

THE TOPKAPI SCROLL—GEOMETRY AND ORNAMENT IN ISLAMIC ARCHITECTURE

Topkapı Palace Museum Library MS H. 1956

Gülru Necipoğlu

with an essay on the geometry of the muqarnas by Mohammad al-Asad

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PART 2.

THE DISCOURSE ON THE GEOMETRIC "ARABESQUE"

*That thou canst never end, doth make thee great,
And that thou ne'er beginnest, is thy fate.
Thy song is changeful as yon starry frame,
End and beginning evermore the same;
And what the middle bringeth, but contains
What was at first, and what at last remains.*

—Goethe, "Hafis Nameh"¹

CHAPTER 4. ORNAMENTALISM AND ORIENTALISM: THE NINETEENTH- AND EARLY TWENTIETH-CENTURY EUROPEAN LITERATURE

A great deal has been written about the geometric ornament of Islamic architecture without taking into consideration the role pattern scrolls played in the conceptualization and transmission of the distinctive mode of design that came to be known as the *giri*h in the Persian-speaking eastern Islamic lands. This chapter will analyze the nineteenth- and early twentieth-century European literature on ornament within which the discussion of Islamic geometric patterns often was embedded. That literature generally overlapped with the Orientalist discourse on the so-called arabesque, singled out as a unifying essence of Islamic visual culture. After tracing the development of the ahistorical discourse on the arabesque, a category to which Islamic geometric patterns belong as a subset, I will turn to some of the recent secondary literature that uncritically has appropriated many of the stereotypes constructed more than a century ago, recycling them with a new ideological twist. This critical review of dominant paradigms in modern scholarship will serve as a backdrop for the subsequent parts of the book where the *giri*h mode is historicized and contextualized.

Although the European fascination with Islamic ornament had its roots in the medieval and Renaissance periods, it reached its peak in the nineteenth century.² A lively debate on the subject of ornament arose in the wake of the Industrial Revolution when theorists began to reflect on the nature of abstract patterning as a language of pure form and color. Ornament, which was to be relegated to a distinctly lower realm by the Modern Movement and rediscovered by postmodernism, thus came to play a central role in the critical discourse on design in nineteenth-century Europe. As the practical relevance of abstract Islamic patterns to the European search for appropriate decorative motifs for mass production became apparent, publications on this specialized subject rapidly multiplied.³

Another factor that fueled the growing European interest in the decorative aspects of the Islamic architectural tradition was the awakening of the Romantic spirit with its search for the picturesque. The Romantic movement encouraged not only Gothic archaeology but also the exploration of exotic lands. James Cavanah Murphy, for

example, one of the early architect-antiquarians interested in Gothic architecture, was equally fascinated with the monuments of Islamic Spain as can be seen in his *The Arabian Antiquities of Spain* of 1813–1816. The topographic illustrations of late eighteenth- and early nineteenth-century publications on various regions of the Islamic world, no doubt an outgrowth of earlier travelogues, accentuated the scenic decorative values of architecture so appealing to Romantic sensibilities. These idealized images depicted picturesque monuments, often set in the midst of idyllic landscapes with ruins and inhabited by languid natives wearing exotic local costumes.⁴

In the multivolume work written by orders of Napoleon, *Description de l’Egypte*, 1809–1828, illustrations of Islamic buildings were once again shown with natives engaged in a variety of activities, but this encyclopedic work reflected a more “scientific” ambition to record, catalog, classify, and ultimately control the recently colonized lands of Egypt. It was followed by several publications on Egyptian Islamic architecture, such as Pascal Coste’s *Architecture arabe; ou, Monuments du*

Kaire, mesurés et dessinés, de 1818 à 1826, 1837–1839; Philibert Joseph Girault de Prangey's *Monuments arabes d'Égypte, de Syrie et d'Asie Mineure dessinés et mesurés de 1842 à 1845, 1846*; and Achille-Constant-Théodore-Émile Prisse d'Avennes's *L'art arabe d'après les monuments du Kaire depuis le VII^e siècle jusqu'à la fin du XVIII^e*, 1869–1877; followed by his *La décoration arabe*, 1887. In contrast to earlier travelogues these were lavish oversize volumes that often included color plates highlighting the polychromy of Islamic architectural revetments; they featured more precise measured drawings, plans, and elevations, accompanied by a large number of details and ornamental panels.

Like Napoleon's *Description de l'Égypte*, these publications generally started with an introduction to Egypt's geography, climate, and the various races making up its population, followed by an enumeration of the Islamic dynasties that ruled there until the time of the French expedition, before turning to a description of the monuments illustrated in accompanying plates. This methodological framework, based on the widespread nineteenth-century view that architecture and the decorative arts were determined by climate and racial character, turned the documented buildings depicted with natives into objects for the ethnographic "gaze." Coste, for instance, asserted in his introduction that monuments not only were adapted to different climates but also reflected the customs and the predominant racial character of peoples; in the case of Cairo this was "*la peuple arabe*."⁵

Prisse d'Avennes wrote that the Muslim civilization of Cairo was engendered by the Koran, "a faithful embodiment of the aspirations, ideas, and mores of the Semitic races, and manifest sanction of customs appropriate to their character." He regarded the differences of style "in the works of the various races under the sway of the law of Muhammad" as "varied modes of the same art, since all the principles that inspire these races are derived from the same source." He concluded, "thus we affirm that it is to this pure source that we must turn if we are seriously to study Arab art," that is to the "Arab genius in architecture" that produced the monuments discussed in his book, their decoration, and "their capricious ornaments known as *arabesques*, down to the smallest details of their furnishings." Prisse d'Avennes ultimately hoped that the contents of his book would provide the "modern decorative arts and architecture materials with which they may renounce banality."⁶ This practical agenda was reflected in his book's illustrations, which are dominated by architectural fragments and details of abstract ornamental panels presented out of context so that contemporary designers could derive lessons from them.

Albert Gayet's *L'art arabe*, 1893, argued that the abstract decoration of Arab monuments reflected deeply seated racial characteristics: "This is not the art of a religion or of a people, but that of a race." According to Gayet, the Islamic prohibition of figural representation had only reinforced the instinctive artistic tendency of Semitic races to

renounce mimetic art. The innate spirituality and mysticism of the Arabs made them favor abstract ornaments capable of expressing transcendental beauty: "Contemplative and ecstatic, the Arab distances himself from the human form, not to obey a religious precept, but an instinct."⁷ The spiritual essence of Arab art was embodied in the arabesque, with its three types of rhythmically interlaced variants, vegetal, calligraphic, and geometric.⁸ First appearing in the ninth-century Tulunid monuments of Cairo, this mode of abstract ornament developed more fully during the Fatimid period in the tenth and eleventh centuries. Gayet identified the use of geometric compositions dominated by polygons as the "essential character of all Islamic art," even though he recognized regional variations reflecting racial differences.⁹

The arabesque came to be identified as the primary characteristic of Islamic art by Orientalists focusing on the material culture of the Arabs in Syria, Egypt, North Africa, and Spain during the nineteenth century, when artistic styles very often were defined as reflections of racial and religious mentalities.¹⁰ The presence of figural imagery, whether in architectural decoration, objects, or manuscript painting, was conspicuously downplayed in constructing the "otherness" of the Arabo-Islamic visual tradition. Generally classified in terms of its geometric, vegetal, and calligraphic variants, the so-called arabesque (occasionally intertwined with stylized figures and animals) was assigned a purely decorative function that differed fundamentally from the iconographic tradition of

Western representational art.¹¹ The arabesque's alleged absence of meaning facilitated its appropriation by modern European architects and industrial designers.

Much like the publications on Egypt those on Islamic Spain, such as Jules Goury and Owen Jones's *Plans, Elevations, Sections and Details of the Alhambra*, 1842–1845, and Girault de Prangey's *Essai sur l'architecture des Arabes et des Mores en Espagne, en Sicile, et en Barbarie*, 1841, featured lavish plates of architectural monuments and ornamental details. Jones, who had first visited Cairo and Istanbul before moving on to Spain, identified the architecture of the Arabs as “essentially religious—the offspring of the Koran,” just as Gothic architecture is of the Bible:

The prohibition to represent animal life, caused them to seek for other means of decoration,—inscriptions from the Koran, interwoven with geometrical ornaments and flowers, not drawn decidedly from nature, but translated through the loom; for it would seem that the Arabs, in changing their wandering for a settled life,—in striking the tent to plant it in a form more solid, had transferred the luxurious shawls and hangings of Cachmere, which had adorned their former dwellings, to their new,—changing the tent-pole for a marble column, and the silken tissue for gilded plaster.¹²

This description of abstract Arab ornament in terms of three dominant elements (calligraphy, vegetation, and geometric interlaces) originating in nomadic tents would be repeated in countless publications including Gayet's *L'art arabe*, which sees the distant memory of tents in polygonal geometric patterns.¹³

Unlike the more scholarly first volume of Goury and Jones's *Alhambra*, which was accompanied by the Spanish Arabist Pascual de Gayangos's historical account and transcriptions of Arabic inscriptions translated into English and French, the second volume consists only of chromolithographic plates depicting decorative fragments detached from their architectural setting. It primarily was intended, much like Girault de Prangey's *Choix d'ornements moresques de l'Alhambra*, 1842, to supply contemporary designers with examples of ornament to copy or study. Most books that dealt with Islamic architecture in those years, such as Charles Félix Marie Texier's *Description de l'Asie Mineure*, 1839–1849, and his *Description de l'Arménie, la Perse et la Mésopotamie*, 1842; Coste's *Monuments modernes de la Perse*, 1867; and Léon Parvillée's *Architecture et décoration turques au xv^e siècle*, 1874, featured plates of decontextualized architectural ornaments in various techniques and styles, explicitly or implicitly addressing a European professional audience in an age of eclecticism and revivalism. Broken down into their decorated components such as facades, domes, minarets, portals, mihrabs, lattices, and calligraphic or ornamental panels, Islamic buildings

were fragmented in these publications into reusable parts, displayed as neutral objects of “consumption.”¹⁴

The implied practical agenda of these regionally specialized publications was articulated more explicitly in the European universal encyclopedias on ornamental styles. One of the earliest encyclopedias on ornament, Charles-Ernest Clerget and Martel's *Encyclopédie universelle d'ornements*, circa 1840, contained samples of Greek, Roman, Egyptian, Arab, Moresque, Persian, Turkish, Indian, Chinese, Japanese, medieval, Renaissance, and modern decorative patterns.¹⁵ By far the most important and comprehensive encyclopedic work on this subject, Jones's *The Grammar of Ornament*, 1856, was written soon after the Great International Exhibition of 1851 in London, which encouraged a more rigorous grounding in the structural grammar of ornament. Jones classified Islamic ornament in terms of the ethnoracial categories typical of his time: Arabian, Moresque, Turkish, Persian, and Indian. This scheme, repeated in several later publications, distorted the multiethnic culture of most premodern Islamic dynasties, whose rule had unified several geographic regions with mixed populations and religious minorities. Together with the horizontal paradigm of an all-encompassing universal Muslim visual tradition, this vertical paradigm of regional ethnic dialects was among the lasting legacies of the nineteenth century in later scholarship on Islamic art and architecture.

The Grammar of Ornament was the first serious

study to adopt a systematic approach aimed at formulating a rational language of ornament appropriate for the modern industrial age. Its central assumption was that "evidence adduced from culture is as universal and timeless as evidence from nature; and that, therefore, decoration can be described by laws equivalent to the laws of science."¹⁶ Jones's universalist tenet that the a priori conditions for good ornament were the same for all epochs and cultures was articulated in thirty-seven propositions. These propositions were meant as guidelines for an abstract language of polychromatic ornament going beyond historicisms and reflecting a protomodernist urge to establish universal rules for good design. Proposition 1 stressed the primacy of architectural form from which the decorative arts "arise" and upon which they are "attendant." Jones's conviction that despite "local or temporary character" all historic styles were based on "eternal and immutable" principles and on "the same grand ideas embodied in different forms, and expressed, so to speak, in a different language" was encapsulated in Proposition 36: "The principles discoverable in the works of the past belong to us; not so the results. It is taking the end for the means."¹⁷

Jones's practical agenda led him to overlook the signifying potential of ornamental patterns belonging to different cultural traditions so that their underlying syntactic principles could be appropriated for modern needs. It called for a study of patterns for their universal relevance

rather than as systems of signification, at the expense of their cultural associations and contextual meanings. Jones's ahistorical approach to Islamic ornament was not different from the way in which he treated other ornamental styles, even though *The Grammar of Ornament* was heavily biased in favor of the so-called Moresque style epitomized by the Alhambra, "the very summit of perfection of Moorish art, as is the Parthenon of Greek art." The book assigned the more abstract Moresque and Arabian styles a higher status than the remaining three "mixed styles" (Turkish, Persian, and Indian), which were characterized by relatively naturalistic motifs. In his earlier monographic work on the Alhambra, Jones had already noted that the great variety of intricate Moresque patterns was derived from a series of underlying geometric grids providing infinite possibilities for the invention of abstract design. This was translated into a universal principle in Proposition 8: "All ornament should be based upon a geometrical construction."¹⁸

Jones was fascinated by the geometric basis of patterns in the Alhambra:

However much disguised, the whole of the ornamentation of the Moors is constructed geometrically. Their fondness for geometrical forms is evidenced by the great use they made of mosaics, in which their imagination had full play. However complicated the patterns may appear, they

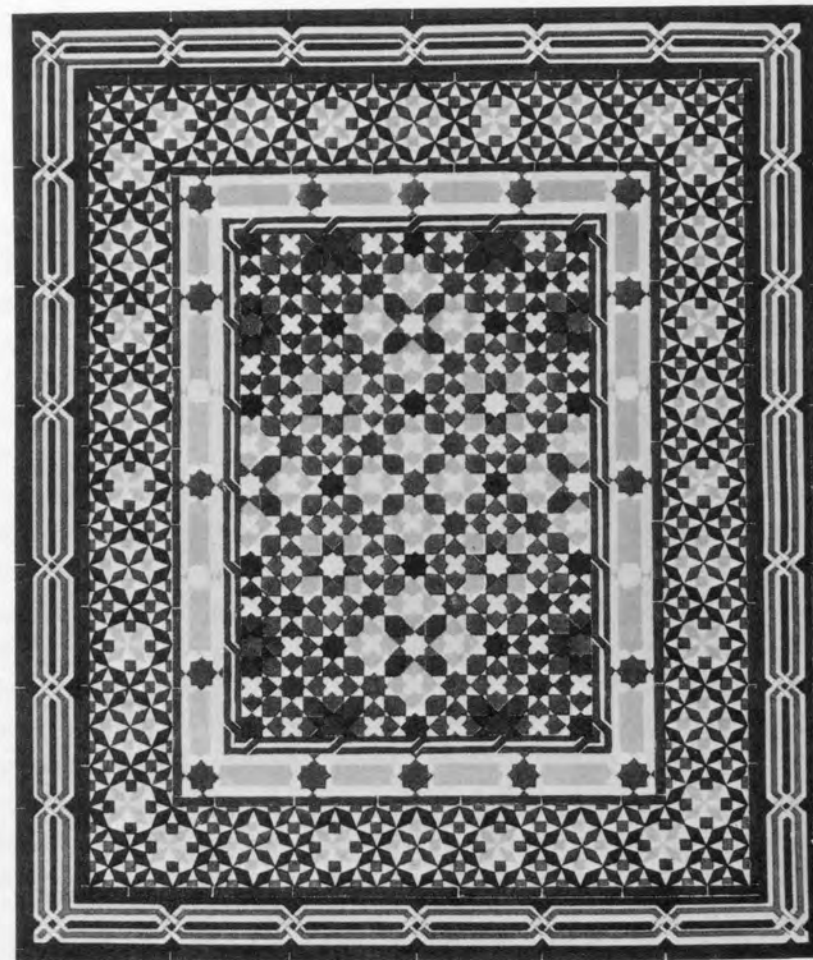
are all very simple when the principle of setting them out is once understood. They all arise from the intersection of equidistant lines round fixed centres . . . in fact, geometrical combinations on this system may be said to be infinite.¹⁹

Though he did not explain these geometric principles of setting out patterns, which many later authors would attempt to decipher, Jones created polychromatic compositions inspired by Islamic and Pompeian geometric patterns that were generated by underlying grids. Intended for mosaics and tiles produced by modern mechanical processes, some of these drawings were published in his *Designs for Mosaic and Tessellated Pavements*, 1842 (fig. 78a). Others are preserved at the Victoria & Albert Museum in an unpublished volume of watercolor and ink drawings entitled "Designs for Mosaic Tiles" (fig. 78b).²⁰ These drawings reflect the genetic link Jones detected between two related historical styles of geometric design, a link he briefly hinted at in *The Grammar of Ornament*, which traces the roots of the geometric and vegetal arabesque to the Greco-Roman tradition.²¹

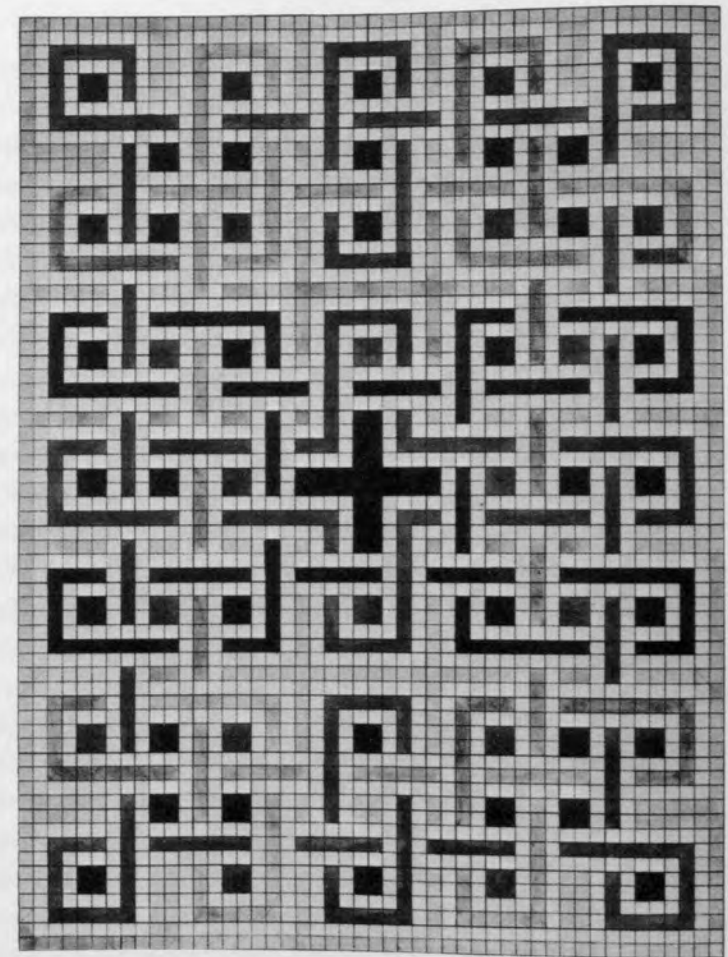
The classical origins of the arabesque were more fully explored in the Austrian art historian Alois Riegl's *Stilfragen*, 1893, which often cites Jones. In this celebrated study Riegl demonstrated in Darwinian terms the genetic mutation of the vegetal arabesque rooted in the classical palmette-and-

tendrils ornament, only briefly discussing the origin of Islamic interlaced geometric patterns in late antique floor mosaics and ceiling decorations. He interpreted the arabesque as the creation of an "Oriental spirit of abstraction" (*orientalische Geist der Abstraktion*) that endlessly multiplied modular decorative units through "infinite correspondence" (*unendliche Rapport*) to cover whole surfaces in which foreground and background motifs were no longer distinguishable. Riegl noted that the transformation of Hellenistic, late antique, and Byzantine vegetal motifs into a "full-fledged Islamic arabesque" mode had been completed by the twelfth century after a turning point sometime around the tenth or eleventh century.²²

Riegl's assumption that the arabesque played a purely decorative role was a product of his time just like his notion of artistic intention (*Kunstwollen*), a pervasive mentality (*Geisteshaltung*) or spirit (*Geist*) motivating the art of particular ethnic groups and periods. Like nineteenth-century Hegelian art historians who interpreted ornament—whether Greek, Roman, Gothic, or Islamic—as the reflection of a spirit, Riegl saw the arabesque as a mirror of cultural tendencies. It embodied an antinaturalistic drive for geometric abstraction that was an outcome of the Islamic prohibition against figural representation (*Bildverbot*). Its figure-ground ambiguities reflected a specifically Islamic *weltanschauung* that assigned absolute power to a transcendent God who leveled all hierarchies. The arabesque was thus the crea-



78a. Owen Jones, design for a mosaic pavement. From Jones 1842, pl. x. Photo: Courtesy John Calman & King, Ltd.



78b. Owen Jones, design for a mosaic pavement. From his volume of drawings "Designs for Mosaic Tiles," late 1830s or early 1840s, watercolor and ink on paper. By courtesy of the Board of Trustees of the Victoria & Albert Museum, London, Prints and Drawings Department.

tion of a *Kunstwollen* that transformed naturalistic classical motifs and brought them into a completely different cultural orbit.²³

The Grammar of Ornament was followed by an avalanche of encyclopedic publications on ornamental styles that included chapters on Islamic patterns. Albert Charles Auguste Racinet's *L'ornement polychrome*, 1869–1887; Heinrich Dolmetsch's *Der Ornamentenschatz*, 1887; Leonhard Diefenbach's *Geometrische Ornamentik*, 1892; James Ward's *Historic Ornament*, 1897; and Alexander Speltz's *Ornamentstil*, 1904, are only some examples of this popular genre that continued well into the twentieth century until Modernism discredited the teaching of the syntax of historical ornament. These universal encyclopedias were complemented by specialized pattern books of Islamic ornament featuring plates with brief descriptions, such as E. Collinot and Adalbert de Beaumont's *Encyclopédie des arts décoratifs de l'Orient* (which in addition to the Hindu, Russian, Venetian, Japanese, and Chinese styles included *Ornements de la Perse*, 1880; *Ornements turcs*, 1882; and *Ornements arabes*, 1883); Nikolai Evstafievich Simakov's *L'art de l'Asie-centrale: Recueil de l'art décoratif de l'Asie centrale*, 1883; and the anonymous *Illustrations of Indian Architectural Decorative Work for the Use of Art Schools and Craftsmen*, 1887–1894.

Two books by Jules Bourgoïn, *Les arts arabes*, 1873, and *Les éléments de l'art arabe: Le trait des entrelacs*, 1879, systematically analyzed for the first time the underlying compositional principles of geometric patterns, mainly selected from the

Islamic monuments of Egypt. In the first book Bourgoïn explained that he omitted the muqarnas (*les stalactites*) from his study of geometric patterns because he was addressing the contemporary needs of the industrial arts: "We had to conform to the conditions common to all publications of this genre, that is to say, we limited our subject in order to render the book more accessible by choosing among the materials we have collected those that appeared to us as the most appropriate for furnishing our industrial arts with new elements."²⁴ Bourgoïn's focus on the compositional principles of two-dimensional geometric patterns reveals that the tendency to treat the muqarnas as an independent element (which eventually was singled out as the most distinctive artistic creation of Islam) originated in the nineteenth-century literature on ornament, a literature primarily concerned with surface patterns. This resulted in an arbitrary separation of spatial geometric constructs from the two-dimensional ones with which they are so consistently juxtaposed in Islamic pattern scrolls.²⁵

Bourgoïn's *Les arts arabes* begins with an introduction to the general characteristics of "the art of the Muhammedan East" (*l'art de l'Orient mahométan*) before turning to a structural analysis of planar geometric ornament, the main subject of the author's two books. Bourgoïn and his contemporaries were writing at a time when factual information about Islamic architecture was rather limited. Painfully aware of these limitations, Bourgoïn admitted that the Arab monuments of Egypt,

Tunisia, Algeria, Morocco, Spain, and Sicily were better known to him than those of other Islamic countries from which more information had to be gathered. Moreover, he was not blind to stylistic variations between different regions and periods.²⁶ Nevertheless, like his contemporaries Bourgoïn attributed a certain timelessness to the art of the Orient, often seen as an ethnographic rather than a historiographic field of inquiry. In *Les arts arabes*, where he used such categories as *race arabe* and *racés sémitiques* or *sémitisées*, he wrote, "One should not expect to recover in the history of the art of the Orient the equivalent of that rigorous chain of different phases characteristic of the art of the Occident."²⁷ By casting the art of the Islamic East as a relatively static native tradition untouched by the historical processes so central to the complex evolution of European artistic culture, Bourgoïn highlighted its essential otherness.²⁸ In doing so he repeated a topos of the Orientalist discourse, with its opposition between the rational West, representing a dynamic world of progress, and the spiritual East, constituting a static world of stagnation that was denied a true history.²⁹

Like Jones before him, Bourgoïn classified Arab ornament in terms of three elements—geometric, vegetal, and calligraphic—noting that "these three varieties are often mixed and mingled." Tracing the interlaced patterns (*entrelacs*) to late antique origins, he identified them as the essential characteristic of Islamic art in all regions.³⁰ Eugène-Emmanuel Viollet-le-Duc's introduction to *Les arts arabes* attributed the geometric abstraction

of such patterns, whose purity was diluted by naturalistic motifs in areas with a mixed population, to religious and racial factors:

One has agreed to give the name "Arab art" to the art that has spread itself in those countries with milieus of diverse races through the conquest of Islam, from Asia to Spain. . . . This art excludes, if not in an absolute manner, at least generally, the representation of living beings, it thus limits its decorative conceptions to forms borrowed from geometry and to a lesser degree from flora, the latter also being subservient to geometric laws. It is especially among the semitic peoples that these tendencies manifest themselves with energy, at least since Muhammedanism. In places where a mixture of races exists, ornamentation partakes of diverse influences, and representations borrowed from organic nature intermingle with purely geometric compositions.³¹

Viollet-le-Duc repeated the generally shared view that the Arabs transformed the *entrelacs* of late antique art into a tapestry-like surface ornament because their nomadic origin inspired them to take the tent as a model for architecture.³²

In *Les éléments de l'art arabe* Bourgoin identified three major styles of ornament—Greek, Arab, and Japanese (Chinese)—corresponding to the animal, mineral, and vegetable kingdoms of nature, respec-

tively. With its rigid geometric basis Arab art was analogous to the crystallization of minerals; its nonfigural, abstract interlaced patterns, mechanically produced with the aid of ruler and compass, constituted an autonomous design system with closed horizons characterized by an incomparably "seductive" elegance.³³ In *Les arts arabes* Bourgoin defined this art form as essentially decorative, guided by the compositional logic of geometric schemes independent of observed nature and destitute of iconographic meaning: "One can consider Arab art as a system of decoration founded entirely upon the order of geometric forms and which borrows nothing or almost nothing from the observation of nature; that is to say, this art, very complete in itself, is destitute of natural symbolism and of ideal signification. The inspiration is abstract and the execution devoid of plasticity."³⁴

The importance that the Islamic architecture of Spain and North Africa placed on surface decoration was judged by Bourgoin as a sign of inferiority.³⁵ Although he recognized the structural values of monuments in other regions, he nevertheless regarded Islamic architecture as essentially decorative. A similar view was expressed in the *Discourses on Architecture* by Viollet-le-Duc, who believed that studies of Islamic architecture would contribute to the progress of world architecture mainly in the field of decoration:

The Arabs . . . did not change the Roman structure, but contented themselves with modifying its envelope; the geometry

which they called to their aid did not lead them to discover new systems of construction, but simply inspired new curves for their arches, and was the generative element of all composition of ornament; in their hands it became a plaything, and occupied the eye with endless and marvelous combinations of lines. In the West, on the other hand, geometry at once overturned the Roman structure, which was no longer sufficiently scientific to meet the new emergencies of architecture. . . . In order that we may comprehend the differences between these two forms of art, both of which became the slaves of geometry, let us enter the Alhambra and examine there one of the last buildings due to what is called Arabic civilization. . . . In the Arabic monument, geometry supplied the vestment; in the western mediaeval structure, it gave the body.³⁶

This comparison accentuated the essential decorativeness of the Arab architectural tradition, generally seen as the ultimate source of regional variants in other Muslim lands, and overlooked the structural values of such monuments as those of the Seljuqs, Ayyubids, and Ottomans. Its framing of Islamic architecture as a primarily decorative tradition, much like the lavishly illustrated nineteenth-century publications on that subject, embodied an implicit value judgment that associated decoration with femininity, as opposed to the

superior masculine vigor of structural forms. This dichotomy still dominates popular perceptions of Islamic architecture and the ongoing "feminization" of the Orient in various public media.

Viollet-le-Duc's introduction to *Les arts arabes* praised the difference of Bourgoin's analytical method from that of other publications with agreeable collections of engravings to skim through: "The book of Mr. Bourgoin is not merely one of those compilations of engravings pleasant to glance through, which adorn the libraries of architects and decorators, but which one never consults; it is a practical and complete treatise that uncovers in its entirety a new order of composition." Viollet-le-Duc, whose own studies emphasized the rational structural principles of Gothic architecture, appreciated how Bourgoin's analytical approach brought to light the formulas used in generating Arab geometric patterns, formulas that could be used in modern design practice. To be able to create anew, it was necessary to analyze the inner principles of forms rather than their outer appearance.³⁷

Viollet-le-Duc also praised Parvillée's *Architecture et décoration turques* as a corollary to Bourgoin's book. Both works sought rational geometric principles behind architectural forms and decorative motifs. His introduction to the Parvillée volume praised Bourgoin's and Edmond Duthoit's work demonstrating the geometric basis of ornament in the Islamic monuments of Cairo and Algeria, respectively. The three books had shown the rational scientific basis of seemingly

fantastic compositions, to the dismay of the romantic "partisans of fantasy," who considered this a disastrous invasion of science into the domain of the arts. Speculating about the impact of the Arabic mathematical sciences on artistic production, Viollet-le-Duc wrote:

Who does not know that the Arabs were versed in the mathematical sciences ever since an early period and that Occidental Europe partly owes them the elements of these sciences? It would be natural, therefore, to think that their artistic productions were based on this [scientific] knowledge, as far as it informed a perfectly clear-cut and sharply defined character [of forms]. Fantasy, or if one wishes imagination, could not have conserved in the domain of the arts such a unity across the centuries if formulas had not perpetuated themselves among the artists and artisans. The book of Mr. Parvillée is one of those works that introduces analysis into artistic productions that appear entirely fantastic, and which demonstrate that behind fairylike compositions cold science had intervened, that calculation had prepared the way. It is for this reason that we have claimed the privilege of writing this brief preface.³⁸

Prisse d'Avennes was the first to observe, in *L'art arabe*, that the unusually complex Islamic

geometric patterns had to be based on a system of scientific knowledge transmitted by treatises on applied geometry:

All ornamentation is based on geometric construction, that of the Arabs more than any other; thus, if one possesses the Elements of Euclid, one can trace, without instruction and, so to speak, without study, the most complicated of the interlace motifs of Cairo, Baghdad, or Granada. The Arabs had acquired such a taste for these plays of lines that several Arab treatises on geometry, analysed by Wroicke [Woepcke], contain problems of this type: "Trace six equal pentagons around a circle," and so on. For our part, we will refrain from presenting the general outline of Arab art in this domain, for that task has been masterfully performed by Mr. Bourgoin in his *Les arts arabes*.³⁹

Bourgoin did not, however, research the historical methods of geometric construction by consulting such practical treatises. Neither did he have access to Islamic pattern scrolls that would have revealed the grid systems used in generating geometric patterns. The formulas he presented were based on his own observations and were not necessarily the same ones used by those who had originally created the patterns. Using a taxonomic method of classification according to inner structure rather than outer appearance, similar to that used by

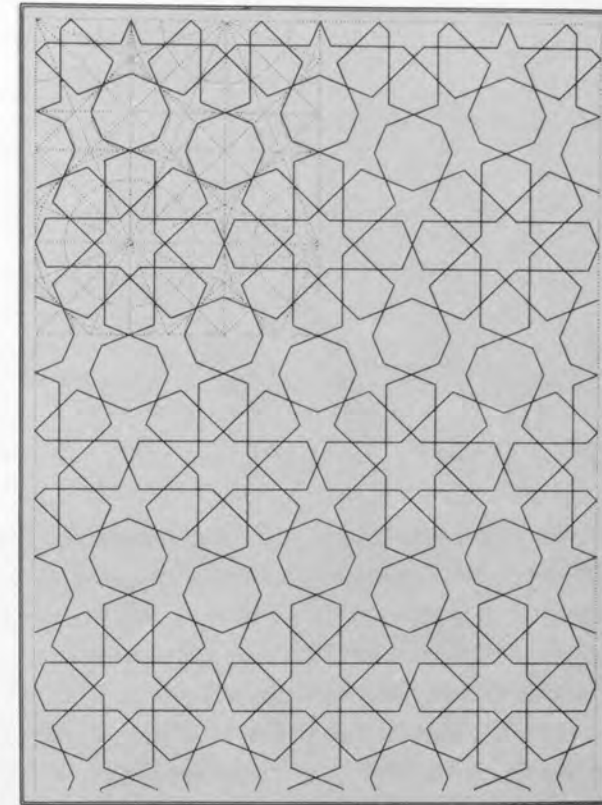
biologists, he subdivided patterns into eight categories based on the fundamental geometric elements that generated them (hexagons, octagons, dodecagons, star-rose combinations of two types, square-octagon combinations, heptagons, and pentagons).

Bourgoin's systematic classification had a practical purpose; it addressed a European audience of practitioners. As Viollet-le-Duc's introduction to *Les arts arabes* stated, the book was intended to open up an infinite possibility of new geometric compositions, "applicable to architecture, as well as to woodwork, to painted ornaments, to cabinet-making, to fine ironwork, to bronzes, to enamels, to textile designs, wallpaper, etc."⁴⁰ In *Les éléments de l'art arabe* Bourgoin reminded his readers that the book's two hundred drawings of two-dimensional geometric patterns, overlaid at the upper left corner with dotted construction lines showing underlying grids, would lose their apparent monotony when applied to various media and enlivened by color (fig. 79). A similar practice-oriented approach is found in the interior decorator and amateur scientist David Ramsay Hay's *Original Geometrical Diaper Designs*, 1844, a collection of Islamic-flavored interlaced geometric patterns meant to serve as underlying compositional grids for modern industrial ornament (fig. 80).

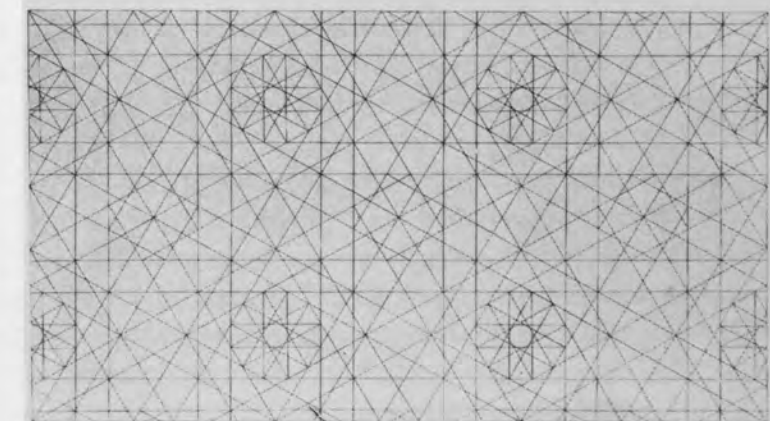
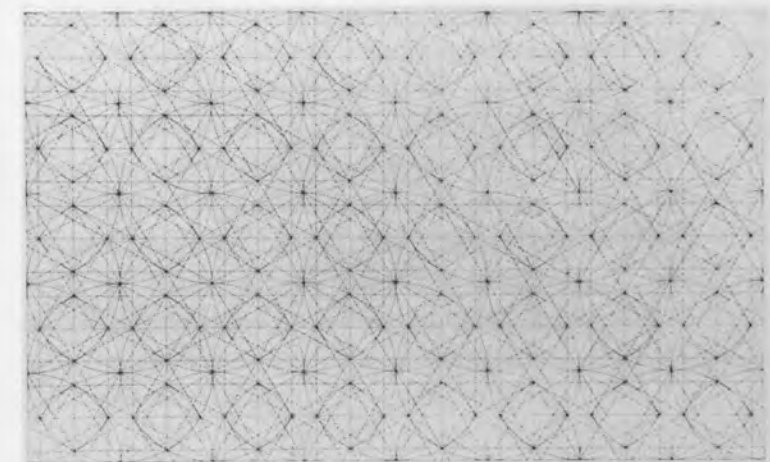
Bourgoin's studies of Arab geometric patterns were part of his broader inquiry into the syntactic structure of ornament as an abstract language. While a professor of the theory of ornament at the Ecole des Beaux-Arts in Paris he wrote one of the

most original theoretical studies on geometric ornament, *Théorie de l'ornement*, 1873. This work attempted to formulate a universal system of repeat pattern and tessellation that would serve as a guide to the decorative arts. Like Jones, Bourgoin regarded the applied arts as subservient to monumental architecture and adopted a comparative approach to the major historical styles of ornament created by different races in order to uncover a syntax that transcended differing stylistic dialects.⁴¹ He compared the "syntax" of ornament (consisting of order, rhythm, and scale) to prosody and defined the "grammar" of ornament as an ensemble of rules and procedures proper to each historical style characterized by distinctive forms.⁴² His sophisticated protostructuralist analysis was rooted in the conviction that the decorative arts of the Industrial Age had to be based on a rational skeletal structure embodying measure (*la mesure*) and scale (*l'échelle*), constituting the shared basis of harmonious beauty in music, poetry, and ornament.⁴³

Bourgoin's publications were followed by a series of others that studied the underlying generating principles of Islamic geometric patterns. One of them was Christie's *Traditional Methods of Pattern Designing*, which advocated the structural analysis of patterns: "The structural method, not the element used, is the sole basis of classification."⁴⁴ Christie's method followed "the lines laid down by the zoologist, who separates into well defined categories all living and extinct creatures."⁴⁵ His access to the Mirza Akbar scrolls



79. Jules Bourgoin, star-and-polygon pattern superimposed with a diagram of its underlying grid network at the upper left corner. From Bourgoin 1879, fig. 51. Photo: Courtesy The University of California, Los Angeles.



80. Stuart Durant after David Ramsay Hay, designs with geometric grids. Based upon Hay 1844b, pls. XIII, 19. Photo: Courtesy John Calman & King, Ltd.

provided him with the original formulas used in setting out geometric patterns on various grid systems (see figs. 37–39). The repeat units of these Qajar scrolls supported Christie's universal definition of *pattern* as "a design composed of one or more devices, multiplied and arranged in orderly sequence."⁴⁶ The book gave many revealing examples of how Islamic geometric patterns were generated from modular repeat units by processes such as interlacing, branching, interlocking, and counterchanging. It did not, however, discuss the stellate arch-net and muqarnas vault patterns included in the Mirza Akbar scrolls, a conspicuous omission demonstrating that Christie was once again addressing a European audience of industrial designers, using a well-defined format in which three-dimensional patterning had no place.

Several regional studies on North Africa and Spain also analyzed geometric patterns in terms of their underlying structural grid systems, such as J. Collin's *Etude pratique de la décoration polygonale arabe*, 1911; Antonio Prieto y Vives and Manuel Gómez-Moreno's *El lazo: Decoración geométrica musulmana*, 1921; José Galiay Sarañana's *El lazo, motivo ornamental destacado en el estilo mudéjar, su trazado simplicista*, 1943; and Basilio Pavón Maldonado's *El arte hispanomusulmán en su decoración geométrica*, 1975.⁴⁷ Similar studies on geometric ornament by Soviet scholars were informed by the discovery of the Tashkent scrolls in the 1930s and of modern scrolls used by practicing Central Asian master builders. Such authors as Gaganov, for instance, worked out a structural

syntax of planar geometric ornament for contemporary practitioners, classifying the repeat units (*rapport*) of *girihs* in terms of their symmetrical properties—linear or "ribbonlike," evenly spread or "carpetlike," and radial. Baklanov also observed that *girihs* were meant to be multiplied by "simple repetition," "symmetric repetition," or "rotation." This echoed a tripartite classification encountered in such European publications as Franz Sales Meyer's *Handbuch der Ornamentik*, 1888, which divided all planar geometric ornament into "ribbonlike forms (bands), bordered figures (panels), and unbordered flat patterns," or Alfred Dwight Foster Hamlin's *A History of Ornament, Ancient and Medieval*, 1916, which referred to "linear," "all-over," and "radiating" patterns.⁴⁸

These parallels show that the aim of Soviet scholars was not so different from that of European encyclopedists of ornament who searched for a universal structural language that might have practical contemporary applications. This aim, already foreshadowed in Simakov's compilation of ornamental patterns in *L'art de l'Asie-centrale*, culminated in a large number of studies undertaken during the Soviet regime on the architectural ornament of Central Asian Islamic monuments. It is therefore not surprising that the fragmentary Tashkent scrolls initially were studied to derive practical lessons for contemporary usage; in 1941 Usta Shirin Muradov, Boris Nikolaevich Zasytkin, and N. S. Lukasheva wrote a textbook for artisans that was inspired by these scrolls.⁴⁹

The emphasis of Russian publications on the

rational-mathematical basis of architectural design and ornament in Islamic Central Asia prefigured recent attempts to apply scientific methods of analysis to the arts. The threefold classification of patterns used by such authors as Gaganov, Baklanov, Meyer, and Hamlin is not so different from that used today by crystallographers who scientifically analyze patterns in terms of their underlying symmetry groups. The latter identify three pattern types in plane designs: one-dimensional (line), two-dimensional (plane), and finite (point or radial). Bourgoïn, who had observed the crystalline composition of Arab ornament, which reminded him of the inner structure of inanimate matter, would be surprised to find out that this analogy had a direct relevance for mathematicians investigating crystal symmetry. Edith Müller (a student of Andreas Speiser, who wrote *Die Theorie der Gruppen von endlicher Ordnung*, 1927, and *Die mathematische Betrachtung der Kunst*, 1944) was the first systematically to use the mathematical tools of group theory in the analysis of Islamic ornament. Her thesis, *Gruppentheoretische und strukturanalytische Untersuchungen der maurischen Ornamente aus der Alhambra in Granada*, 1944, opened up new horizons for the scientific classification of geometric patterns on the basis of different symmetry groups.⁵⁰ Her work was followed by a number of studies on the arts, each study using categorization methods developed by crystallographers.⁵¹

Rigorous classifications derived from the mathematical bases for repeat patterns are found in

some recent books and articles that are modern counterparts of nineteenth- and early twentieth-century universal encyclopedias of ornament. The architect Peter S. Stevens's *Handbook of Regular Patterns*, 1981, for example, which illustrates the three plane pattern classes (point, line, plane) with examples selected from worldwide artistic traditions, familiarizes artists with the technical descriptions of crystallographers and chemists for a better structural understanding of repeat patterns that may help them create new designs. These recent studies replace the unscientific terms *decoration* and *ornament* with "pattern"; they refer to tightly fitting geometric figures in contact that leave no gaps as regular or semiregular "tessellations" (planar or spatial) and to underlying grids as "nets" or "lattices." Regarding earlier attempts at categorizing ornamental patterns by such authors as Bourgoïn (who grouped them according to their geometric elements rather than their symmetry groups) as lacking in mathematical basis, modern-day scholars have adopted a detailed system of notation to standardize the mathematical study of repeat patterns called "tilings and patterns." Some of these studies focused exclusively on the crystallographic analysis of Islamic geometric patterns, singled out as a treasury for teaching such topics as tessellation, algebra, two- and three-dimensional symmetry, and color symmetry.⁵²

Wasma'a K. Chorbachi, who since 1970 has been arguing for "the need for a scientific language and methodology with which to understand and systematically categorize Islamic geometric pattern,"

noted the necessity to "search for the proper scientific languages and tools to generate new forms and expressions" in contemporary Islamic design. She wrote:

The importance of Group Theory and its notational system for Islamic art lies in the fact that it provides a tool for exact cataloging of the infinite number of geometric designs used in Islamic art. It is also helpful as an analytical tool in recognizing the symmetry used within a design. Moreover, it provides a precise language and terminology by which those who are interested in these patterns can communicate precisely with each other about these patterns. All this might seem redundant to the scientists who have been involved in the study of symmetry yet, for the art historians, it is still an unacknowledged tool.⁵³

Such scientific studies provide invaluable insights into the fixed geometric properties of symmetry relationships and the constraints that designers faced in the composition of form and color. Their mathematical notation system enables the scientifically precise description and classification of geometric patterns, but such an enterprise falls beyond the scope of this book. The master designers who created the Topkapı scroll's variegated patterns were probably less concerned with the problem of classification than with the inge-

nious manipulation of inherited geometric formulas. Neither the ability to classify the symmetry groups of given patterns nor the structural analysis of their syntax in ornament studies (which only rarely approximate the original formulas used in pattern scrolls) explains the creative processes and aesthetic aspirations of their makers. Those processes relied on the transmission of a knowledge of practical geometry codified in pattern scrolls that provided master builders with a rich repertoire of traditional formulas developed over the centuries. An understanding of the historical methods of geometric design therefore requires a close study of surviving pattern scrolls, practical geometry manuals, and written primary sources relevant to the theory and praxis of the *giriḥ* mode.⁵⁴

Given that a large portion of the secondary literature we have considered in this chapter was directed to a Western professional audience not particularly interested in a study of Islamic geometric patterns per se, the general lack of concern for primary sources capable of revealing historical methods and processes of design is not so surprising. The nineteenth- and early twentieth-century European discourse on ornament, characterized by its urge to find universal design principles, overlapped the equally ahistorical discourse of Orientalism, with its essentialist fixation on the arabesque. It was these two types of discourse in which the earliest discussions of Islamic geometric patterns were most often embedded.

CHAPTER 5. RECENT STUDIES ON GEOMETRIC ORNAMENT

From the early twentieth century onward the study of Islamic art and architecture developed into a specialized academic field in which Orientalist, archaeological, and museum or collections research led to an unprecedented accumulation of information. Corpuses of epigraphy, archaeological reports, international exhibitions, detailed regional studies, and surveys with a general scope, either limited to a particular period or covering the whole range of Islamic art and architecture, increased awareness of the chronological, regional, and ideological complexities of the Muslim visual heritage. These academic studies, which grew out of the Orientalist discourse, increasingly turned away from the ethnoracial categories encountered in nineteenth- and early twentieth-century writings and replaced them with regional, dynastic, and chronological-stylistic ones. Nevertheless the notion of an all-encompassing category of "Islamic" art continued to dominate scholarship. Such subcategories as Arabic, Moorish, Turkish, Persian, Central Asian, or Indian generally were reclaimed by various nationalist discourses that attempted to construct new self-identities con-

fining to the borders of modern nation-states that no longer corresponded with those of previous dynasties encompassing multiple regions, nations, and subcultures. Despite the growing refinement and sophistication of academic art-historical studies, the Orientalist legacy still lingered.

Specialized publications dealing with the subject of architectural decoration were now for the most part limited to particular techniques, motifs, periods, or regions. Generously illustrated popular works such as Sonia P. Seher-Thoss's *Design and Color in Islamic Architecture*, 1968, and Derek Hill and Oleg Grabar's *Islamic Architecture and Its Decoration, A.D. 800–1500*, 1967, however, signaled that the earlier interest in a broader treatment of ornament had not altogether disappeared. Nevertheless with the advent of international Modernism in architecture, the popularity of universal encyclopedias of ornament eventually died out. The genre of professional pattern books with Islamic material was, however, curiously revived in the 1970s in response to the new Middle Eastern construction boom, particularly in Iran and the Arab lands, that made both Western and non-

Western architects competing for projects search for ready-made prescriptive formulas. It was in that context that Bourgoin's *Arabic Geometrical Pattern and Design* was reprinted in 1973, accompanied by several new publications on the subject of Islamic ornament that emphasized geometry.

In an attempt to "Orientalize the Orient" these publications willfully blurred stylistic, regional, and chronological differences unknown to earlier writers. Constructing the artistic "otherness" of the Islamic East was no longer a project limited to Europeans observing a foreign culture. Now a mixed group of Western and non-Western authors sought to articulate that "difference" in response to the postcolonial Islamic world's internal search for distinctive national and cultural identities.⁵⁵ In doing so they ironically appropriated many of the stereotyped categories constructed by the nineteenth-century Orientalist discourse, among which the so-called geometric arabesque came to enjoy a particular prominence, a striking example of Orientalism in reverse. The new literature on the arabesque was often framed by an explicitly or implicitly antimodernist discourse that sought to

preserve the "otherness" of the Orient, with its timeless traditions rooted in an innately spiritual psyche. This represented a reversal of the proto-modernist search of earlier writers such as Jones and Bourgoïn for universal design principles transcending historicisms, an urge that would ultimately culminate in the rejection of historical ornament by international Modernism. By contrast, the new writers on Islamic ornament exhibited a revivalist nostalgia for the architectural styles of the past in a modern world whose secular internationalism seemed to threaten the distinctiveness of traditional Muslim culture. A recurrent subtext of the new secondary literature on geometric ornament was a critique of the modern world and the spiritual plight of Muslims in an industrial era dominated by Western culture.

This chapter will analyze the ahistorical treatment of Islamic geometric patterns in some recent publications, particularly the series of books that appeared in conjunction with the World of Islam festival in 1976 in which the arabesque was once again singled out as the primary "essence" of Islamic visual culture. No longer limited to regional studies on Egypt, Syria, North Africa, or Spain, these publications universalized the so-called arabesque into a pan-Islamic concept transcending time and space. Before turning to the books published as part of the festival, I will briefly summarize the various definitions of the arabesque current at the beginning of this century that prepared the groundwork for later studies.

The entries on the arabesque in the two editions of the *Encyclopaedia of Islam* encapsulate the prev-

alent views. Ernst Herzfeld's entry of 1913 added a fourth, figural category to the three more common variants of the arabesque, that is, vegetal, geometric, and calligraphic:

The term arabesque in its wider sense, as denoting the ornament of Muslim art in general, also comprises a number of figurative elements. It would indeed be possible to distinguish these from the arabesque, taking this word in a narrow sense, and to class them under the term "iconography"; but the value of these figurative elements is for the most part purely ornamental, while their composition is frequently closely connected with or even inseparable from the arabesque.⁵⁶

Herzfeld noted the antinaturalism and geometric abstraction of the arabesque, characterized by "countless repetitions" and an "infinite correspondence" that gave rise to completely covered surfaces reflecting a typically Islamic horror vacui, a psychological fear of empty spaces.⁵⁷ This notion would be repeated by such authors as Richard Ettinghausen and by Maurice S. Dimand, who wrote, "Mohammedan art is essentially one of decoration, for an empty surface is intolerable to the Mohammedan eye."⁵⁸ Like earlier writers Herzfeld associated the arabesque, identified as a "dominant feature of supreme authority for the whole art of Islam," with the "character of the Muslim view of life":

All provincial developments, apart from a few exceptions, change the style of the arabesque in its outward features only. The essential characteristics of the arabesque are preserved throughout, both as regards the composition and the elements; there is therefore only one arabesque in antiquity as well as in modern times, in the East and the West, and in the South as well as the North.⁵⁹

Ernst Kühnel's "Arabesque" entry in the second edition of the *Encyclopaedia of Islam*, 1960, summarized his booklet *Die Arabeske*, 1949, translated into English in 1976 by Ettinghausen as *The Arabesque: Meaning and Transformation of an Ornament* (published in 1977). Rejecting Herzfeld's broad description of the arabesque as "anti-quoted," Kühnel adopted Riegl's narrower focus in *Stilfragen* on its vegetal type that could be intertwined with geometric, calligraphic, and stylized figural elements. He traced the origins of the arabesque to late antiquity and noted that it had acquired its typical shape in the ninth century under the Abbasids, becoming more fully developed in the eleventh century under the Seljuqs, Fatimids, and Moors, thereafter appearing in countless variations impossible to classify "according to a chronological order or according to national-dynastic predilections." Though "Persian, Turkish and Indian artists understood the language of the arabesque quite as well as Arabic-speaking artists," Kühnel interpreted this mode of design as the "outcome of a particular Arab atti-

tude" that informed parallel developments in Arabic poetry and music, as noted in Johann Wolfgang von Goethe's (1749–1832) *West-Östlicher Divan*, 1820. Kühnel identified its two aesthetic principles as "rhythmical alternation of movement always rendered with harmonious effect, and the desire to fill the entire surface with ornament." Like most earlier European writers on the subject, Kühnel highlighted the purely ornamental character of the arabesque: "It seems unnecessary to emphasise that the arabesque never has any symbolic significance but is merely one ornament from a large stock."⁶⁰ Its ephemeral decorative quality and its lack of iconographic specificity is stressed in *The Arabesque*:

Just as the infinite repetition underlines the significance of the individual forms which do not come into sharper focus through serialization, but rather seem to evaporate, so does the uninterrupted covering of the surface deprive them of all objective meaning. It is obviously the decorative intention that the eye of the viewer is not arrested by the pleasant detail, but that it is delighted by the kaleidoscopic passing of an ever-changing and disappearing harmony of unreal forms. . . . One would entirely misunderstand the character of the arabesque if one were to attach to it any symbolic function. . . . Decisive is a decorative intent which is devoid of a meaningful purpose.⁶¹

Like Riegl, Kühnel related the development of the vegetal arabesque to an Islamic spirit, specifically to the concept that "nature does not create out of itself, but that it is the work of the divine creator which manifests itself in all happenings and phenomena." The belief in the transitoriness of the world led "to the assumption that it cannot be the task of the artist to arrest reality which has been optically perceived or personally experienced since it could be counter to the divine decision to give permanence to temporary earthly forms."⁶² Thus the divinely inspired artist who "carried in himself the Islamic world view" deliberately reworked naturalistic motifs into unreal forms that gave free reign to the artistic imagination "plunged into linear speculations of an abstract nature."⁶³

Such Orientalist scholars and art historians as Louis Massignon, Georges Marçais, and Ettinghausen also explained the characteristics of abstract ornament by reference to the nature of Islam. Massignon, for example, linked the ephemeral abstractions of Islamic art with the philosophy of atomism, according to which the universe was composed of atoms and accidents continually changed by an omnipotent God, unique and indivisible. Although this hypothesis is not unlikely, as we shall see in part 3, Massignon failed to historicize it, presenting it as a universal explanation regardless of context.⁶⁴ The questions raised about abstract Islamic ornament by Massignon, Ettinghausen, and others including Herzfeld, Dimand, and Kühnel were put into perspective in Grabar's *The Formation of Islamic Art*, 1973, which devoted a chapter to "Early Islamic Decoration:

The Idea of an Arabesque." Here Grabar discussed the methodological problem of assigning meaning to repetitive abstract patterns that did not "seem to have an intellectual or cultural content" but to have been aimed at "beautification" and "visual pleasure."

Grabar observed that the arabesque, in which every motif, even inscriptions, became "ornamentized," endowed the observer with considerable subjective freedom, given its "ambiguity" and "ambivalence." Iconographic significance could occasionally be assigned to it (especially through the use of inscriptions), but an essential ambiguity still remained: "Like the beads of the holy man, the meditation it suggests is not in itself but in the mind of the beholder." Grabar did not altogether dismiss the possibility that "Muslim ornament could not reflect some attitude of Islamic culture as a whole," comparable to the relationship between Scholasticism and Gothic construction; "the mood of the faith and the mood of the ornament" seemed to share a number of common assumptions. However, doubts about the validity of such parallels lingered. He concluded, "It does not seem possible to formulate for early Islamic times any sort of correlation between a common denominator of the arts and what appears to have been the main common denominator of the contemporary society."⁶⁵

Some other scholars were apparently less troubled by the methodological problems of assigning specifically Islamic meanings to abstract patterns. Foreshadowing several later Muslim authors on the subject, Isma'il R. al-Faruqi accused West-

ern scholars of misinterpreting Islamic art as merely "decorative" and "contentless," thereby failing to understand its "spirit" and its "Islamicness." He argued that denaturalized abstract forms visually represented God's "infinity or inexpressibility" and the Muslim profession of faith, "There is no God but God." The Islamic artistic tradition, stamped by the "Semitic consciousness" and by the central notion of *tawhīd* (absolute unity or oneness of God), induced "an intuition of unimaginableness and inexpressibility—in short, of infinity."⁶⁶ Al-Faruqi defined the arabesque as follows:

Properly understood, the Arabesque is the religious work of art in Islam. It is the semitic religious work of art *par excellence* since it produces an aesthetic—not logical—intuition of "not-nature," of "not-finitude," and of "inexpressibility," the only intuitable categories of transcendent reality. Every work of art in Islam is a more or less successful exemplification of it.⁶⁷

Asserting that figural representation is against "the vision of *tawhīd* as expressed in the *shahāda* [profession of faith]," al-Faruqi dismissed miniature painting as originating from "non-Islamic" influences. He assigned priority to architecture and the arabesque, since "figural painting is of miserably less value" to the Muslim whose consciousness is "completely determined by Allah" and by the notion of *tawhīd* that is "the first principle of every aspect of Islamic civilization." The

abstract forms of Islamic art, therefore, have no function other than helping the believer intuit "the unintuitability of that which can never be the object of immediate intuition," that is, the absolute transcendence of a God who is beyond time and space.⁶⁸

Other interpretations that stressed the Islamic meanings of the arabesque tended to highlight its mystical, Sufi dimension. This dimension had already been emphasized in Gayet's *L'art arabe*, 1893, where polygonal geometric interlaces were seen as mystical expressions of transcendental beauty, inviting the soul to contemplation and ecstasy. The same idea appeared again in Probst-Biraben's "Essai de philosophie de l'arabesque," 1905, where abstract patterning is defined as "the ornamental translation of mystical Muslim thought, its very symbolism." This act of translation was undertaken by Muslim artisans belonging to Sufi confraternities who exalted their spiritual meditations by visually transcribing them on the walls of buildings and on the surfaces of luxury objects by means of an ornamental language.⁶⁹ The rhythmic repetition of abstract patterns recalled the ritual of *dhikr*, the tireless repetition of ejaculatory litanies by the devotees of mystical brotherhoods. Probst-Biraben wrote:

Gayet, an artist and fine connoisseur, has perhaps exaggerated the symbolism of interlaced patterns [*entrelacs*], but has finely sensed the spirituality of Arab inspiration, the connection of art with the

Muslim mystic desirous of tracing phenomenal multiplicity back to the divine unity, and the emanation back to the initial source.⁷⁰

The mystical notion of "unity in variety," as reflected in the cosmological order of the universe, and the doctrine of *tawhīd* came to occupy a central position in the interpretations of the arabesque during the 1960s and 1970s, culminating with the publications of the World of Islam festival. The role of Sufism, the esoteric dimension of Islam, was particularly emphasized in Nader Ardalan and Laleh Bakhtiar's *The Sense of Unity: The Sufi Tradition in Persian Architecture*, 1973. This book argued that "unity in multiplicity," a central doctrine of Sufism, is what informs all the elements of Islamic architecture in Iran, from geometric surface decoration and architectural form to complex urban settings. In the preface Seyyed Hossein Nasr defined the Iranian Islamic architectural tradition as composed of timeless "forms that echo transcendent archetypes" intimately related to cosmology and identified its most fundamental principle as the concept of God's unity (*tawhīd*):

There is nothing more timely today than that truth which is timeless, than the message that comes from tradition and is relevant now because it is relevant at all times. Such a message belongs to a now which has been, is, and will ever be present. To speak of tradition is to speak of

immutable principles of heavenly origin and of their application to different moments of time and space. . . . Islamic civilization presents an eminent example of a traditional civilization wherein can be clearly observed the presence of certain immutable principles that have dominated the whole civilization in both time and space. Islamic art is no more than a reflection in the world of matter of the spirit and even of the form of the Quranic revelation.⁷¹

Nasr's emphasis on static tradition, as opposed to dynamic historical change, revived a central topos of the Orientalist discourse with its typical distinction between historical and traditional cultures. This topos was now reversed to privilege unchanging tradition over modernity and given a new coloring through the notion of the archetype, here applied to the analysis of Sufism. Notably the book's bibliography cited C. G. Jung and Mircea Eliade in addition to such scholars of Sufism as Henry Corbin and Toshikiko Izutsu.

After identifying the Islamic architecture of Iran as a spiritual tradition, Nasr pointed out that "this art has been only too rarely studied with the aim of understanding its symbolic and metaphysical significance." To penetrate its inner meaning "woven around the central doctrine of unity" required "both an outward research and an inner discovery of the tradition," not unlike a spiritual journey toward truth. Complaining that the

"modernized classes of the East since the spread of the modern mentality from the end of the last century" have ignored their own architectural traditions, Nasr recommended the book to the Westernized practicing architects of Iran "at a moment when so many of them are looking desperately for guidelines to follow and have realized the shortcomings of imitating Western models blindly." Although the book's search for "primordial and eternally valid" design principles may initially recall the modernist search for universal forms transcending historicisms, it is nevertheless embedded in an antimodernist, traditionalist discourse.⁷²

Ardalan and Bakhtiar interpreted geometric patterns as eternal archetypes that could lead the contemplative mind from outer appearances to the esoteric inner realities of Sufism through spiritual hermeneutics.⁷³ They wrote, "These shapes, as the personality of numbers, are understood by traditional man as aspects of the multiplicity of the Creator."⁷⁴ Infinitely extendable geometric patterns symbolized the inner esoteric dimension of Islam and the Sufi concept of the "inexhaustible multiplicity of creation, the effusion of Being that emanates from the One: multiplicity within unity."⁷⁵ Although this may have been true in some cases, the authors showed no attempt to contextualize their arguments or to demonstrate through primary sources the ways in which geometry was interpreted in specific historical settings. Their universalizing generalizations were based on conceptual categories freely borrowed from a

wide variety of Sufi texts without regard to time and place, or to the cultural mechanisms that informed the assumed connection between visual aesthetics and Sufism.

The radical sectarian shifts throughout Iranian history (characterized by such irreconcilable positions as the rigid Sunnism of the Seljuqs and the official Twelver Shi'ism of the Safavids) were ironed out in this romantic vision of an eternal sense of unity that was engendered by an innate spiritual psyche, shaped by the unique Iranian ecology and tradition. Ardalan and Bakhtiar's epilogue promised a future Iranian artistic creativity that would be part of a tradition with no apparent beginning or end: "This body of knowledge crystallized through the arts, embodied in the traditional societies, and available today for those who would 'see,' presents concepts that are primordial and eternally valid."⁷⁶ What could be a more appropriate ending for a book published during the regime of Shah Riza Pahlavi "on the occasion of the twenty-fifth centenary of the foundation of the Persian Empire," as its title page stated, a book that rarely mentioned any specific dates that might disrupt the semblance of uninterrupted continuity in an unchanging traditional Iranian culture rooted in ancient civilization?

The central premises of *The Sense of Unity* were intimately linked with those of the Traditionalist School founded in Switzerland by René Guénon (1886–1951). Adherents of that school traced the so-called modern deviation to Renaissance secularism, engaged in a radical critique of the

contemporary world, and searched for universal spiritual truths in metaphysics, cosmology, and traditional art. The publications of Titus Burckhardt, a leading spokesman of this school who was to become a key figure together with Nasr in the World of Islam festival, are fully cited by Ardalan and Bakhtiar. Titus Burckhardt, the grandnephew of the celebrated Swiss cultural historian of the Renaissance, Jacob Burckhardt, was an intimate friend of Frithjof Schuon, another disciple of the Traditionalist School, who wrote on esotericism and the transcendental unity of religions. Burckhardt had converted to Islam after spending some years in Morocco as a young man in the 1930s, where (much like the early Orientalists) he developed a romantic fascination with traditional Maghribi culture that still preserved many pre-modern elements. There he became immersed in Sufism, a subject to which most of his early studies were devoted. These works dealt with esoteric Sufi doctrines (particularly those of the Andalusian shaykh Ibn al-ʿArabi [1165–1240]), alchemy, astrology, cosmology, and spiritual symbolism in the traditional crafts.⁷⁷

Burckhardt's main work on aesthetics, translated from the French as *Sacred Art in East and West*, 1967, discussed the metaphysical aesthetics of major world religions, including Islam. Among his early articles on Islamic aesthetics perhaps the most influential was "Perennial Values in Islamic Art," 1967, which argued for the timeless spiritual unity of the Islamic visual tradition in all periods and regions.⁷⁸ Noting that the arabesque prevented

the observer from focusing on any one form, Burckhardt stressed its mystical, contemplative, and ahistorical character capable of bridging the Muslim past and present through abstract forms concerned with "only those elements that are valid for all time":

There are two typical forms of the arabesque; one of them geometrical interlacing made up of a multitude of geometrical stars, the rays of which join into an intricate and endless pattern. It is a most striking symbol of that contemplative state of mind which conceives of "unity in multiplicity and multiplicity in unity." . . . The second form, the arabesque commonly so-called is composed of vegetable motifs, stylized to the point of losing all resemblance with nature and obeying only the laws of rhythm transposed into graphic mode, each line undulating in complementary phases, and each surface having its inverse counterpart. The arabesque is both logical and rhythmical, both mathematical and melodious, and this is most significant for the spirit of Islam in its equilibrium of love and intellectual sobriety. . . . Moreover, the universal character of geometrical ornament—the fundamental elements of which are essentially the same, whether they appear in a Bedouin rug or in a refined urban decoration—corresponds perfectly to the universal

nature of Islam, which unites the nomads of the desert with the learned man of the city, and this latter-day epoch of ours with the time of Abraham.⁷⁹

This extraordinary passage encapsulates Burckhardt's essentialistic approach to Islamic visual culture, an approach that informs his rejection of historical methods of analysis. He denounced the analytical method of modern art history as unequipped to deal with the spiritual dimension of Islamic art: "Whatever is timeless in art—and a sacred art like that of Islam always contains a timeless element—is left out by such a method."⁸⁰ The radical implication is that historical methods of analysis developed for post-Renaissance artistic traditions in the West are inappropriate for understanding the Islamic visual tradition. This tradition represented an ahistorical spiritual phenomenon accessible only to the initiated believer who can decipher its inner, esoteric meanings:

The study of Islamic art, if undertaken with an open mind and without the post-Medieval prejudices we have mentioned, is a way of approach to the spiritual background of all Islamic culture. . . . The main shortcoming that one has to avoid is the academic mentality that considers all works of art from earlier centuries as purely historical "phenomena" which belong to the past and have very little to do with present life. . . . Let us ask what is

timeless in the art of our spiritual ancestors. If we recognize this, we shall also be able to make use of it within the inevitable framework of our own age.⁸¹

This statement, based on the premise that Islamic culture constitutes a monolithic block characterized by its timeless continuum between the seventh and twentieth centuries, puts the modern Muslim observer in the privileged position of "native informant." The implication that Muslim believers are better equipped to penetrate the inner meanings of their own visual culture assumes that the past is more transparent to them. Since all interpretations are bound up with one's own historicity, however, it is difficult to believe that any interpreter, from whatever background, is more privileged with objectivity. A sensitive contextual interpretation of any given aspect of the Islamic visual tradition as a historically informed, dynamic cultural phenomenon demands equal methodological rigor in the use of primary sources from any scholar engaged in that field, whether Muslim or non-Muslim. The construction of a visual tradition based on timeless spiritual truths, however, makes such methodological rigor irrelevant. Burckhardt stated that the Islamic visual tradition was fundamentally derived from the contemplation of divine unity (*tawhīd*) revealed in the Koran in discontinuous flashes: "Striking the plane of the visual imagination, these flashes congeal into crystalline forms, and it is these forms in turn that constitute the essence of Islamic art."⁸²

Disregarding the specificities of the historical and regional developments of Islamic theology and mysticism, Burckhardt and the authors of *The Sense of Unity* attributed a universal significance to Sufism, which was not equally influential in all regions or periods. Neither the doctrine of *tawhīd* nor the transience of the material world, in whose diverse forms the contemplating believer could detect underlying signs of transcendental unity, were concepts limited to Sufi circles. It is therefore not surprising that such authors as al-Faruqi and Edward H. Madden associated abstract Islamic patterns with Sunni orthodoxy instead of Sufi esotericism. Nasr's claim that "to grasp fully the signification of Islamic art is to become aware that it is an aspect of the Islamic revelation, a casting of the Divine Realities (*ḥaqā'iq*) upon the plane of material manifestation" could even be regarded as anathema from an orthodox Muslim viewpoint.⁸³ Given the completely transcendental nature of the creator it would be inconceivable for an orthodox believer to attempt to represent God or God's revelation in any form, no matter how abstract. This is why al-Faruqi interpreted abstract patterns as visual expressions of the nonrepresentability of God, rather than as material manifestations of spiritual truths accessible to the contemplating mystic.

Madden, who recognized that arabesques and "infinite patterns" were not uncommon in Sufi or Shi'i settings where they "could well be given various esoteric meanings," nevertheless associated them primarily with "the classical Sunni Muslim world view" that blended "traditional

legalism and moderate mysticism." He concluded that such patterns:

though used in the other contexts, seem especially Sunni in perspective, for they speak eloquently of no individual, no unit, no person, no historical event but rather of the infinite, transcendent One. Sunni Islam in its purest form is a lovely and lonely world view; the infinite pattern and the arabesque in their purest forms mirror that world view in a transcendently beautiful way.⁸⁴

Although Madden deemphasized the Sufi dimension of Islamic art, his views were nevertheless rooted in the same Traditionalist School that inspired Burckhardt and Nasr:

Traditional or religious art is the expression of a whole community, of a complete culture, in contrast to the idiosyncratic and self-expressive features of contemporary art and, indeed, of much of Western art since the Renaissance. Decoration is fundamental to all traditional art, but it is always symbolic in nature and never something added as an afterthought. In Islamic art the infinite pattern, the arabesque, and stylized calligraphy all have significant symbolic functions wherever they occur; each in its own way is a surrogate in the physical world of such spiritual

concepts as Allāh's infinity, transcendence, and unity. . . .

There can be no doubt that the arabesque is a fundamental religious symbol. . . . In all cases of the infinite pattern—which has no beginning or end and is self-contained—the design is at once symbolic both of Allāh's infinity and unity in multiplicity and at once expressive both of His transcendence and the concept of *al-tawhīd*.⁸⁵

Whatever conclusions they reach, studies emphasizing the religiospiritual and cosmological dimension of Islamic art are characterized by sweeping generalizations unsubstantiated by concrete data. The wide margin of difference in their symbolic interpretations of the arabesque indicates that a priori connections with mystical and theological doctrines need to be demonstrated with respect to specific historical contexts. The ahistorical and essentialist discourse on Islamic art reached a particularly broad public forum during the World of Islam festival in 1976, organized by various institutions and governments from both the Islamic world and the West to celebrate the 1400th anniversary of Muslim culture. The festival recycled many of the stereotypes that had originated in the nineteenth-century Orientalist discourse, but this time the intent was to provide concepts easily accessible to non-Muslim and Muslim audiences alike. Held all over Britain, but mostly centered in London, it featured an exhibition, *The Arts of Islam*, at the Hayward Gallery,

accompanied by a series of related exhibitions, films, and publications. The publications, all of which appeared in 1976, included the exhibition catalog *The Arts of Islam* (featuring an introductory essay by Titus Burckhardt), Burckhardt's *Art of Islam: Language and Meaning*, Nasr's *Islamic Science*, and Issam el-Said and Ayşe Parman's *Geometric Concepts in Islamic Art*.

As Grabar noted in his critical review of the festival, the objects in the *Arts of Islam* exhibition were not grouped according to the usual chronological, regional, iconographic, and stylistic criteria but were presented in terms of such ahistorical categories as calligraphy, geometry, and vegetal ornament, "characteristics or attributes which are alleged to be particular to the artistic creativity of the Muslim world, which make Islamic art different from other arts, and therefore justify an idiosyncratic presentation."⁸⁶ Grabar interprets the ideological message of the festival, characterized by its marked "reluctance to deal with history," as follows:

The message was that of the basic unity of Islamic art and by extension of Islamic civilization in the past and, ideally, of most Muslims today. By a fascinating sleight of hand, the profoundly Islamic theological notion of *tawhīd*, of the absolute oneness of God, was transferred not only to the community, the *ummah*, but also to the objects and buildings sponsored and used by the community of Muslims. To the single message of a unique

Divine Revelation there corresponds a visually perceptible artistic creativity of comparable unity. And then the identification of the principles which create that unity acquire automatically a culturally normative value.⁸⁷

These normative values reduced the rich complexity and multiplicity of Islamic visual culture(s) into simple prescriptive formulas meant to guide contemporary architectural projects in the Middle East. It is no surprise, then, that Burckhardt's catalog introduction identified architecture, represented in the exhibition with color projections, as the main focus of Islamic creativity to which the decorative arts were subordinated, a leitmotif in many nineteenth-century publications on ornament.⁸⁸

Burckhardt once again attributed the unity of Islamic art, based on a "common language," to the pivotal concept of *tawhīd*, accompanied by the mystical search for cosmic unity, and the spiritual ethos of a culture permeated with the Muslim revelation.⁸⁹ Nasr's introduction to *Art of Islam* rejected the Western interpretation of Islamic art as "decorative" and praised Burckhardt's ability to penetrate its "essence" by speaking "from within the Sufi tradition of the profoundest aspect of wisdom with an authority which can only come from actual experience and realization of the world of the spirit." He added:

Islamic art is at last revealed to be what it really is, namely the earthly crystalliza-

tion of the spirit of the Islamic revelation as well as a reflection of the heavenly realities on earth, a reflection with the help of which the Muslim makes his journey through the terrestrial environment and beyond to the Divine Presence Itself, to the Reality which is the Origin and End of this art.⁹⁰

Burckhardt's book, dominated by decontextualized illustrations of abstract ornament in various techniques, revived such Orientalist stereotypes as the nomad who had "little feeling for the conventions of architecture" but instead valued geometric ornaments derived from the woven textiles of tents, together with the ethnoracial categories of "the Arab," "the Turk," and "the Persian" that represented "vastly different mental types." Nevertheless, differences were unified by the ubiquity of the sacred book since "the entire life of a Muslim is filled with Quranic formulae, prayers, litanies and invocations in Arabic."⁹¹ Burckhardt assigned a central role to the arabesque, another favorite Orientalist theme revived with the English translation of Kühnel's *Die Arabeske* (translated by Ettinghausen in 1976). Unlike Kühnel, who focused exclusively on the vegetal arabesque, however, Burckhardt treated all of its variants with particular emphasis on the "spirit of geometry":

For a Muslim artist or—what comes to be the same thing—a craftsman who has to decorate a surface, geometrical interlacement doubtless represents the most

intellectually satisfying form, for it is an extremely direct expression of the idea of Divine Unity underlying the inexhaustible variety of the world.⁹²

The special role of geometry as a metaphor for divine unity was also stressed in other publications associated with the festival. In his book *Islamic Science*, for instance, Nasr claimed that the Muslim "love for mathematics, especially geometry and number, is directly connected to the essence of the Islamic message, which is the doctrine of Unity (*al-tawhīd*)."⁹³ He added, "Nowhere is the sacred character of mathematics in the Islamic world view more evident than in art, where with the help of geometry and arithmetic matter is ennobled and a sacred ambiance created wherein is directly reflected the ubiquitous Presence of the One and many."⁹⁴

Another monograph devoted to the subject of geometry was El-Said and Parman's *Geometric Concepts in Islamic Art*, whose foreword by Burckhardt once again linked the sacred geometry of Islamic art with the concept of *tawhīd*:

At the basis of this geometry there lies the circle which is an image of an infinite whole and which, when it is evenly divided, gives rise to regularly shaped polygons which can, in their turn, be developed into star-shaped polygons elaborated indefinitely in perfectly harmonious proportions. . . . In the Islamic perspective, this method of deriving all

the vital proportions of a building from the harmonious division of a circle is no more than a symbolic way of expressing Tawhid, which is the metaphysical doctrine of Divine Unity as the source and culmination of all diversity. It is not surprising, therefore, that Muslim artists should have explored all the geometric systems that depend upon the regular division of the circle.⁹⁵

El-Said and Parman's text, which attempted to decipher the geometric formulas used in constructing surface patterns, neither showed an awareness of surviving scrolls (published by Soviet scholars and Christie) nor of practical geometry manuals (studied by Franz Woepcke and cited by such authors as Prisse d'Avennes and Gayet): "To our knowledge, no record has survived to instruct us in the theory of designing Islamic geometric patterns."⁹⁶ The authors analyzed a wide variety of two-dimensional geometric patterns generated by underlying grid systems dominated by the circle, with its radius constituting the basic unit of measure. They compared the repetition of modular units in visual patterns to music, poetry, and calligraphy, a comparison commonly made in nineteenth-century Orientalist writings and in ornament studies.

Testifying to the sudden popularity of this topic, in the same year, 1976, two other books were published on the geometric arabesque, Keith Critchlow's *Islamic Patterns: An Analytical and Cosmological Approach*, featuring an introduction

by Nasr,⁹⁷ and David Wade's *Pattern in Islamic Art*.⁹⁸ Characterized by short texts that briefly touched on the a priori religious, mystical, and cosmological meanings of two-dimensional geometric designs, these works essentially were pattern books providing guidelines for contemporary architects practicing in the Middle East. In that respect they recall nineteenth- and early twentieth-century European publications on ornament that left out three-dimensional patterns, such as Bourgoin's *Arabic Geometrical Pattern and Design*, which had been reprinted without its text for the same market in 1973. Their main difference from earlier publications on the same subject was an insistence on the Islamic symbolism of abstract patterns, no longer presented as merely decorative motifs. Nasr's foreword to Critchlow's book praised it as the first study by a non-Muslim author to explore the misunderstood tradition of Islamic art, usually regarded as no more than decoration. Critchlow, a teacher at the Architectural Association School of Architecture and the Royal College of Art in England, had been invited in the early 1970s to become an associate of the Imperial Iranian Academy of Philosophy in Tehran by its director, Nasr, and was chosen as a design consultant for a new mosque in that city. It was in those years that he prepared his book on Islamic geometric patterns. It is therefore not surprising that his writing contained unmistakable echoes of Burckhardt's and Nasr's works on Islamic mysticism and cosmology.⁹⁹

To summarize, then, the symbolic interpretation of Islamic geometric patterns can be traced to

a common intellectual milieu. Its recurrent ingredients were an emphasis on architecture to which the decorative arts were subordinated, a romantic Sufi universalism (with particular attention to Maghribi and Iranian mysticism), the assumption of an inner esoteric dimension of outer artistic forms, the stress on the doctrine of *tawhīd* with its cosmological corollary of "unity in multiplicity," and the total rejection of historical context. The publications coordinated with the World of Islam festival, which as Grabar noted "still form the most coherent statement about Islamic art available to students or to the general public,"¹⁰⁰ attributed universalizing symbolic meanings to geometric patterns without any demonstration of the presumed link with mystical and religious doctrines in particular historical settings. Therefore, the still-popular conclusions of these methodologically unrigorous publications, which occasionally do contain perceptive insights, need to be tested by carefully framed nuanced contextual studies.

Gombrich was one of the first to criticize the methodologically problematic approach publicized by the *Arts of Islam* exhibition. In *The Sense of Order* he disputed this exhibition's basic assumptions:

The visitor must be reassured that there is more to the arabesque than meets the eye. The revelation of symbolic meaning resembles an initiation into the deeper mysteries of the tradition. It is clear . . . that there is no concrete evidence for these interpretations. Certainly a contem-

plation of ordered systems could have "religious symbolic connotations."

Whether these connotations would fit in perfectly with the tenets of Islam is a different matter. . . . Here the search for meaning coalesces with the tendency . . . of looking for some principle of unity among all manifestations of a culture or period. Being characteristic of Arabic decoration the arabesque must also partake of the essence of "Islamic thought." . . . In linguistics the quest for the "spirit" of a language has been abandoned and so has the search for the original meaning of roots as a guide to semantics. Instead interest has begun to centre on the synchronic analysis of how a language actually functions in any one community. The student of design would do well to follow suit.¹⁰¹

Stuart Durant's *Ornament: 1830–1980*, 1986, similarly criticized the festival's publications as being "all too inclined to attribute mystical significance to Islamic decoration."¹⁰²

In his Mellon Lectures of 1989, published as *The Mediation of Ornament*, 1992, Grabar also rejected the symbolic interpretation of geometric patterns:

Many arguments of logic and of fact exist against this immediate interpretation of geometry, however appealing it is to a curious mixture of Western orientalist and Islamic fundamentalists. The most

important objections are several. There does not exist, to my knowledge, a single instance justifying the views that the Muslim community, the *ummah*, as opposed to individual thinkers, understood mathematical forms as symbolizing or illustrating a Muslim cosmology.¹⁰³

In an attempt to reassert the universal values of Islamic geometric design, Grabar proposed that geometry, like calligraphy and vegetal ornament, functions as a “perfect intermediary, for it attracts not to itself but to other places or to functions other than itself.” He concluded that “geometry is a passage, at best a magnet, to something else that it does not identify but which the culture deems desirable.”¹⁰⁴ As an “object of emotional or psychic involvement” that gave the viewer a remarkable freedom of interpretation, geometry was devoid of cultural specificity:

Geometry really works only as an intermediary. As an intermediary, it leaves the viewer or user a freedom of choice no other intermediary seems to offer. In this respect, as a harbinger of free choice, geometry is a most dangerous mediator. . . . The penalty of freedom in the arts is loss of meaning. Its reward is accessibility to all. Humble triangles on a dress or in the weaving of a basket or the very sophisticated brick walls of Iranian towers share an ability to make us wonder what they mean, because, like moths or butter-

flies, we are attracted to an abstraction which seems to be devoid of cultural specificity. It is only meant to be beautiful.”¹⁰⁵

Like Gombrich’s psychology of decorative art, Grabar’s book highlighted the universal psychological factors at work in the perception of abstract patterns that mediate sensual pleasure. Both authors viewed such patterns as primarily decorative, a view rejected by writers who attempt to charge the same patterns with a priori symbolic meanings. Grabar’s theory of intermediaries aimed to bridge the “boundaries between ornament and reality” through a psychological framework of perception within which the viewer and the abstract image subjectively interact. He deemphasized culturally significant contextual factors, being interested in private perceptions of a universal kind. By definition such a universalizing Gombrichian psychology of perception does not concern itself with culturally constructed codes of recognition and sign systems at work in the process of visual communication. Grabar expressed doubt “whether it is appropriate to seek a philosophical explanation or even parallel for the arts of medieval and premodern times in the Islamic world,” since he found it unlikely that philosophy, literary theory, theology, or mysticism informed the sphere of visual aesthetics. This freed the field of Islamic art from the monopoly of specialists to a much wider audience, giving the art historian the “uniquely interesting task . . . of devising the appropriate contexts, historical or contemporary, within which Islamic art should be understood.”¹⁰⁶

Grabar’s psychological theory of intermediaries, which privileged the category of sensual pleasure, and other theories that continue to interpret abstract patterns as religio-spiritual symbols perpetuate the “decorative versus iconographic” polemic that has polarized the study of Islamic visual culture since the nineteenth century.¹⁰⁷ This binary opposition, grounded in the construction of a sharp dichotomy between abstract pattern-making and mimetic representation in the Western tradition of art, has deeply colored the literature on the “character” of Islamic art.¹⁰⁸ The ongoing ideological split in the secondary literature can only be mediated by a paradigm shift capable of transcending the culture-bound opposition between iconographic representation and ornamental patternmaking. A semiotic framework can be particularly useful in addressing the problematic issue of cultural specificity and meaning in a visual tradition that employed repetitive abstract signs whose signifying potential was largely contextual. Such a framework can help dissolve the sharp dichotomy between the “iconographic” and the “decorative” by investing abstract patterns with a wide range of culturally relevant associations—even contradictory ones—depending on specific settings. Before exploring the semiotic dimensions of Islamic abstract patterns as context-bound sign systems open to a plurality of multilayered meanings, however, it is necessary to analyze the *girih* mode as a historically circumscribed phenomenon bound by identifiable regional and chronological parameters.

NOTES TO PART 2

1. Johann Wolfgang von Goethe, "Hafis Nameh," in *The Poems of Goethe*, trans. E. A. Bowring (New York: Gordon Press, 1974), 892.
2. The German Benedictine monk Theophilus, who was a practicing craftsman himself, included in his twelfth-century technical manual *De diversis artibus* a section on metalwork explaining "whatever Arabia adorns with repoussé or cast work, or engravings in relief"; see Theophilus 1986, 4. During the Renaissance arabesques were used in Venetian-Saracenic metalwork, and they appeared in pattern books published from the early sixteenth century onward, such as those of Francesco di Pellegrino, Jean Gourmont, and Balthasar Sylvius; see Gombrich 1979, 85–86; and Ward-Jackson 1967.
3. For the nineteenth-century literature on ornament and its vast bibliography, see Durant 1986. Many of the works cited below are discussed in Durant's richly illustrated and useful book. See also Gombrich 1979; Kroll 1987; Darby 1983; Brett 1992; Creswell 1961; and idem 1973.
4. See Lewis 1835; Roberts 1837; idem 1842–1849; Walsh 1838; Daniell 1795–1807; and Hodges 1786. This illustrated travel literature is analyzed in Bozdoğan 1988; and Darby 1983.
5. Coste 1975. For the involvement of colonial powers in studying and preserving the architectural heritage of Arab lands, see Reid 1992; and Mitchell 1988.
6. Prisse d'Avennes 1983, 22–23.
7. Gayet 1893, 310, 304–5. See idem, 57: "By proscribing the human form, the *hadith* summed up into a dogma the inclination of spiritualist races; by renouncing it, Arab art yielded to a hereditary repugnance whose trace reappears at each step in the history of the people of the Orient."
8. According to Gayet the abstract forms of Arab art reflected a mystical sensibility. See Gayet 1893, 180: "Each polygon, each arabesque, each inscription . . . extends itself into that softly resigned mysticism that at all times has constituted the battleground of Oriental belief."
9. Gayet 1893, 307. See also idem 1978, where Gayet argued that the ecstatic mystical reveries of Arab art were not so characteristic of the "*génie des races de l'Iran*" (genius of the races of Iran); Persian Islamic art was less spiritual and more prone to figural representation, which the Shi'i "schismatics" tolerated.
10. For the development of the concept of the arabesque in Germany, see Kroll 1987.
11. For various definitions of the arabesque, see Riegl 1893 (1992); Herzfeld 1987; Kühnel 1960; and idem 1977.
12. Goury and Jones 1842–1845, commentary on pl. 1.
13. See Gayet 1893, 310: "And isn't polygonality the tracing of the rich and primitive textiles of the tent, which the Arab, still wandering and semisavage, used while camping in the desert?"
14. In nineteenth-century publications on Islamic architecture, linear drawings tended to flatten facades and architectonic elements, stripping away their spatial qualities to translate them into decorative patterns that could be recycled at will. Bozdoğan has observed that the architectural drawings of these books reduced light, shadow, texture, and depth to an interplay of linear patterns: "The color and corporeality of the dome of Mescid-i Shah in Isfahan, for instance, eludes the 1842 survey drawing of Charles Texier no matter how complete and accurate the latter is rendered. . . . Nor is it possible to capture in a two-dimensional drawing, as in Owen Jones' pattern book, the precise quality of ornament inside the dome of a mosque when the drawing by its nature strips away the essential spatiality of this ornament"; see Bozdoğan 1988, 41. For the Orientalist image as "object of consumption," see idem, 43–45.
15. For another early encyclopedia of ornament, see Wornum 1856, which discussed Egyptian, Greek, Roman, Byzantine, Saracenic, Gothic, and modern styles from the Renaissance onward. Wornum opposed excessive naturalism in ornament, which like music had to be based on such abstract principles as repetition, measure, rhythm, and harmony. Friedrich Maximilian Hessemer's work *Arabische und alt-Italienische Bau-Verzierungen*, 1842, resembled pattern books with its chromolithographic plates of ornaments derived from the monuments of Cairo, Alexandria, and Italy.
16. Brett 1992, 90. The second edition of Jones's influential book was published in 1868 and translated into German and French.
17. Jones 1982, 8.
18. Ibid., 66, 5.
19. Ibid., 74.
20. Cited in Durant 1986, 89. For Jones's wallpaper and textile patterns generated by geometric grids like those of the Alhambra, see Darby 1983, 90.
21. Jones 1982, 56–59.
22. Riegl 1893, see esp. pp. 267, 302–3, 308, 311–15, 326. See also the annotated English translation of *Stilfragen*, Riegl 1893 (1992), esp. pp. 229–305. For the turning point in the tenth and eleventh centuries, see Allen 1988, 15, 54–56; and part 3, chapter 6, of the present volume.
23. Riegl often cited the works of Jones, Bourgoin, Gayet, Prisse d'Avennes, and Gottfried Semper, whose *Der Stil in den technischen und tektonischen Künsten*, 1860–1863, emphasized the need to learn the basic principles of decoration from non-Western ornamental traditions. For other Austrian theorists of ornament, see Kroll 1987, 47–68.
24. Bourgoin 1873a, 4. It has been suggested that Bourgoin was interested in the grouping of plant cells and may have used this information to understand tessellation; see Durant 1986, 65.
25. Among the early works that treat the muqarnas are Goury and Jones 1842–1845; and Gayet 1893.
26. See Bourgoin 1873a, 1–2, where he noted "a considerable difference between the Moorsque art of Spain and the Arab art of Egypt and of Syria." He speculated that a similar difference must have existed "in other regions of the vast Muslim empire."
27. Ibid., 3.
28. Bourgoin 1879, 5–11. Bourgoin identified three periods of Arab art: the formative period (*l'époque Byzantine*, up to the twelfth century), the definitive period (*l'époque arabe*, from the twelfth to the fifteenth century), and the period of decadence (*l'époque moderne*, from the fifteenth century to the present). The same biological metaphor of growth and decline, so widely used by nineteenth-century European historians of art and architecture, also appears in Prisse d'Avennes's *L'art arabe*, where its political implications are transparent; see Prisse d'Avennes 1983. In the author's words, the book traces the "formation, flowering, and decay of Muslim civilization in Cairo" up to the arrival of the French armies who rescued the Arabs from Ottoman rule, "an epoch during which artistic inspiration was all but extinguished under the Turkish yoke" and whose few architectural works of merit reflected "the supreme protest of Arab genius against barbarism." This view, constructed to legitimize French colonial rule in Egypt, would be perpetuated within the framework of Arab nationalism that readily appropriated the racially defined notion of "Arab genius." Such Orientalists as Prisse d'Avennes saw the "Arab genius" as the "pure source" of Islamic visual culture whose stylistic and regional variants were merely a function of climate and racial character.
29. The Orientalist discourse accentuated the unbridgeable distance between two separate worlds and time frames; it not only implied the superiority of the West but also rationalized the role of Europe as a catalyst for change in the colonized Arab lands; see Said 1979; Bozdoğan 1988; Mitchell 1988; and Çelik 1992.
30. Bourgoin 1873a, 24, 4.
31. Ibid., intro.
32. Ibid., intro.
33. Bourgoin described the geometric character of Arab art as follows: "Elegance and complexity by geometric involutions more or less distinct or mixed, and constructed with symmetry. Abstract figures, linear inflections, and a sort of organic growth: in other words, purely geometric themes that are graphically translated

by working drawings, and technically executed by being transferred onto materials, such is the essential basis of Arab art." While Greek art was inspired by the animal realm and exhibited beauty and clarity through representational plastic forms arranged with attention to order, rhythm, and measure, Far Eastern art reflected the vegetal realm, imbued with the spontaneous vivacity of curvilinear floral motifs that defied order and symmetry; see Bourgoin 1879, 5–11.

34. Bourgoin 1873a, 3–4.

35. See *ibid.*, 3: "Moresque architecture is an architecture of decoration, it is this that makes it inferior, and that is why one cannot judge the art of the Orient by what one knows about Moresque or African countries."

36. Viollet-le-Duc 1875, 457–58.

37. Bourgoin 1873a, intro.

38. Parvillée 1874, 11–12. For Edmond Duthoit, see Barry Bergdoll, "'The Synthesis of All I Have Seen': The Architecture of Edmond Duthoit (1834–89)," in Robin Middleton, ed., *The Beaux-Arts and Nineteenth-Century French Architecture* (Cambridge, Mass.: MIT Press, 1982), 216–49.

39. Prisse d'Avennes 1983, 186.

40. Bourgoin 1873a, intro.

41. Bourgoin wrote that monumental architecture "particularly holds under its dependence the arts and crafts which are directly linked to it"; see Bourgoin 1873b, ii.

42. *Ibid.*, 48, 209–11.

43. See *ibid.*, 33: "These ideas of measure and scale tend to regularize the expansion or [compositional] development of forms and of ornaments; this is necessary in itself and for the detail. Moreover, in order to have concordance in the general chord, it is necessary that a measure, a eurythmy, and a general metrics harmonize each of the constituent series, subordinating one to the other, and as a whole to the overall harmony."

44. Cited in Washburn and Crowe 1988, 8–9.

45. Cited in *ibid.*, 8–9.

46. Cited in *ibid.*, 8–9.

47. See also Prieto y Vives 1907; *idem* 1932; and *idem* 1932–1935.

48. See Gaganov 1958, 183; and Baklanov 1947, 102–11. Meyer and Hamlin are cited in Washburn and Crowe 1988, 7.

49. For studies on ornament, see Rempel' 1961; Denike 1939; and Yuldashev 1957. Such studies not only were applicable to modern architecture but also helped to forge regional identities in the modern Soviet republics. Self-contained diachronic studies on the architectural ornament of various republics from pre-Islamic times up to the modern era reinforced artificial national boundaries and concealed a striking reluctance to

engage in contextual interpretations that stressed religious culture. The practical working methods of medieval builders and the universal language of the geometric and mathematical formulas they used conveniently neutralized the historical, ideological, and cultural contexts of monuments built under Muslim rule. The textbook by Muradov, Zasyepkin, and Lukasheva is mentioned in Bulatov 1988, 264–65.

50. Although Müller has been credited with having found at the Alhambra all of the seventeen symmetry groups possible in one-color plane patterns (known as plane crystallographic groups), it was not until 1987 that Spanish mathematicians and topologists were able to document their presence; see Washburn and Crowe 1988, 5, 20. Finite patterns have a central point axis around which elements can rotate or through which mirror axes can pass (other symmetries, such as translation or glide reflection, are not possible in this category). One- and two-dimensional patterns with a single color have respectively seven and seventeen different motion classes, consisting of combinations of the four basic motions possible in the Euclidean plane (reflection, translation, rotation, glide reflection). To these seven strip groups and seventeen plane groups can be added 230 three-dimensional crystallographic groups. Crystallographers also systematically have explored the greatly increased number of variants possible with the addition of two or more colors (dichromatic and polychromatic) to these symmetry groups. For more information, see Weyl 1952; followed by Shubnikov and Koptsik 1974, which summarized the work of Soviet crystallographers. Until recently the most extensive study of two-color patterns had been attempted by the Soviet school of crystallography, made available in English by Shubnikov et al. 1964. The nearly infinite variety of patterns with more than two colors has been explored in Loeb 1971; Wieting 1982; and recently in Grünbaum and Shephard 1987, which is regarded as the definitive text for the mathematical theory of patterns.

51. For one example, see Washburn and Crowe 1988, ix, where the book's purpose is explained as follows: "In this book we demonstrate how to use the geometric principles of crystallography to develop a descriptive classification of patterned design. Just as specific chemical assays permit objective analysis and comparison of objects, so too the description of designs by their geometric symmetries makes possible a systematic study of their function and meaning within cultural contexts . . . analysis classifies the underlying structure of decorated forms; that is, the way the parts (elements, motifs, design units) are arranged in the whole design by geometrical symmetries which repeat them. . . . We have attempted to offer a more comprehensive survey of pat-

terns occurring on decorated objects from cultures all over the world and systematically show how to classify the finite, one-dimensional, and two-dimensional one- and two-color designs with the use of flow charts and other detailed descriptions of symmetry motions and colors present." See also Hargittai 1986.

52. See Makovicky and Makovicky 1977, 58–68; Mamedov 1970; *idem* 1986; and Niman and Norman 1978, 489–91. Makovicky, Makovicky, and Mamedov applied crystallographic analysis to the study of Islamic geometric patterns and showed how such abstract designs are useful as tools for teaching two-dimensional and color symmetry. Noting that the drawings of Escher (who acknowledged being influenced by the Alhambra) have already become crystallographic classics, Makovicky and Makovicky identified Islamic geometric patterns as a "treasury for crystallographic teaching" for which they also recommended the less complicated Roman, Byzantine, and Romanesque mosaics and Gothic vaulting patterns. They also pointed out the usefulness of Bourgoin 1879 for this purpose. Niman and Norman 1978 was part of a project initiated in 1976 by the Metropolitan Museum of Art and Hunter College on the teaching of secondary-school mathematics through works of art, a project whose first part drew exclusively on Islamic geometric patterns. The authors encouraged other American math teachers to use Islamic designs whose "abstractness, inherent logic, and universality" made them "a particularly valuable means of teaching topics such as tessellation, algebra and symmetry."

53. Chorbachi 1989, 757, 774. As an artist Chorbachi has experimented with developing new geometric designs inspired by traditional patterns: "I have tried, visually, to show here that returning to the study of medieval Islamic tradition does not necessarily mean to advocate a move from the present century backwards to medieval times. . . . Rather, the opposite may be the case, for Islamic tradition is so strong that, if we are in touch with the language of the present time and ground ourselves in this strong old tradition, we can arrive at an expression that is not only contemporary but that could be meaningful and valid in the coming century"; see *idem*, 788.

54. This book is not a study of the symmetrical properties of the Topkapı scroll's patterns—it is mainly concerned with the cultural and historical contexts in which they were created, together with their implications for aesthetic theory. Mathematical analysis of the symmetry groups to which these patterns belong is a task for which I am not qualified, but it is a task that I hope others will undertake in the future. Chorbachi, who made a pioneering effort to apply the scientific language of

group theory and crystallography to the study of Islamic geometric patterns, was also among the first few scholars to turn to primary sources of scientific manuscripts on practical geometry written specifically for artisans. She wrote: "It is essential to study in detail the scientific manuscripts and old documents that are now available to us, for they bring us closest to the true historical procedure of the Islamic science of design"; see Chorbachi 1989, 776. As such, she moved beyond symmetry issues to the step-by-step process of design in the medieval era. For these manuscripts, see Bulatov 1988; and part 4 of the present volume.

55. See Bozdoğan 1988, 44: "A contemporary version of what Said calls 'Orientalizing the Orient' is, not surprisingly, enjoying growing appeal both for Western architects/firms competing for corporate jobs in the non-Western world and for the architects of the non-Western world in their post-traditional, post-colonial—and frequently post-Modern—search for national/cultural identity."

56. Herzfeld 1987, 365.

57. *Ibid.*, 364–67.

58. Dimand 1930, 12; Ettinghausen 1944; *idem* 1979. See also Sourdel-Thomine 1965, which repeated the stereotyped interpretation of Islamic art as an essentially decorative tradition: "It is justifiable to define Islamic art as a whole as an art of decorators and ornamenters, concerned to decorate every surface with a multiplicity of figures springing from their own imagination in accordance with a repertoire of motifs. . . . This art of the ornamenters thus corresponded to a peculiar regard for agreements and harmonies, founded, not without some aridity, on the observation of rules such as the horror of the void and the continuation of the line, in a climate which produced also the melodic line of Arab music and the cadences of its poetry." The author identified the arabesque "among the most typical aspects of the art of Islamic countries."

59. Herzfeld 1987, 367.

60. Kühnel 1960.

61. Kühnel 1977, 8–9.

62. *Ibid.*, 5.

63. *Ibid.*, 6. This statement ignores the fact that not all artisans practicing in the Islamic world were Muslims.

64. See Massignon 1921, 50–51: "Muslim art derives from a theory of the universe. . . . This theory is that, in the world, there is no form in itself, and there is no figure in itself, God alone being permanent." He added, "Just as in the scientific point of view that for them [Muslims] nature does not exist, but is simply an arbitrary series of accidents and atoms with no duration, so too in art we see that the negation of the permanence of the figure and of the form is precisely the principle."

For a recent elaboration of this theory, see Tabbaa 1985. Ettinghausen 1944, which explained various tendencies of Islamic art by reference to Islam's essential characteristics, was criticized in Aga-Oglu 1954.

65. Grabar 1987, 178–94.

66. See al-Faruqi 1970a; *idem* 1970b; *idem* 1973; and *idem* 1989. Terry Allen, by contrast, disagreed with the view that the arabesque expressed "the secret inner workings of some 'Islamic mind'" and went as far as asserting that "there is nothing 'Islamic' about Islamic art"; see Allen 1988, 15.

67. al-Faruqi 1970b, 78–79.

68. al-Faruqi 1989, 261–69. For a further elaboration of the same themes, see al-Faruqi 1985.

69. Gayet described Arab artisans as follows: "They are first of all spiritualists; they see with the soul, whereas their so admired rivals of the imitative school see with their eyes and never the beyond"; see Gayet 1893, 181. See also Probst-Biraben 1907, 17–23. More recently Bürgel has also interpreted the arabesque in mystical terms, as a visual expression of joy and ecstasy. Moreover, he has associated the arabesque with magic: "Magical or quasi magical influences are ascribed to these three arts (poetry, music, painting) in countless cases related in sources from premodern Islam. Does not the idea suggest itself of interpreting the patterns of harmony and symmetry, of mirrorlike repetitions of motifs in chains or clusters or arabesques, as something closely related to the 'sympathetic' chains, the talismans of the magician?"; see Bürgel 1988, 22.

70. Probst-Biraben 1907, 20.

71. Ardalan and Bakhtiar 1973, ix–xii.

72. *Ibid.*, xi–xiv.

73. *Ibid.*, 21–27.

74. *Ibid.*, 40.

75. *Ibid.*, 3, 6.

76. *Ibid.*, 129.

77. For additional biographical and bibliographical details, see Burckhardt 1987, 3–9.

78. Reprinted in *ibid.*, 219–30.

79. *Ibid.*, 227.

80. *Ibid.*, 220.

81. *Ibid.*, 217.

82. *Ibid.*, 230.

83. Nasr 1987, 13.

84. Madden 1976.

85. *Ibid.*

86. Grabar 1988a, 147–48.

87. *Ibid.*, 150.

88. Burckhardt observed that Islamic art was primarily aimed at creating a spiritual ambience that would encourage contemplation; this is why architecture played a central role, with the traditional crafts and

calligraphy subordinated to its needs; see Burckhardt 1976b, 27; *idem* 1987, 228; and *idem* 1976a, 29.

89. See Burckhardt 1976b, 32: "The Muslim is not fascinated by the drama of individual artistic creation; rather his soul vibrates through the idea of the unity and immensity of God which are reflected in the cosmic order and also in the artefacts shaped by the hand of man."

90. Burckhardt 1976a, xv–xvi. See *idem*, 46: "But the most profound link between Islamic art and the Quran is of another kind: it lies not in the form of the Quran but in its *ḥaqīqah*, its formless essence, and more particularly in the notion of *tawḥīd*, unity or union, with its contemplative implications; Islamic art—by which we mean the entirety of plastic arts in Islam—is essentially the projection into the visual order of certain aspects or dimensions of Divine Unity."

91. *Ibid.*, 45. According to Burckhardt, diversity was created by different "ethnic environments" that exemplified "the phenomenon of diversity in unity, or of unity in diversity"; see *idem*, 117.

92. *Ibid.*, 63.

93. Nasr 1976, 75.

94. *Ibid.*, 78.

95. El-Said and Parman 1976, ix–x.

96. *Ibid.*, 7. The lack of awareness of surviving scrolls in this study is particularly surprising given that the Mirza Akbar scrolls were displayed in one of the exhibits coordinated with the World of Islam festival. For the catalog of that exhibition, entitled *Science and Technology in Islam*, see Harrow and Wilson 1976.

97. Nasr praised the works of Burckhardt and Schuon and reiterated the notion of spiritual concepts reflected in Islamic art: "Islamic spirituality could not but develop a sacred art in conformity with its own revealed form as well as with its essence. The doctrine of unity which is central to the Islamic revelation combined with the nomadic spirituality which Islam made its own brought into being an aniconic art wherein the spiritual world was reflected in the sensible world not through various iconic forms but through geometry and rhythm, through arabesques and calligraphy which reflect directly the worlds above and ultimately the supernal sun of Divine Unity." He stated that the Pythagorean-Platonic tradition was the origin of using numbers and geometric figures as keys to the structure of the cosmos and as symbols of the archetypal world and wrote: "Thanks to the efforts of a small number of authorities, foremost among them F. Schuon and T. Burckhardt, Islamic art is gradually coming to be understood for what it is, namely a means of relating multiplicity to Unity by means of mathematical forms which are seen, not as mental abstractions, but as reflections of

the celestial archetypes within both the cosmos and the minds and souls of men"; see Critchlow 1976, 6.

98. Wade believed the Islamic ethos found its consummate artistic expression in the application of elaborate geometricism to the infinite pattern. He wrote that geometric patterning based on scientific developments should be seen as "integral to the Islamic spirit": "Its widespread usage suggested that this mode of expression satisfies something essential in Islam. These patterns in their infinite form reflect the basic Islamic creed of the indivisibility of God. Endlessly repeating themselves in elaborate complexity these *mandalas* of Islam are a reflection of the One God whose influence is not 'centred' in a divine manifestation, as in Christianity, but whose presence is an even and pervasive force throughout His creation. . . . This art is also a science, but the distinction is irrelevant to Islam, where architecture and geometric ornament develop hand in hand with the advances made in mathematics"; see Wade 1976, 7. Wade also emphasized the Platonic and Pythagorean origin of Islamic geometric patterns; his brief introduction is followed by an analysis of the underlying grids of a large number of two-dimensional patterns.

99. Critchlow 1976, 6. Critchlow freely assigned cosmic meanings to Islamic geometric patterns. For example, the hexagon "is related archetypally to the six days of the Creation"; see idem, 156; and twelve "gives the number of hours in a full daily cycle, one half being dominated by the sun, the other by the moon"; see idem, 160. In addition eight-, sixteen-, and thirty-two-pointed stars "can be taken to be cosmically related on the one hand, to the four-fold division of the seasons etc., the eight-fold division relating to the orbital cycle of retrograde loops as seen in the orbit of Mars, and the subsequent divisions by multiples of the primary archetype of four and eight"; see idem, 161. For a recent elaboration of these cosmological interpretations, see Critchlow 1988.

100. Grabar 1988, 150.

101. Gombrich 1979, 225.

102. Durant 1986, 143. For a critique of mystical and cosmological interpretations of Islamic geometric patterns, see also Chorbachi 1989. After analyzing the fallacies of publications on this subject during the 1970s, Chorbachi observed: "The symbolic mystical interpretations that have proliferated in these books on Islamic geometric design, pattern and ornament are based on a modern understanding of Islamic literature. There is no documented evidence that such interpretations were given to the art forms when they were created hundreds of years ago"; see idem 1989, 760.

103. Oleg Grabar 1992, 151.

104. Ibid.

105. Ibid., 154.

106. Ibid., 233–34.

107. This polemic continues to divide recent studies on the arabesque, studies that tend to repeat earlier stereotypes. Among the works that see the arabesque as an essentially decorative element are Sourdél-Thomine 1965; and Sandler 1976. Allen was also reluctant to assign iconographic significance to the arabesque and to geometry, which he admitted probably conveyed some associations in at least some cases: "Whatever these may have been, the use of the arabesque and geometry always serves the purpose of increasing the visual richness of an object or building, and I believe this to be their primary purpose"; see Allen 1988, 54, 56. See also idem, 2: "Ironically the idea of the 'Islamicness' of Islamic art has been picked up by Muslims unaware of how deeply rooted it is in a highly culture-bound Western view of the 'East.'" Such authors as Nasr, Lois al-Faruqi, and Ismaʿil al-Faruqi continued to assign specifically Islamic meanings to the arabesque. The recent appearance in Iran of several practice-oriented publications on geometric patterns, with "how-to" instructions addressing professional architects charged with designing buildings appropriate for the new Islamic regime, once again reflects the perception of geometric patterns as symbolic stamps of cultural and religious identity in some Muslim circles; see Firishtah Nazhad 1977; Lurʿzadeh 1979; Shiʿrbaf 1982–1983; and Buzurgmihri 1982.

108. This dichotomy informed Gombrich's different treatment of abstract patterns and representational art in two separate works; see Gombrich 1960; and idem 1979.