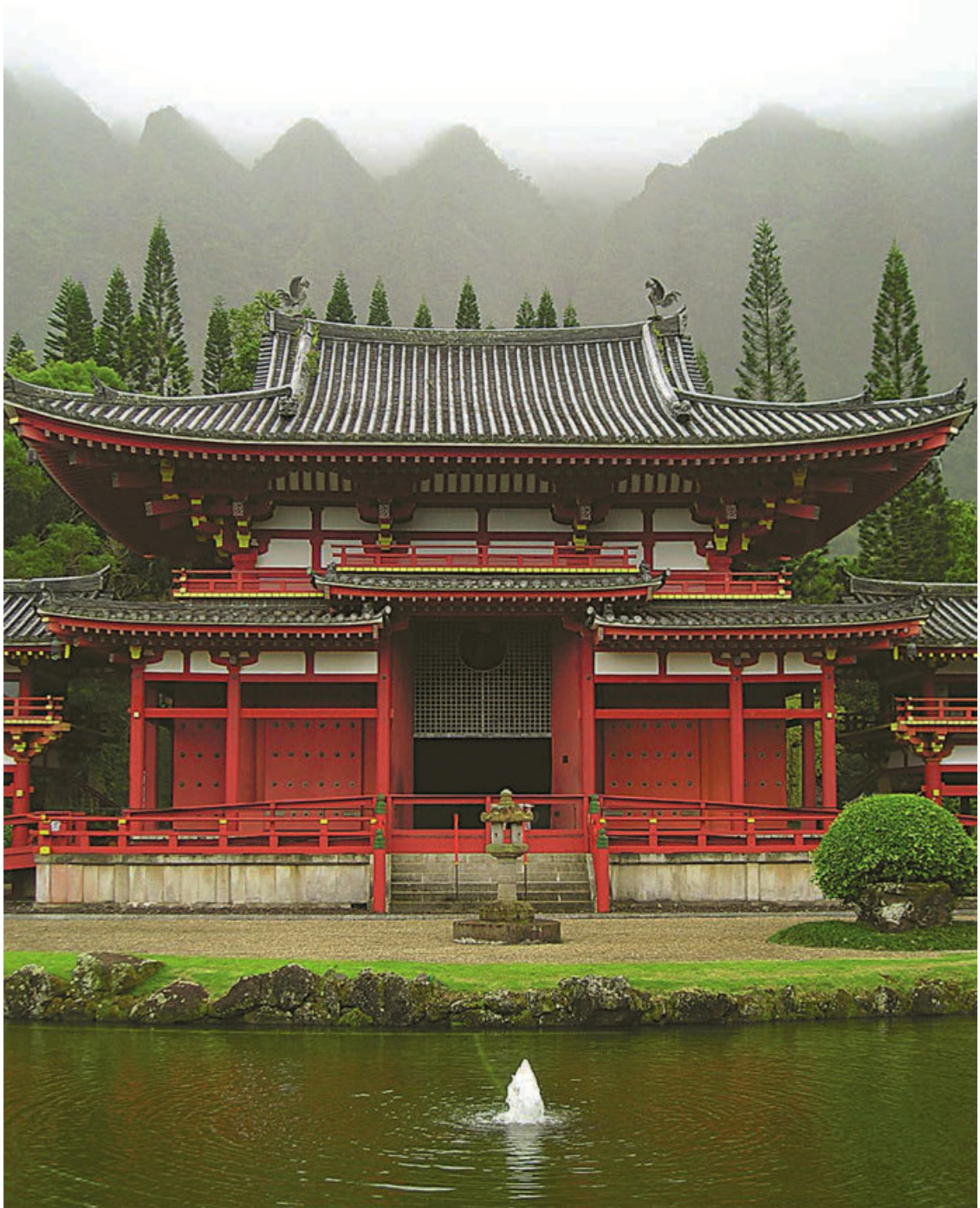


111. *Angkor Wat temple complex, Angkor, c. 1120 and later (Cambodia)*

One of the largest religious monuments in existence, the temple at Angkor Wat is a source of great national pride – it has appeared on the Cambodian flag since 1863. A great mountain-like assemblage of stone originally dedicated to the Hindu god Vishnu, its order and layout are comparable to the earlier Great Stupa at Borobodur. Angkor Wat was begun by King Suryavarman II, who was later buried there. When completed, it became the royal shrine of the Khmer dynasty, though it was eventually converted to Buddhist uses. Like Borobodur, the temple is largely sculptural rather than spatial in conception. On their quest to reach the top, dedicated visitors would cover many kilometres in circumambulating the multiple terraces. After being attacked in 1431, the complex was largely abandoned except by a colony of monks. Few Western visitors made their way to Angkor Wat before its existence was advertised by the French naturalist Henri Mouhot, who came across it in 1860. Astonished by its size and grandeur, Mouhot wrote that Angkor Wat rivalled the Temple of Solomon and was greater than any ruin left by the Greek and Roman civilisations. The complex was cleared and partly reconstructed in the 20th century.



112. *Ananda Temple*, Bagan, 1091–1105 (Myanmar)



113. Ho-odo (Phoenix Hall), Byodo-in temple, Uji, c. 1053 (Japan)

This famous monument of Japanese Buddhism, located just south of Kyoto, exemplifies the otherworldly sect of Pure Land Buddhism that became popular with the Japanese nobility from the 10th century. It was originally constructed by the wealthy Fujiwara clan as part of a rural villa, but was changed to a private temple in 1052 by Fujiwara no Yorimichi. The Phoenix Hall, or Amida Hall, is the only surviving building from this complex. In plan the layout of the Hall is symmetrical, with extensive L-shaped wings in the form of corridors connecting to pavilions on either side; a third corridor extends to the rear. From above, this configuration suggests a bird in flight, an image further echoed in the upward sweep of its eaves. The major external impression of the Ho-odo is of a huge sheltering roof upheld by a complex system of bracketing. The red and

gold colourscheme suggests Chinese prototypes. The magnificent interior of the Hall is focused on a large cult image of Amida Buddha in gilded cypress wood, which was created by the famed sculptor Jocho. The inside of the roof displays statues of Chinese phoenixes. Such opulence was intended to suggest the Pure Land paradise of Buddhist teachings.



114. *Beisi Pagoda*, Suzhou, 1131–1162 (China)



115. *Qutb Minar*, Delhi, 1190s and later (India)



116. *Great South Gate (Nan-daimon) of Todai-ji*, Nara, 1199 (Japan)

This huge wooden gateway serves as the entrance to the monastic complex of Todai-ji, or the Eastern Great Temple. One of the most important religious foundations in the old capital city of Nara, Todai-ji was established by the Emperor Shomu in the 8th century as part of his efforts to involve the Japanese people more directly in Buddhist ritual; this was undertaken in the hope that the resultant display of piety would protect the nation from further disaster. The dominant architectural presence at Todai-ji is the Great Buddha Hall, or Daibutsuden, reputedly the largest wooden building in the world; it houses a colossal bronze image of the Buddha that is 16 metres tall. The roof structure of the Great South Gate, exemplary of the 'Great Buddha style,' reflects an evident knowledge of contemporary building practises in Song-dynasty China. Its lower roof is supported by eight tiers of cantilevered brackets, and its upper roof by seven. These brackets are inserted directly into the supporting columns, which are linked by tie-beams. Since the gateway has no ceilings, the complexity of the entire roof structure is visible from inside. Like the other

remarkable buildings at Todai-ji, the Nan-daimon has been designated a National Treasure of Japan.



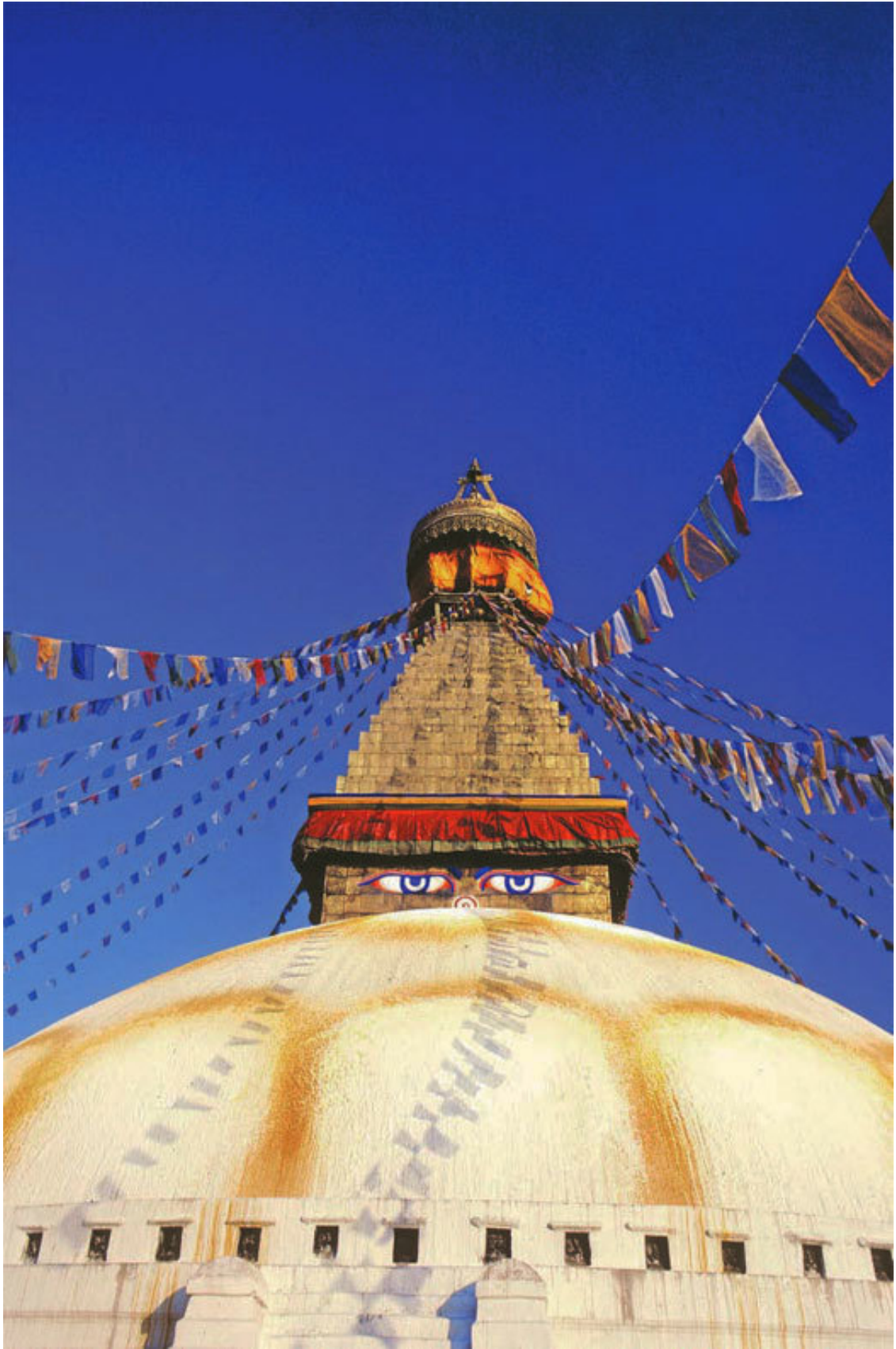
117. **Ali ibn Ibrahim of Nishapur**, *Minaret of Jam*, Firuzkuh, c. 1195 (Afghanistan)



118. *Keshava Temple*, Somnathpur, Karnataka, 13th century (India)



119. *Wat Buddai Svarya Temple*, Ayutthaya, 13th century (Thailand)



120. *Swayambhunath Stupa*, Kathmandu Valley, c. 1372 (renovations) (Nepal)



121. *Ancient city of Pingyao*, Shanxi Province, 14th century and later (China)



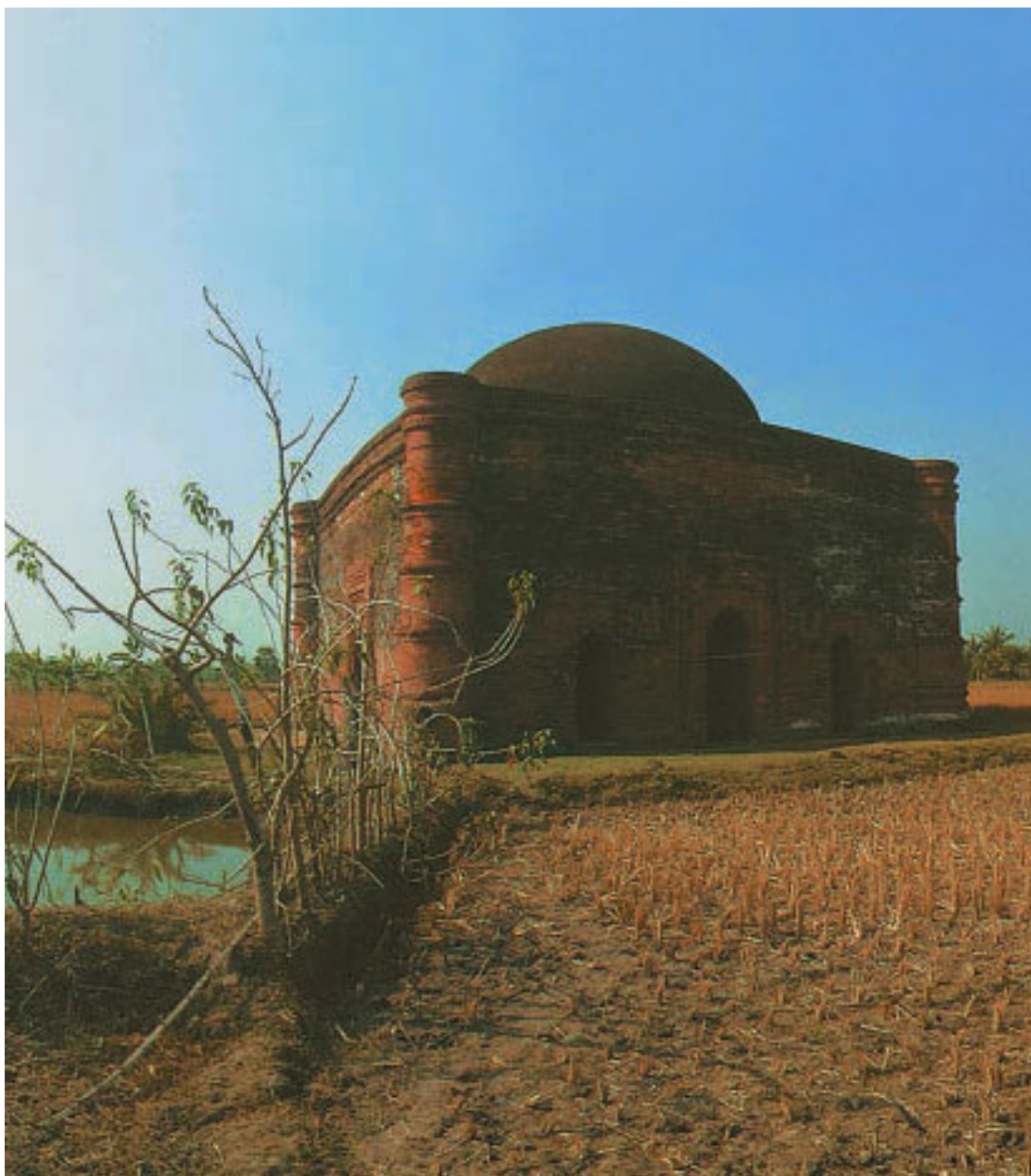
122. *Old Sukhothai city*, Sukhothai, 13th-14th century (Thailand)



123. *Old town of Lijiang*, Lijiang, c. 1200 and later (China)



124. *Kinkaku-ji*, also known as the *Golden Pavilion*, Kyoto, 1397 (rebuilt in 1955) (Japan)



125. *Mosque city of Bagerhat*, Bagerhat, 15th century and later (Bangladesh)



126. *Great Mosque*, Xi'an, 8th century, 1328–1398 (important renovations) (China)



127. *Jongmyo Shrine*, Jongmyo, 1394 (South Korea)



128. *Forbidden City*, Beijing, 1406–1420 (China)



129. *Changdeok palace*, Seoul, 1405–1412 (South Korea)



130. *Imcheonggak Estate buildings*, Beopheungdong, Andong, Gyeongsangbukdo, 1515 (South Korea)



131. *Temple of Heaven, Beijing, 1406–1420 and later (China)*

Part of a complex of Taoist buildings in Beijing, this great walled temple was erected in the early 15th century by the Yongle Emperor, who also built the Forbidden City. As the Son of Heaven, the Emperor of China was expected to make regular and public sacrifices, and through the Ming and Qing dynasties successive rulers made twice yearly visits to the Temple to pray for a good harvest. Such rituals followed a rigid order, and their details remained highly secret. The temple complex consists of three major buildings. The central Hall of Prayer for Good Harvests, 38 metres tall, is a three-tiered circular building set on a marble base. Its construction is entirely of wood, using no nails. Opposite, to the south, is the smaller Imperial Vault of Heaven, also built on a circular plan. Even further south, accessed by a long stone causeway, is the Altar of Heaven, a three-level circular platform where the Emperor would pray for favourable weather. The complex manifests an elaborate cosmological symbolism in which the juxtaposition of circles and squares represents the unity of Heaven and Earth. Much augmented in the 16th century, the Temple of Heaven was renovated in the 18th century and again for the 2008 Olympics. It was declared a UNESCO World Heritage Site in 1998.



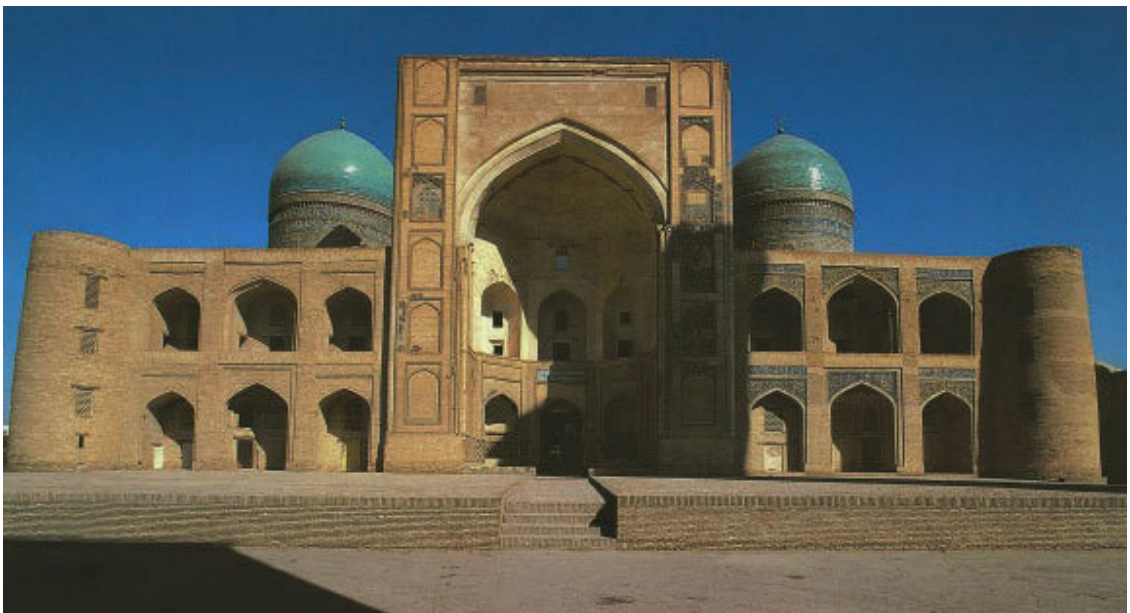
132. *The Khas Mahal*, a palace in Agra Fort, Uttar Pradesh, 1573 (India)



133. *Isa Khan Niyazi's tomb*, Delhi, 1562–1571 (India)



134. *Lahore Fort*, Lahore, 1566 (Pakistan)



135. *Madrasa of Mir-i Arab*, Bukhara, 1535 (Uzbekistan)



136. *Friday Mosque at Fatehpur Sikri*, Fatehpur Sikri, Uttar Pradesh, c. 1571–1574 (India)



137. *White Heron Castle*, Himeji, begun in 1333 (Japan)

The great fortress at Himeji is of the most spectacular of all Japanese castles, which differ in many respects from their European counterparts. The earliest structure on this site, erected by the warlord Sadanori Akamatusu, is said to date from 1333. From 1601 this was extensively rebuilt by Ikeda Terumasu. Set on a natural outcrop, the castle dominates the city of Himeji, west of Osaka, which grew up around its base. Set on a tall stone podium and surrounded by a moat, the castle is extremely well defended: any attacker would soon become lost in a labyrinthine system of concentric walls, terraces, passages, ramps and fortified gates, all the while coming under attack from galleries above. In fact, Himeji was never besieged or damaged by hostile action. Like all Japanese castles, the central keep is built of wood, though this was made fireproof by a coating of thick plaster. The interiors are remarkably comfortable and elegant for a military building. It is known as the 'white heron' or 'egret' castle because its dramatic composition of flared roofs and white gables suggests a bird about to take flight.



138. *Panch Mahal*, Fatehpur Sikri, Uttar Pradesh c.1570–1585 (India)



139. *Golden Temple*, Amritsar, Punjab, 1585–1604 (India)



140. *Charminar Gate*, Hyderabad, Andhra Pradesh, 1591 (India)



141. *Katsura Imperial Villa*, Kyoto, c. 1616–1660 (Japan)

This sprawling villa was built as a domestically-scaled palace for the Japanese Imperial family. It was intended mainly as a temporary or seasonal retreat for meditation and relaxation, and especially for viewing the natural world at various times of day and in different seasons. The buildings of Katsura offer an exquisitely refined manifestation of the traditional Japanese aesthetic, particularly the rustic sukiye style, as evidenced in the five teahouses on the grounds. Its deliberate restraint, or self-conscious austerity, is characteristic of Zen philosophy. The overall plan of the Katsura complex is irregular and additive, but within each building the floor plan is strictly determined by repetition of the standardised module of the tatami mat. The cedar framing of the palace is left unfinished, allowing an appreciation of the natural qualities of the material as well as its weathering with time and use. The interiors can be transformed through the opening and closing of sliding rice-paper partitions; along with an abundance of terraces and porches, this helps to break down the interior/exterior dichotomy, a characteristic much admired by visiting modern architects like Walter Gropius.



142. *Potala Palace*, Lhasa, Tibet, 1645 and later (China)

Rising 300 metres above the valley floor, this immense hilltop palace served as the winter residence of the Dalai Lama until 1959, when the fourteenth reincarnation of the Tibetan spiritual leader was forced to flee to India. Begun under Lozang Gyatso, the fifth Dalai Lama, the Palace also served as a seat of government. Copper was poured into its foundations to assist with earthquake stability. Impressively fortress-like in appearance, the Palace's thirteen stories are set on a tall base of canted stone walls with an average thickness of 3 metres. The central portion, with its puce colouration and golden roofs, is known as the Red Palace, and is devoted solely to prayer and study. In plan the Palace forms a giant rectangle of 350 by 400 metres. It contains over a thousand richly ornamented rooms that house countless shrines and statues. The Potala Palace is named after a hill on a cape at the southern tip of India, which was seen as the abode of a revered Bodhisattva. It is now a museum, but the flow of visitors is strictly regulated. It was placed on the UNESCO World Heritage List in 1994.

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