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# THE TILES OF INFINITY

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**Cover**

A decagonal tile pattern adorns a panel of a doorway on the *madrassa* of Abdullah Khan in Bukhara. It was one of the panels whose complexity prompted Peter Lu to investigate connections between the tiles and the principles of non-periodic patterns. Photo by Peter J. Lu.

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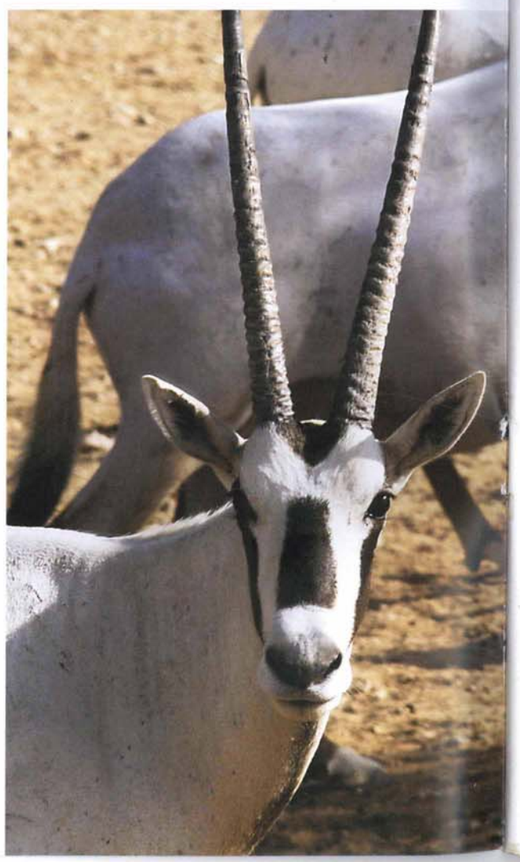
**Back Cover**

At the Dubai Desert Conservation Reserve—one of eight major protected areas in the Arabian Peninsula—the Arabian oryx is easily visible to tourists, while in other areas, human contact with the oryx is kept minimal. Both approaches appear to be part of the endangered antelope's future. Photo by Bill Lyons.

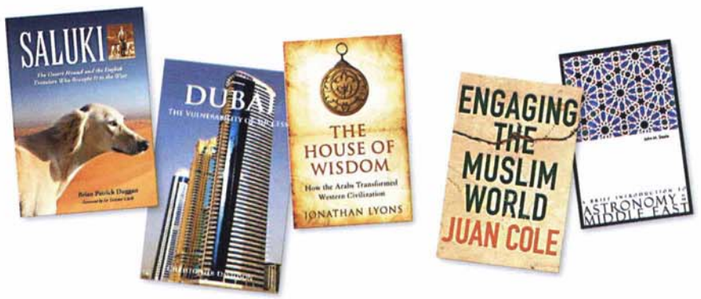












WRITTEN BY RICHARD COVINGTON PHOTOGRAPHED BY CAROLYN DRAKE

# ISTANBUL'S Opening

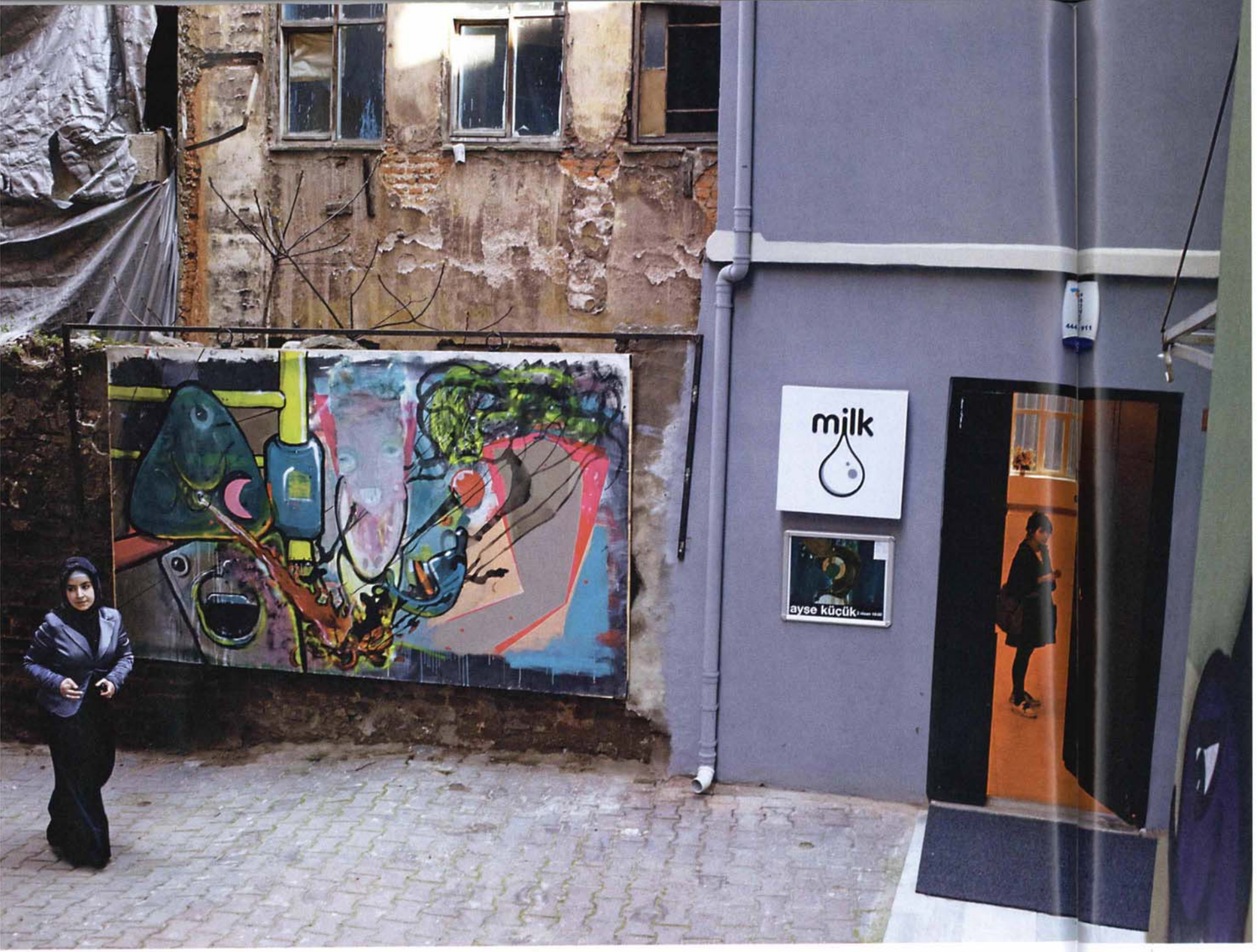
Mehmet Ergen should be ecstatic. The bushy-haired, 43-year-old director has a hit in a brand-new theater. In less than a month before the opening, his cast and crew transformed a garage in a rundown neighborhood into one of the liveliest experimental stages in Istanbul. The play, "Boy Gets Girl" by American playwright Rebecca Gilman, became one of the hottest tickets in the 2008 Istanbul Theater Festival. Ergen, who splits his time between Istanbul and London, where he is founder and artistic director of Arcola Theatre, is brimming with optimism when I meet him at the trendy House Café on Taksim Square. But there's a wrinkled petal in his bed of roses.

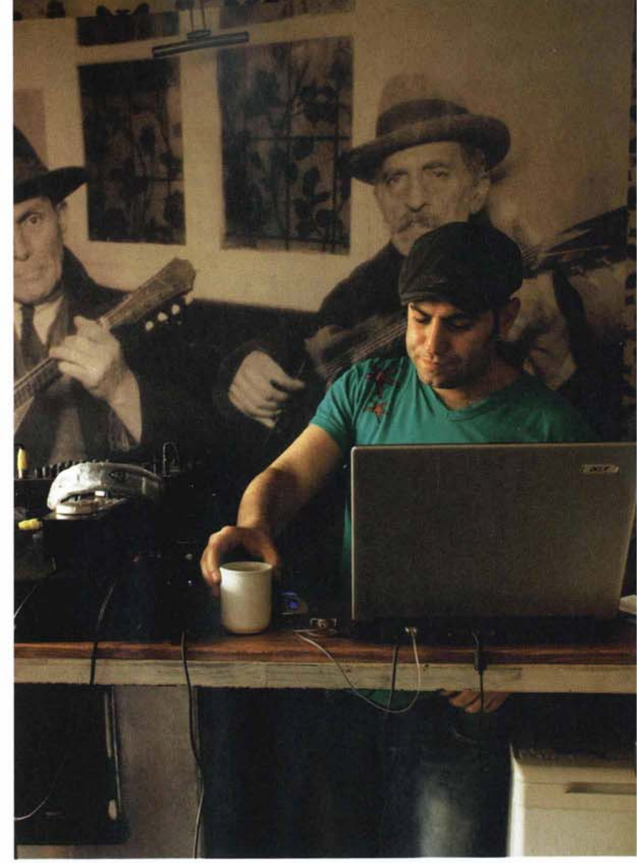
For the festival, he says he would have preferred staging a work by a Turkish playwright. He submitted one—"Silver Birch House" by Leyla Nazlı, which he had directed in London—but the organizers rejected it for reasons he suspects have to do with the play's exploration of Turkey's political upheavals in the 1970's.

"Part of our problem," reckons Ergen, is that "sometimes it seems we just don't want to know about ourselves."

In the Turkish and foreign plays he has planned for his new theater, named Talimhane, and in his workshops, Ergen aims to hold up

**The clear glass of a hotel's rooftop pool railing frames Istanbul's Tepebaşı ("hilltop") neighborhood as it tumbles toward the Bosporus. The Galata Tower can be seen at far right; Aya Sofya and Sultan Ahmet, the Blue Mosque, are on the horizon.** Above: **Mehmet Ergen directs a rehearsal. "I'm encouraging my students to write realistically," he says.**



Left: **Since its opening in February, Milk Gallery's indoor-outdoor space has focused on the influences of street art.** Right: **The traditional music of yesteryear is a backdrop for deejayed sounds every Thursday at the Eski Cambaş restaurant.**

mirrors to society. "I'm encouraging my students to write realistically about things we talk about every day–about European Union membership, about veiled women, about conflicts within schools and universities," he says.

Not that everything has to be serious, he adds. "Just once I'd like to see the curtain rise on a comedy set on a beach in Bodrum," a popular holiday spot on the Mediterranean. "That's exactly what we need."

**There is a palpable global-cultural-capital buzz in this city, a 2800-year-old storehouse of Byzantine and Ottoman treasure,** half of whose current population is under the age of 30. That buzz is humming from the sold-out former garage of Ergen's Talimhane to the streets, cafés and outdoor restaurants of brash Beyoğlu and glitzy Nişantaşı; in the ebb and flow of youthful, entertainment-hungry crowds on the Istiklal Caddesi, with its busking *saz*, *kemenche* and saxophone players; inside the Istanbul Modern Art Museum; and outdoors at fashion and design fairs at the foot of the medieval Galata Tower. There's expectancy in the air, a buoyant impression that Istanbul's time is now.

Novels by Orhan Pamuk, winner of the 2006 Nobel Prize for Literature, and by the no less outspoken Elif Shafak; films by Nuri Bilge Ceylan, who won last year's best-director award at Cannes, and Turkish–German director-screenwriter Fatih Akın; paintings by Leyla Gediz at the Basel Art Fair and by Abdurrahman Öztoprak, who opened a retrospective in Venice–the list could go on–are all drawing the world's eyes to Istanbul with their insights into a country that's embracing modernity while coming to terms with millennia of tradition.

Four major museums have opened in the city in recent years and more are in the works, including a Frank Gehry concert hall and cultural center. Contemporary art galleries and design studios are popping up in gentrifying neighborhoods like Çukurcuma and Cihangir.

The Istanbul Biennial, founded in 1987, is becoming a fixture on the global circuit of thematic art fairs, and Istanbul's well-heeled art collectors still seem largely unaffected by the global recession.

Although progress on Turkey's membership in the European Union remains glacial, the EU named Istanbul one of three "capitals of European culture" for 2010. (The others are Essen, Germany and Pécs, Hungary.) This year, France is hosting dozens of Turkish cultural events nationwide. And Turkey was the guest of honor at last year's Frankfurt Book Fair, the world's largest, where the country was fêted for the vibrancy of its literary production.

"There's a growing interest in the West in Turkish literature and culture, and particularly in the city of Istanbul," notes Shafak. "It's very visible, with the number of people coming to the city, journalists and artists, increasing by the day." Shafak, in fact, was speaking at a meeting of German and Turkish publishers in advance of the Frankfurt Book Fair. The 38-year-old author's most famous novel, *The Bastard of Istanbul*, was a bestseller in both Turkey and the US. It examines the effects of the 1915 Armenian genocide–a word whose use remains highly controversial in Turkey–on two families, one of Turkish Muslims in Istanbul and the other of Armenian-Americans in San Francisco. Although prosecutors charged Shafak in 2006 with "insulting Turkishness," the allegations were later dismissed.

In characterizing Istanbul today, both Shafak and her publisher, Müge Gürsoy Sökmen of Metis Publications, use the term "multi-layered," describing the city as a westernized hybrid blending modern Islamic and Ottoman elements with Kurdish, Armenian and other ethnic influences. "This complexity makes the city more difficult to understand, but all the more stimulating for artists and writers," says Shafak, who was born in France of Turkish parents and moved to Turkey for her university studies. "Wherever you turn, there are stories piled up."

Adds Gürsoy Sökmen: "My daily experience is that I go past a mosque designed by an Armenian architect, listen to music by a Greek musician, eat in a Jewish restaurant and hear the Muslim call to prayer."

One thing that drives the publisher crazy is the "Orientalist" stereotyping about Turkish culture that too often still colors western perceptions. "Even when I'm trying to sell Turkish literature to western publishers, they object that it's too intellectual, too western," she complains with a shrug. "They want wife-beating stories and *teppiche-haschisch* stories."

""Teppiche-haschisch?"" I ask.

"You know, 'carpets and drugs,' exotic contraband and smugglers. When I was traveling on German trains 20 years ago, there was this constant interrogation by customs officials: 'Teppiche? Haschisch?' I said no then, and I still have to say no."

## Pronouncing Turkish: A Rough Guide

| | | | |
|---|---|---|---|
| **a** | short, as in "start" or "far" | **c** | like *j* in "jet" |
| **e** | short, as in "bend" or "bell" | **ç** | [*c* with cedilla] like *ch* in "chew" |
| **i** | long, as in "see" | **g** | hard, as in "glory," never soft as in "George" |
| **ı** | [undotted *i*] short, as in "lip" | **ğ** | [soft *g*] unpronounced, but lengthens preceding vowel |
| **o** | as in "shown" | **s** | unvoiced, as in "see," never voiced as in "please" |
| **ö** | say "er" and cut it short | **ş** | [*s* with cedilla] like *sh* in "shoe" |
| **u** | long, as in "grew" | | |
| **ü** | say "ew" and cut it short | | |

Therefore the neighborhood Beyoğlu is pronounced **bay**-oh-loo, Nişantaşı is pronounced nish-**ahn**-tahsh-ih, Ceylan is jay-**lahn**, caddesi ("street") is **jad**-deh-see and Uluğ is ooh-**looo**.

What Gürsoy Sökmen says yes to, and what Metis publishes, are comic novels blasting authoritarian rule, anguished morality tales about the emotional costs of suppressing ethnic identity and tales of country folk who try to find their place in the city. And even as one of a staggering 1000 publishing houses throughout Turkey, Metis does not lack for customers.

"Sometimes you hear people complaining that we don't read enough in this country," Shafak remarks. "But it's not true. I find that books, especially fiction, have a deep, long-lasting effect here."

As much as the novelist resents stereotyping, there's one image she's not quite ready to abandon: the time-worn notion of Istanbul as a "bridge between East and West." "These East-West categories still exist, but they're always changing," she says. "Istanbul is constantly mixing the categories and showing the world that Islam and western-style democracy can indeed live together."

Still, misperceptions abound in the West, and young Turks are becoming especially frustrated. After a one-woman performance entitled "The Storyteller," 29-year-old Pinar Töre, manager of the experimental theater group Dot, explained that–although Dot had a private sponsor (the textile company Bilsar) and had, over four years, cultivated a loyal audience for its probing of society and politics–it is foreigners, she says, who are not so open-minded, as she found on a brief tour to Italy, Germany and the Netherlands. "It's difficult to tour because people [in Europe] claim our plays are 'not Turkish enough,'" frets Töre. "Sadly, they have this very Orientalist prejudice. Westerners expect to see belly-dancing when they think of Turkish theater."

Of the urban professionals boisterously eating *mezze* in Beyoğlu's profusion of restaurants, I suspect that none could even give directions to a belly-dancing performance, much less claim ever to have witnessed one. Educated *Istanbullus* consider themselves as progressive as their counterparts in Berlin, London, New York or San Francisco–but with a grittier enthusiasm to embrace their city's chaotic cocktail of diversity and conservatism. Though many take time abroad for education and exposure–and the cachet that goes with it–many of those are pulled back home.

"They find Europe dull," says Beral Madra, founder of the Suma Contemporary Art Center in the Karaköy district. "Here it's more interesting for their work. There are continuous crises."

Indeed, Istanbul is becoming more of an artistic magnet than ever, she observes. "I cannot count the number of exhibitions I have put on with artists from Tblisi, Baku, Yerevan, Cairo, Beirut, Damascus," Madra continues. "The artists come for 10 days, meet other artists and gallery owners, and create new, wider networks. They flock here to jump into the international culture mainstream."

A driving force behind Istanbul's successful bid to become a European "capital of culture," Madra is now helping plan events to boost the city's cultural profile and stimulate arts financing from the corporations, private sponsors and municipalities that play the largest roles in backing the arts in Turkey. Although the national government has historically played only a minor role–something Madra laments–others give the government credit for recently promoting a more inclusive sense of Turkish identity.

Left: **Inside the 1927 Italian-style villa of the Sakıp Sabancı Museum is one of the leading collections of early Turkish painting.** Right: **Opened last year in the shell of the Ottoman Empire's first electrical power plant, Santrallstanbul features a Museum of Energy as well as large spaces for contemporary art.**

"Five years ago, I had to worry about spending time in prison for the music I was producing," recalls record executive Hasan Saltık, the first to champion songs in the Kurdish language–banned at the time. "But now, the country's president invites me to dinner, and officials hand out CDs I produce as examples of the wealth and breadth of the nation's musical heritage."

Despite his office in a nondescript mall filled with independent recording companies, this transformation has made Saltık, 45, something of a moral exemplar on the world music scene. His label, Kalan, now boasts 150 groups and individual artists, and it sells one million CDs a year–some 10 percent of total music sales in Turkey. The catalogue is a wellspring of indigenous musical sources: Derya Turkan, a virtuoso of the *kemenche* (a three-stringed bowed instrument); Judeo-Spanish-Turkish ballads compiled by Hadass Pal-Yarden; and anthologies of traditional Roma tunes and *Rembetika*, or "Greek urban blues." Soon, Saltık says, he's headed to Hollywood to persuade filmmakers to score more authentic Turkish music in soundtracks of movies about the Middle East. He mentions recently seeing a film set in Iraq–diplomatically, he says that he can't recall the title–with what he considered an "unconvincing" soundtrack. "We can do much better," he asserts, flashing an impish grin.

Pozitif Productions, founded in 1989 by Mehmet Uluğ, taps a hipper musical vein with rock, jazz and electronic music festivals, its Doublemoon Records label and a trendsetting club called Babylon in the rising Tünel neighborhood. Originally from Istanbul, 47-year-old Uluğ was living in the US with his brother Ahmet and partner Cem Yegül in the 1980's. They grew bored with their jobs in engineering and computer science. "Our hobby in the US was jazz, so we decided to try to bring it to Turkey," Uluğ recalls.

Initially, the promoters focused on importing western performers. "We didn't know our own music," Uluğ admits. "Hardly anybody of our generation did."

Gradually, the company dug into Turkey's musical heritage and started to produce recordings by Turkish musicians. "Now, there's more interest in Turkish musicians, both here and abroad, though it's still pretty marginal in the US," he explains, despite Fatih Akın's 2005 movie about Istanbul's exuberant music scene, "Crossing the Bridge."

**"Twenty years ago, the city was gray, gray, gray," Uluğ recalls. "Now it's very colorful,** with a new gallery, a new boutique, a new club, something different opening up every day. At the same time, you can still go out into the small streets and see the old ways of life going on."

Vasıf Kortun, director of Platform Garanti, a contemporary art gallery that also provides living spaces for artists, at home with his wife, chef Defne Koruyürek. Kortun returned to Istanbul a decade ago from New York, where he founded the Center for Cultural Studies Museum at Bard College.

On the day I meet him, Uluğ is throwing a press party on the lawn of SantralIstanbul, the cavernous museum of modern Turkish art in an abandoned power plant half an hour's bus ride up the Golden Horn. It was inaugurated in 2007. Yellow banners emblazoned with the logo of June's "One Love Festival" flutter from the trees as pounding beats from a Ukrainian gypsy punk band waft over **a buffet laden with** tomato-and-cucumber **salad, fried eggplant and peppers,** spiced meatballs **and roast lamb.**

"Istanbul could become the ideal meeting point for all the arts because of its historical importance and location," predicts Uluğ as he surveys the mingling performers, record producers, club owners and journalists. "It's close to Europe, the Middle East and Asia—and Americans go everywhere—so I can't think of a better city as a crossroads of cultures."

Back in Beyoğlu, in offices overlooking the Istiklal Caddesi, Vasıf Kortun analyzes his hometown's changes. Opinionated and iconoclastic, the 51-year-old Kortun returned a decade ago from New York state, where he founded the Center for Cultural Studies Museum at Bard College. In 2007, he curated the first-ever Turkish pavilion at the Venice Biennale art fair. For the past eight years, Kortun has directed Platform Garanti, a contemporary art gallery that also provides living spaces for international artists in three- to six-month residencies. The gallery is supported by Garanti Bank, whose majority shareholder is the Sahenk family.

"Istanbul was always a great trading city, but in the 20th century it became a producing city, though it was never designed for that," argues Kortun. "Now it's coming back to its historical identity." The 1985 master plan, which called for removing industry from the Golden Horn and the shores of the Bosporus, is starting to change the landscape for the better, he says.

"When I was growing up in the 1950's and 1960's, there were coal plants, storage depots and tobacco warehouses on the Bosporus," Kortun recalls. "Now there are hotels, shopping centers, clubs and green areas." Though the conversion of SantralIstanbul from power plant to museum is part of this scheme, he regards it as more anomaly than emblem. "Instead of building a symbolic structure, like London's Tate Modern [another power-plant makeover] or the Guggenheim Bilbao, Istanbul has gone the other way," Kortun maintains. "We've decided to fragment the culture and have a number of small- to medium-scale privatized institutions." But this is not all good, he says: As a result of so much private-sector support, "the public does not have a sense of owning its own arts."

**"Complexity makes the city more difficult to understand, but all the more stimulating for artists and writers," says Elif Shafak, best-selling author of *The Bastard of Istanbul* and *The Forty Rules of Love*. "Wherever you turn, there are stories piled up."**

Still, Kortun is grateful for Garanti Bank's backing. Later this year, the gallery is moving into expanded quarters on Istiklal Caddesi that will quadruple its space and, he expects, triple the number of its visitors to half a million a year, allowing him to add lectures and education programs.

"We are trying to push the boundaries of what a contemporary art gallery can do and create an institution that blends art and science," explains Kortun. For example, he is exploring an exhibition on new research into genetic repair, and another on links between architecture and street crime. "In the Middle East, you're expected to deal with Islam, political unrest, East versus West," he says. "But that narrow focus on Middle Eastern themes becomes a prison house, and we want to open up perspectives."

Kortun recollects his own experience at an exhibition called "Paris-Moscou" at the Pompidou Center in Paris in 1977. He wandered into it when he was an 18-year-old student and it "gave me the impetus to embark on a life in the arts," he remembers. "I hope we can make similar impressions on young people—not just Turks, but also foreigners drawn here because Istanbul is emerging as a global arts center."

From the gray backwater that Kortun and Uluğ describe and that Orhan Pamuk limns in his 2003 memoir *Istanbul: Memories and the City*, a newly affluent middle class is forsaking the stone alleys of the Grand Bazaar for the glass-and-chrome "megamalls" of which, according to architect Emir Uras, there are some 70 under construction or in the planning stages. One, the Mall of Istanbul, may become the largest in Europe, and 39-year-old Uras, who moved back to Turkey 10 years ago from Los Angeles, wants to build it.

Uras first came to local prominence as architect and part-owner of 360, an exclusive rooftop restaurant eight floors above Istiklal Caddesi. Apart from malls, offices, restaurants and hotels, Uras and the dynamic 15-person firm he's established with Durmuş Dilekçi in the northern suburb of Yeniköy also design cutting-edge homes, including two for the Turkish pop star Tarkan. Since he's been

## The Art of Volunteerism

At the annual Barışa Rock Festival last August, 130,000 music fans, most in their teens and 20's, descended on a forested park on the outskirts of Istanbul. Among the stands devoted to social and environmental causes was the "living library" project—a brilliant initiative to face prejudice head-on.

Instead of checking out books, borrowers "checked out" people, spending half an hour under a tree asking questions about the life, beliefs, problems and perceptions of a person different from themselves. Check out a Kurd, an Armenian, a Jew. How about a homosexual? A banker? A religious conservative?

"Borrowers come to explore their own prejudices," explains Ibrahim Betil, a 65-year-old former CEO of Garanti Bank and the founder of Community Volunteers, the seven-year-old network of university students that organized the "living library." After their conversations, he says, "people thank us for exploding some of the misunderstandings they had about certain groups."

The "living library" was one of nearly 600 diverse projects by Community Volunteers' legion of some 16,000 organizers and volunteers in 87 Turkish colleges and universities. "Our goal is youth empowerment through community service," says Betil. Other ventures promote health literacy for poor and rural families; microcredit loans for poor women; renovations of libraries and schools; and training in democracy and human rights.

"I simply didn't want to die a banker," says Betil. "I felt I could make more of a difference for the next generation working in education."

back, Uras has observed the esthetic revolution in Istanbul's urban mentality.

"Traditional Turkish architecture was very inward, not allowing people to look in and only letting them look out through veils or screens," he explains. "But now, the buildings—and the life inside—are more transparent. You can see this in architecture, music, politics, the economy, in every aspect of society." (Fittingly, his firm's light-filled studio opens onto a garden.) Some of the new buildings have power-generating wind turbines hidden on their roofs, he adds, part of an evolving environmental concern in design. But apart from transparency and energy-efficiency, he says, the city's new architectural credo is speed.

"Things are done very fast here, a lot like New York," he continues. "And also like New York, we're becoming a 24-hour city."

Yet even New York would be hard-pressed to match Istanbul in construction flexibility, Uras contends. Clients here demand that projects be adaptable enough to change function while work is still in progress. "We start out building a hotel and are ordered to redesign it midstream as offices," he says. Even after a building is completed, re-purposing continues with unnerving frequency. "We've erected buildings that have been converted for different uses five times in five years," Uras points out. "It's crazy to plan a project thinking it will have only one role during its lifespan."

**Like Istanbul's architecture, the city's festival scene has diversified to reflect and reinforce openness.**

"Twenty years ago, there was only one major arts festival that bundled together theater, classical music, visual arts, jazz and film. Now there are separate festivals for each," explains Görgün Taner, director of the Istanbul Foundation for Culture and Arts, the non-profit group organizing the series. Taner views the arts festivals as a means of bridging the country's often vast cultural divides—particularly those that separate religious conservatives and secular Turks—and fostering a climate in which "opposing segments of society are sitting at the same table and airing their disagreements."

Likewise, Nazan Ölçer, director of the Sakıp Sabancı Museum, was astonished at the numbers of conservative visitors who made the hour-long bus ride from the city center for a 2006 exhibition of works of 19th-century French sculptor Rodin. "I'm very proud we attract people who have never been to a museum," she says, adding that she's confident the Sabancı's campaign to reach out to underserved populations will help cultivate a younger generation of art lovers.

In truth, few Turks of any demographic or political segment go to museums, admits Ölçer, an art historian and ethnologist who for 30 years directed Istanbul's Museum of Turkish and Islamic Arts. There, she lamented, nearly all the visitors were foreigners. "Turks have only recently begun to acquire the habit of going to museums," she comments from her book-lined office in an annex to the Sabancı's main building. Next door is the gleaming new wing built for blockbuster shows, making the Sabancı the new principal venue in Turkey for international exhibitions of such artists as Picasso, Rodin, Dalí and Henry Moore—and on Genghis Khan.

"Part of our mission," the director explains, "is to familiarize Turkish audiences with European modernism. But we do not want to forget our roots," she adds. "It's all part of making Turkey and Turkish art more cosmopolitan." Thus the museum also showcases art from the Middle East with displays of Ottoman, Safavid and Mughal miniatures, porcelains, calligraphy and Anatolian rugs.

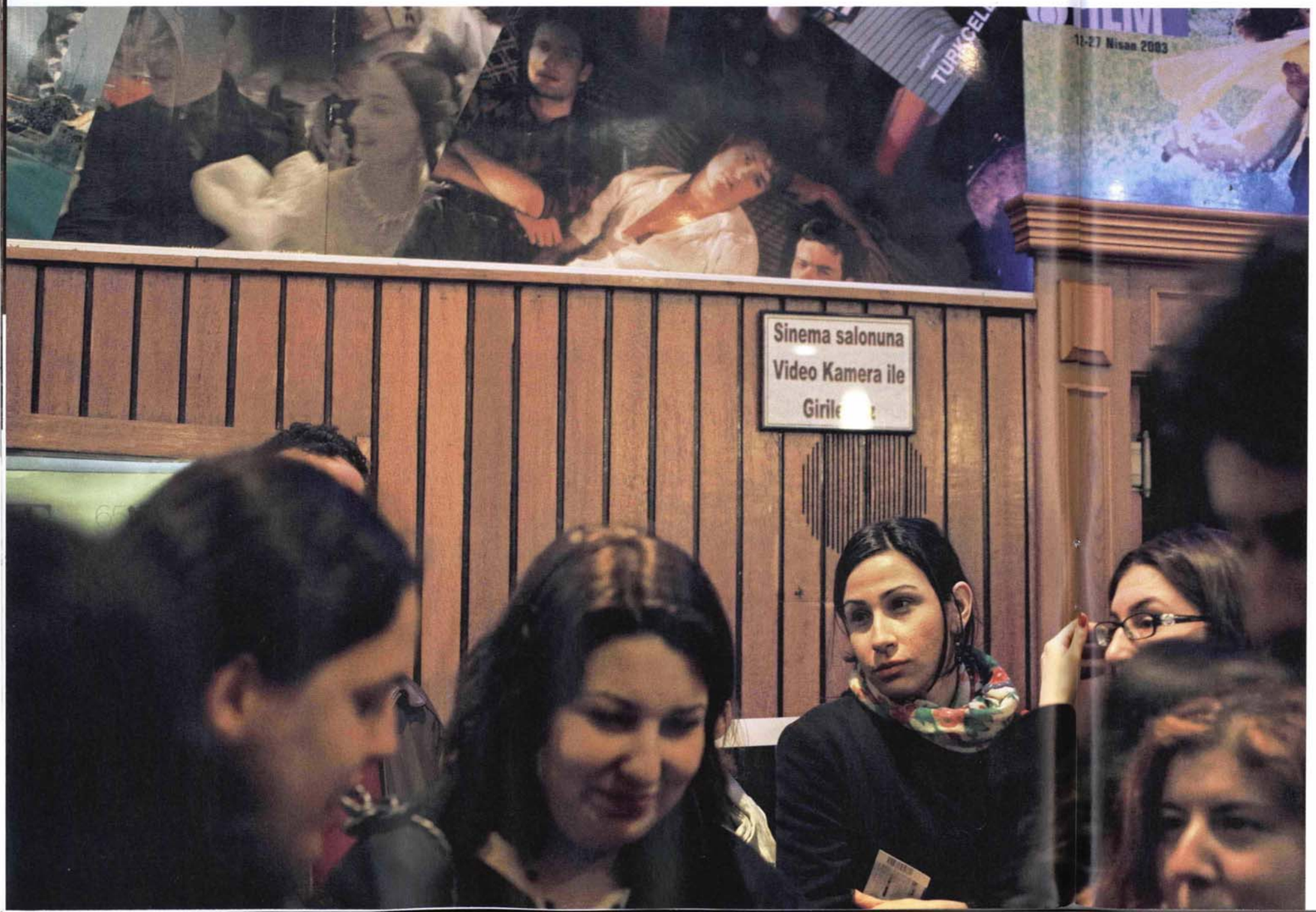
Another angle on the changing face of Istanbul is found at its margins, in the steady migration of rural Turks to the city. Photographer Attila Durak credits this urban population boom with helping encourage the acceptance of ethnic diversity, which the 41-year-old former economist and jazz club owner recently chronicled by spending six years criss-crossing the country, logging more than 240,000 kilometers (150,000 mi) documenting 44 ethnic groups for an exhibition and book titled *Ebru: Reflections of Cultural Diversity in Turkey*. (Ebru, explains Durak, is an aptly Turkish metaphor that refers to the craft of marbling paper—swirling diverse colors into complex, harmonious patterns without blending them.)

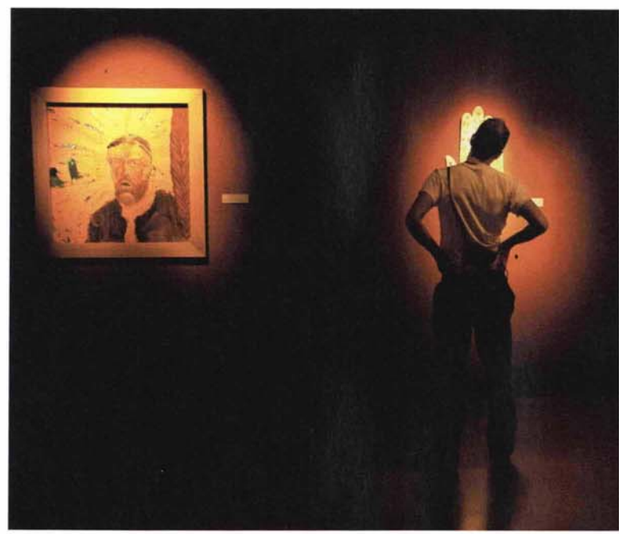
"Years ago, people were afraid to mention religion and ethnicity," he points out. "Now they talk openly about both." In Istanbul, the new migrants are spicing the city's eclectic mix with their own music, arts, fashion and cuisine.

Sitting at an outdoor table of the Ara Café (owned by the former Magnum photojournalist Ara Güler), Durak explains that he too was a migrant, originally from the Black Sea region. "When I moved here 20 years ago, this area around the Istiklal Caddesi was terribly rundown, even dangerous," he recalls. "Now it's one of the liveliest parts of the city." Back then, the air pollution from furnaces that burned coal and wood was so bad it was hard to breathe, he remembers with a shudder, and no one dreamt of so much as sticking a hand into the Bosporus. "Now people swim in it," he marvels.

I think about this transformation as I listen to Shafak articulate her fascination with her adopted hometown as she drives from her publishers' meeting in Sultanahmet back to Beyoğlu. On the Sea of Marmara, ferries glide in violet dusk from Europe to Asia and back, and lights from Topkapı Palace and Aya Sofya, the former basilica and mosque turned museum, vie for attention with the floodlit Galata Tower above the Golden Horn.

"The city is very challenging," she acknowledges. "If you like life neat and sterile, I don't think Istanbul would be your cup of tea. Definitely, life is not very easy for the individual here, to work with the crowds, to handle the chaos and confusion. It has that difficulty. Yet for artists and writers particularly, the city is a treasure."



Left: **Guests arrive at the Emek Theater during the 2009 Istanbul International Film Festival.** Right: **The spotlight is on contemporary art at the Istanbul Modern.**

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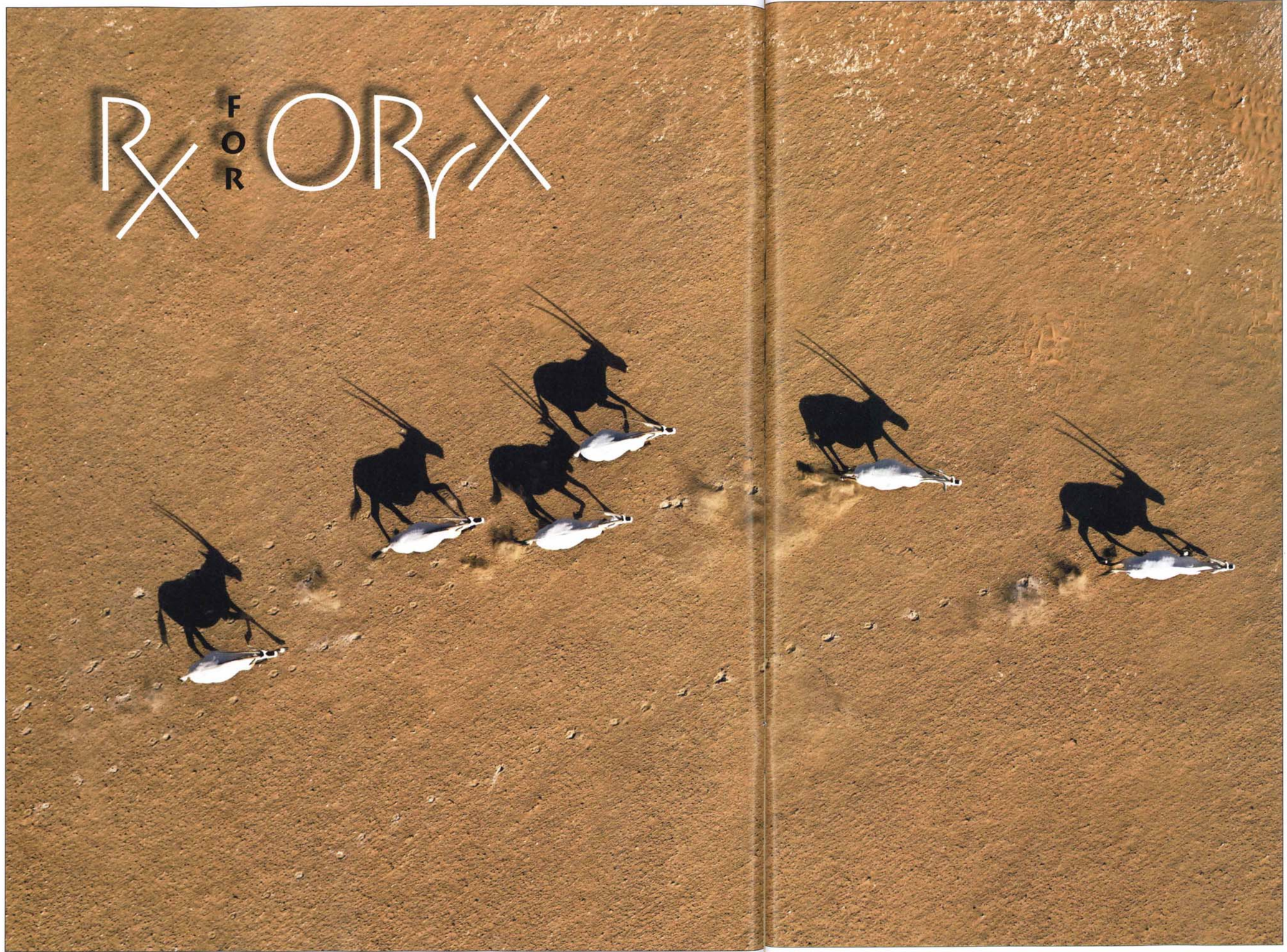
# RX FOR ORYX



GEORGE STEINMETZ

WRITTEN BY
MATTHEW TELLER

PHOTOGRAPHED BY
BILL LYONS

A fingernail moon hung over the table-flat desert as Salah al-Madhoury, my biologist guide, and I are served dates and fresh fruit by Shaykh Muhammad bin Thamna al-Harsusi, one of the leaders of the Harasis tribe of central Oman. We rest on cushions and talk into the night over spiced tea and unsweetened coffee about the Arabian oryx, the long-horned white antelope that is symbolic to many Omanis. "This is the original place for the oryx," the shaykh tells us. Members of his family and others join amiably in the conversation.

"Oryx think like human beings in organizing themselves. The leaders take shifts at the head of the herd." It feels like a recounting of knowledge accumulated over generations. "The Harasis are caretakers. This is the meaning of the word," the shaykh continues. "But despite all the promises, we cannot see the future, because the future is not in our hands."

**Their white coats reflecting some of the most intense sunlight on Earth, the Arabian oryx (*Oryx leucoryx*; in Arabic, *al-maha*) can endure months without drinking, drawing moisture only from grazing, can detect the slightest rain far over the horizon and can walk as far as 100 kilometers in a day—qualities that have given it a near-mythic reputation.**

**Since 1972, when the last wild oryx was shot in Oman, the sultanate has taken a leading role** in regional attempts to save the species from extinction. The focus of its efforts has been largely here on this stony, semi-arid plain of karst limestone covering much of central Oman, known as the Jiddat al-Harasis. Here,


**Named a World Heritage Site in 1994, Oman's Arabian Oryx Sanctuary was about the size of Belgium.** Lower: **An unofficial "national animal," oryx commonly appear as emblems and logos in Oman and throughout the Gulf region—here on a newspaper masthead.**

beginning in 1979, oryx were bred and released into the Arabian Oryx Sanctuary, a vast unfenced area the size of Massachusetts or Belgium. By 1996, two years after being named a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization (UNESCO), the sanctuary was home to more than 450 free-roaming oryx, and the project's success was acclaimed worldwide: The oryx, it seemed, was safe.

Yet as Mohammed Shobrak points out, "most of the countries starting out on reintroductions have the big picture—it's all about conservation, bringing animals back to the wild—but they don't have a detailed plan. So you start to see problems developing after a few years." Shobrak is a biologist at Taif University and a consultant to Saudi Arabia's National Commission for Wildlife Conservation and Development (NCWCD), which coordinates the kingdom's oryx conservation.

In hindsight, it is perhaps too easy to see how the Omani decision to train and employ guards, rangers and guides from only a single tribe—the Harasis—might have been likely to raise hackles among the neighboring Janaba, pastoralists and fisherfolk along the coastal lands to the east, whose population of 15,000 greatly outnumbers the 4500 Harasis.

Eager to exploit this tribal rift were unscrupulous animal collectors, mostly from the Gulf region. From 1996 onward, they offered the Janaba cash to poach oryx—as much as $20,000 for a live female. With only eight rangers charged with patrolling the huge, unfenced reserve, the oryx became unprotectable.

In less than a decade, the herds were decimated. Some animals died from injuries or stress during attempted captures; others were found dead, limbs trussed, dumped in the desert by fleeing poachers. Many, though, were taken and sold alive, mostly to private menageries.

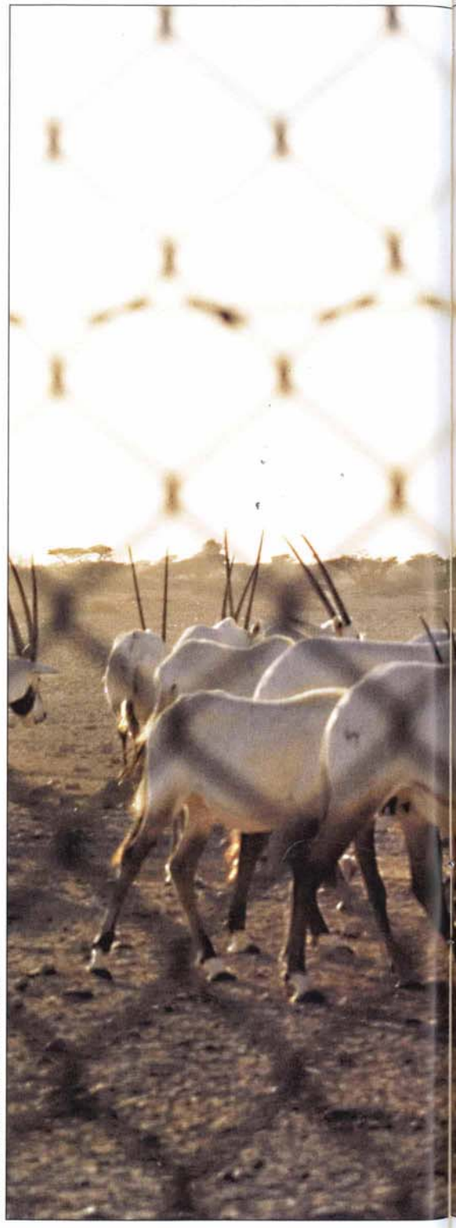
By 2007, only 65 oryx remained, only four of them females. That year, an Omani royal decree reduced the Arabian Oryx Sanctuary by 90 percent to a size that could be guarded. The international press lambasted Oman, and UNESCO delisted the sanctuary as a World Heritage Site—the first time that had been done.

"Oman *chose* to take the site off the UNESCO list," explains Andrew Spalton, who is adviser for conservation of the environment for the royal court and a world authority on oryx. "There is talk of the [human] population of central Oman going from 2000 to 200,000. These changes are huge, and the concept of having oryx in the wild has not kept up. The idea of free-ranging wild herds is finished."

Now, virtually all Oman's oryx are gathered into a fenced enclosure of four square kilometers (1.5 sq mi), where they are protected by police patrols armed with automatic weapons. Despite this defeat, Oman is not giving up.

"All our issues are socioeconomic," says Spalton. "If I could do this again, I would place much heavier emphasis on the balance of communities."

Below and right: **Poachers reduced the population of Oman's huge, unfenced sanctuary from 450 animals in 1996 to just 65 in 2007, leading to the fencing of today's far smaller, heavily guarded reserve. There are now 260 oryx in it.**



MATTHEW TELLER (2); OPPOSITE: ANNA McKIBBEN (2)

The oryx "is part of the wealth of our community," says Shaykh Muhammad, whose tribal territory lies within the Uruq Bani Maarid reserve south of Riyadh, where scrub desert offers grazing to 300 oryx.

Oman's sobering experience has conservationists across the region re-examining their approaches. In Saudi Arabia, Robbie Robinson is director of the King Khalid Wildlife Research Center, north of Riyadh. In Saudi Arabia, he says, oryx roam the Empty Quarter in the unfenced Uruq Bani Maarid reserve, with another group in the fenced Mahazat al-Sayd protected area. In the former, Robinson says, the herd is "completely self-sustaining," and in the latter, "burgeoning." Uruq Bani Maarid, he points out, is "very successful" because the oryx are "integrated into local community life, so you don't need high-intensity policing."


In Saudi Arabia, the National Wildlife Research Center in Taif is part of the National Commission for Wildlife Conservation and Development, which directs the national oryx conservation programs.

About 800 kilometers (500 mi) to the south of Riyadh, the wilderness that is Uruq Bani Maarid (even Arabic-speakers refer to it by its English acronym, calling it "yoobiyem") lies immense and entrancing at the western fringe of the Empty Quarter. Vast longitudinal dunes of the softest ochre, overlying a plateau of Jurassic limestone, contrast with gravelly plains that nurture flora and fauna as diverse as anywhere in Arabia.

As I walk among the *Panicum* grasses and the *sarh* trees (*Maerua crassifolia*), conservationist Abdulrahman Khoja tells me there are 300 oryx living freely in UBM's 12,000 square kilometers (4633 sq mi). Sixty rangers share daily patrols, and despite remaining unfenced, UBM has suffered just 20 poachings in 14 years. "We have very good relations with the people around," nods chief ranger Muhammad bin Moajib.

Nearby in al-Mendefen village, Shaykh Mirbih bin Hadi al-Arjani welcomes us with dates, camel's milk and ginger-spiced coffee. "I remember seeing wild oryx before the hunting parties started driving through here," he says. "When UBM [was set up], we were fearful that the government was going to take our lands away from us, but now we understand the concept of what is being done. We are delighted to see the oryx back!"

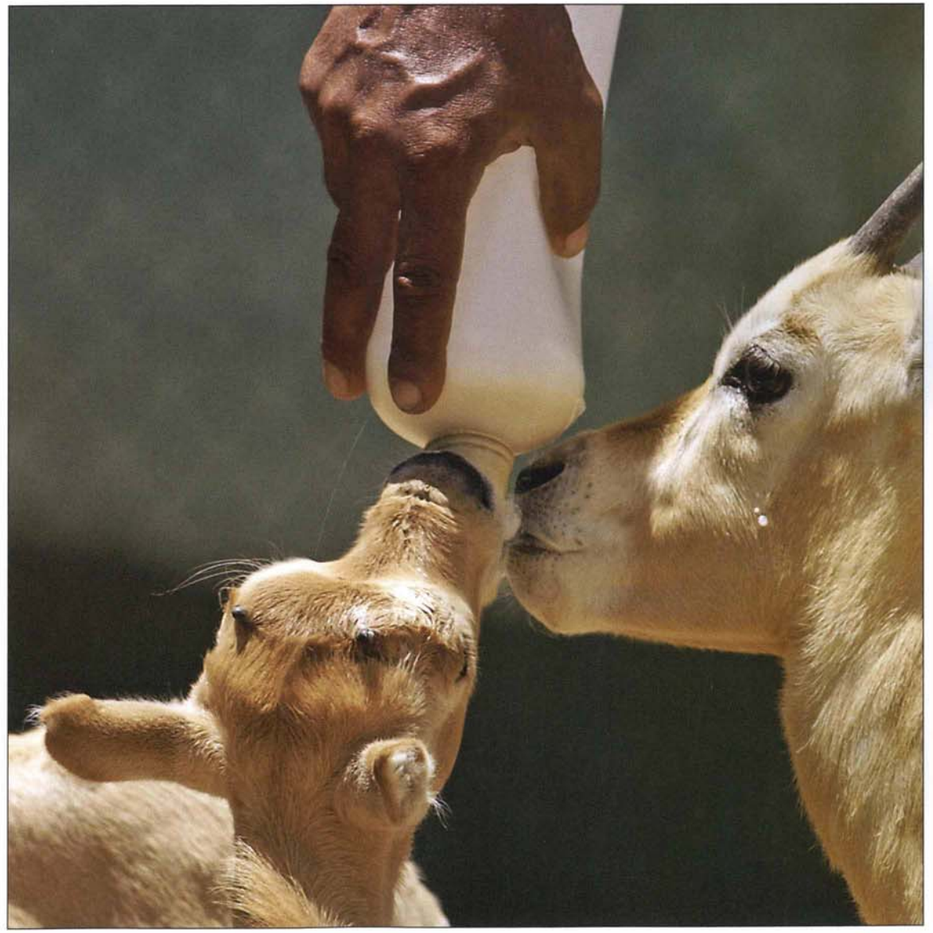
Shaykh Muhammad bin Abdelrahman al-Fahad, head of the Sultana region, told us, "The oryx feels like the prodigal son returning. It is part of the wealth of our community." In Khaldiya village, Shaykh Misfir bin Huwaysh al-Abdan didn't believe the oryx would ever return, but he is now "so proud to have this animal back." North of UBM, aging farmer Saud bin Khalaf ad-Doseri thanks God for the opportunity to finally see wild oryx with his own eyes. People's enthusiasm spans age, clans and tribes, and everybody seems to feel part of the success.

This pride, however, is tempered with contempt for poachers. "The person who is weak inside, who doesn't understand the oryx—he is the hunter," says Shaykh Mirbih.

Hunting has been outlawed by governments from Oman to Jordan. But enforcement remains patchy, and hunting remains deeply embedded in Arab culture. Robinson questions the effectiveness of hunting bans. "It might have been more profitable to educate hunters, to try to integrate hunting into conservation," he says.

Othman Abd ar-Rahman Llewellyn, an environmental planner with the NCWCD and a specialist in Islamic conservation, agrees that "by working with the hunters we could develop a new ethic." He points out that the 16th-century jurist Ibn Nujaym established a principle of Islamic law that declares, "Hunting is permissible, except for sport," a term he defines as "a matter of intent." Llewellyn has gone so far as to suggest that religiously sanctioned trophy hunting could generate funding for conservation.

This last idea reflects a worldwide shift as conservationists move beyond narrowly focused protection of "flagship species"—oryx, pandas, tigers and such—toward protection of whole habitats, often with hundreds of species, using "socially inclusive" methods that help rural human communities maintain viability alongside wildlife. In many places, the most powerful tool in this new paradigm's kit is ecotourism. In that field, where conservation meets commerce, the grandest schemes in the oryx's future are being laid in the United Arab Emirates.

Right: To stamp out the tuberculosis that affects oryx in the wild, the NWRC bottle-feeds captive-born animals and raises them to maturity, breeds them and then releases their offspring—two generations removed from infection—in reserves. Above: Oryx are transported to protected areas in specially made crates.

MATTHEW TELLER (2); OPPOSITE, TOP: NWRC; OPPOSITE, LOWER: DIGSA KIFLE / NWRC


**Dunes piled in every shade of apricot and ochre, divided by immense salt flats, cover an area only slightly smaller than Lebanon** and two and a half times the size of Rhode Island: This is the Umm al-Zumul reserve, 300 kilometers (186 mi) south of Abu Dhabi. Here, Abu Dhabi's Environment Agency released some 98 oryx in 2007. With natural growth, they now number around 150. Another 95 are due for release early next year.

Northeast of the reserve, the city of Al-Ain hosts the largest zoo in the entire Middle East. It is here that oryx are raised for release. "A lot of zoos around the world breed animals with no goal," says Mark Craig, former director of the zoo. "But we have one oryx population on display and another 'back of the house,' maintained specifically for reintroduction. They have a different diet, closer to what they'd get in the wild—less protein, less availability of water."

The goal, he says, is "a bit of both" conservation and ecotourism commerce, the latter fueled by two luxury resorts built by Abu Dhabi's Tourism Development and Investment Company. Along the coast, the Desert Islands project, launched late last year on Sir Bani Yas Island, offers a modest wildlife park (35 km², 13.5 sq mi) holding 400 Arabian oryx along with fauna from giraffes to dugongs.

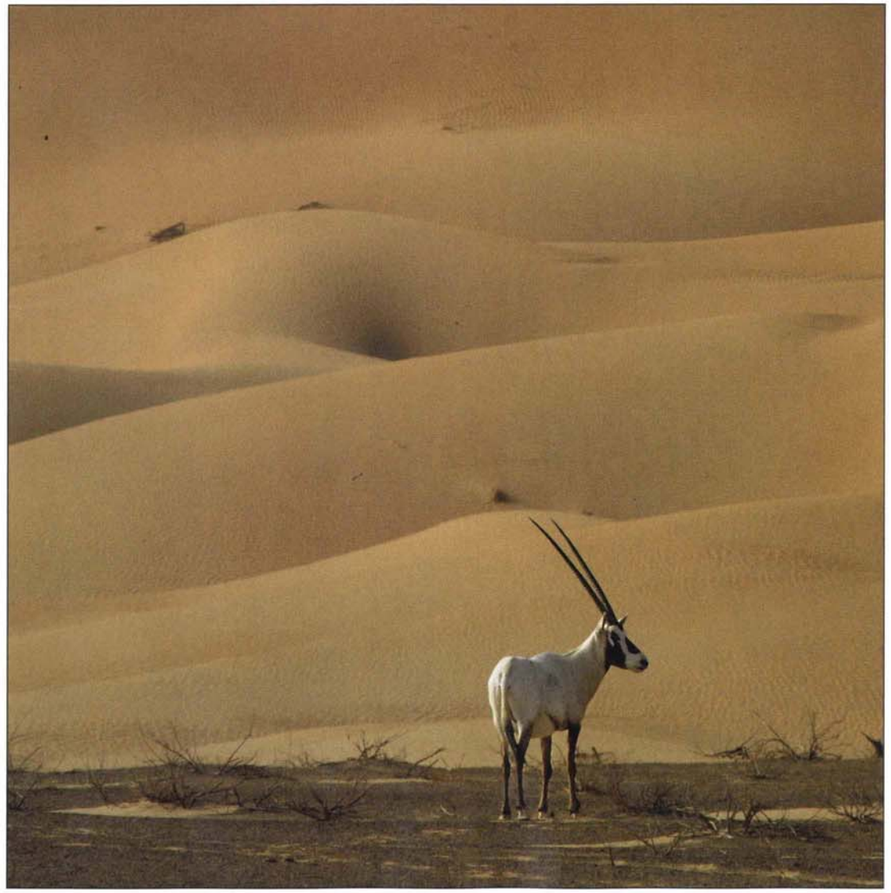
Near Umm al-Zumul, the Qasr al-Sarab (Mirage Palace hotel) is due to open late this year, offering oryx safaris. However remote it may seem, Umm al-Zumul is a model of a managed—even manicured—wilderness.

The Environment Agency has gone so far as to plant an entire forest of *arrak* trees (*Salvadora persica*) to provide food and shade for the oryx—essential in an area recording highs of 62 degrees Celsius (144°F). Nearby, I saw a herd of 60 or 70 gazelle—from the reserve's total population of more than 3000—grazing on irrigated lawns. Elsewhere, rangers dropped alfalfa for roaming oryx and fed bottled milk to abandoned oryx calves. Drinking water for the oryx will be trucked from a solar-powered desalination plant built by the agency on the shores of an artificial lake.

The growth in Gulf tourism has turned the oryx into a business tool. How sustainable is the future this offers?

The question is already being addressed in the neighboring Dubai emirate at the Al-Maha Desert Resort. (*Maha* is Arabic for oryx.) Located within the Dubai Desert Conservation Reserve (DDCR) and open since 1999, the resort has won awards for the sensitivity of its design and its conservation ethic.

In November 2008 the International Union for the Conservation of Nature granted the DDCR "Protected Area" status—the only example in the Middle East (and perhaps the world) of a conservation scheme of global scientific value emerging from a commercial tourism project. Greg Simkins, DDCR's conservation manager, is proud of the achievement. "Serious conservationists now say this [profit-based] model could be utilized in different parts of the world."



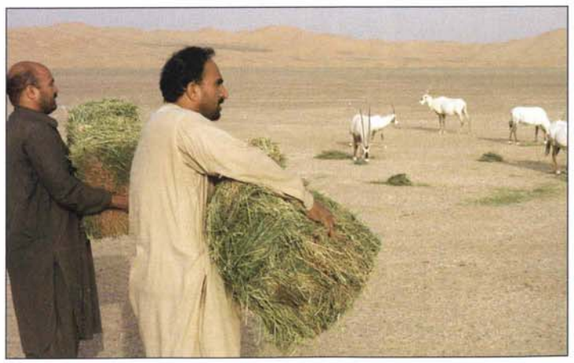
Indeed, on one drive through the grounds, herds of 20 or 30 oryx skittered over the lightly vegetated dunes, their horns crisscrossing against the sky. It was more oryx together in one place than I'd seen anywhere else. Yet there was another side to this coin. Though their habitat was natural, the animals' behavior was not: Like lions in a safari park, the oryx meandered across the paved paths between chalets as if tame, munching at the foliage unfazed as electric golf carts ferried guests to and fro.

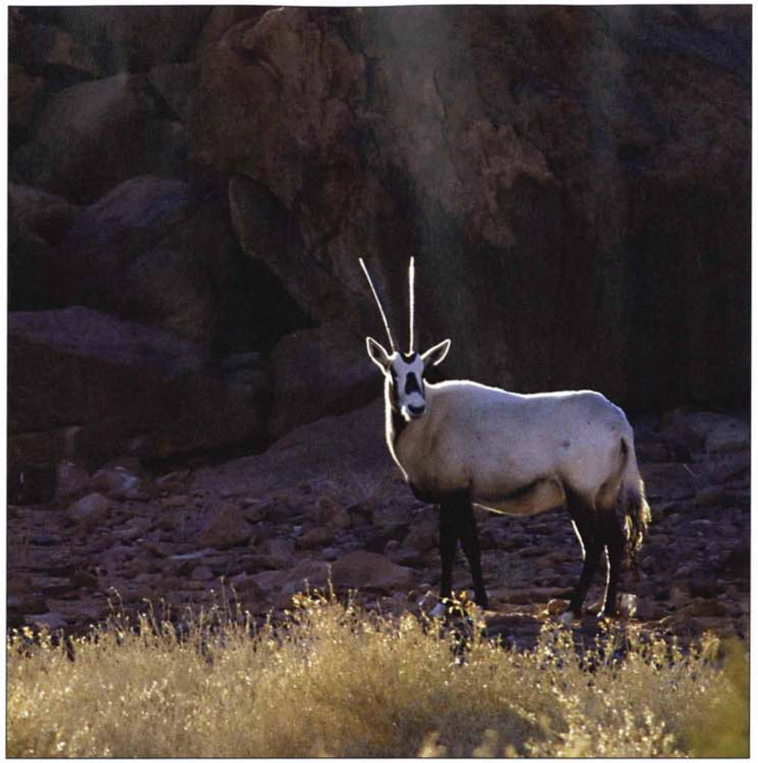
Does giving humans a close encounter with wild animals justify confinement, if that changes the animals' behavior? Does saving a wild animal from extinction justify confinement, if that makes it less wild? These questions apply not only to Arabian oryx, but also to tigers in Rajasthan, dolphins in Florida or, for that matter, creatures in any zoo in the world. And as usual, there are no easy answers.

Conservationists have faced the choice of either limiting the oryx's natural range—a daunting several thousand square kilometers per herd—in order to guarantee the animals' survival, or allowing them to roam under threat of extinction. At Al-Maha, as almost everywhere, fences have proved to be the lesser of two evils.

Left: **More than 3000 oryx now inhabit the Umm al-Zumul sanctuary in the southern corner of the United Arab Emirates, where, later this year, tourists will be able to go on oryx safaris, earning more than a few of the country's oryx-bearing 50-dirham notes,** top, **for conservation programs.**

Above: **Cautious but habituated to humans, oryx on a dune at the Al-Maha Desert Resort observe a photographer.** Below left: **Rangers feed their charges at Umm al-Zumul, which, like other sanctuaries, offers managed conditions designed to resemble wild habitats.** Right: **The Al-Ain Zoo displays oryx and also maintains a population out of public view for future reintroduction to the wild.**





**In more densely populated Jordan, 20 satellite-collared oryx were released this year into Wadi Rum, one of Jordan's most popular tourist regions,** by the Aqaba Special Economic Zone Authority (ASEZA) in partnership with Abu Dhabi's Environment Agency. Conservationists will work with Saudi counterparts to "repatriate" any oryx that wander south over the border. The second batch of 20 is due to arrive early next year.

Significantly, ASEZA is embracing the model of conservation-through-commerce. Yehya Khaled, director of Jordan's Royal Society for the Conservation of Nature, gives a hard-headed analysis: "The Bedouin will hunt the oryx to sell if we release without their ownership and support. And if we try to release in Jafr [a remote site, far from tourist routes], the oryx will be lost, as in Oman. But in Wadi Rum it's easy to create ownership: The people see the oryx as an asset. Keeping an oryx alive will bring them more income than if they kill it or sell it."

**Though southern Jordan was once part of the oryx's natural range, conservationists say the introduction of oryx early this year in the Wadi Rum Protected Area—where each of these three photos was made—will test the continued suitability of the popular tourist region as oryx habitat.**

In Wadi Rum, I found broad support for the project—not least because the area's 1200 people earn their livings almost entirely from tourism. Yet Wadi Rum is far from an ideal oryx habitat, and whether the animal will thrive or not, even with all these efforts, is yet to be seen. In Abu Dhabi, conservationists identified oryx habitats, and then developers created attractions within them, thus bringing tourists to oryx. In Wadi Rum, by contrast, Jordan is shoehorning a reintroduction project into an existing attraction, bringing oryx to tourists.

**Half a world away, there may be a useful analogy in North America,** where as many as 60 million bison once roamed the continent's plains. Uncontrolled hunting in the 19th century reduced their numbers to a few hundred and put their survival in doubt. From 1889, captive-breeding and reintroduction programs, along with changes in hunting behavior, laws and ethics, allowed the species to regain a foothold. Today, there are more than 300,000 bison, most living on combinations of protected and private ranges. Some areas have recently begun issuing permits for hunting in order to maintain balanced populations, and bison are now also widely raised for meat. Though their days of free ranging have gone, it has still been possible to restore the animal to a mostly sustainable habitat within a new economic and conservation framework.

**An oryx and her calf feed on alfalfa at the Shaumari Wildlife Reserve in central Jordan.**

Today's pan-regional programs, despite their challenges, actually make such a future for the oryx relatively easy to imagine: With increasing international cooperation, oryx reserves can network with each other; ranch-style reserves can breed oryx for hunting under permit controls; educational reserves can showcase oryx for students; and tourist reserves can allow visitors to experience Arabian culture and wildlife in natural settings.

In this direction, it may be that the most hopeful sign, paradoxically, is the past catastrophe in Oman on the Jiddat al-Harasis, which demonstrates that, more than ever, social inclusion is essential to wildlife conservation. And in that respect, it is UBM that today stands out as the one project that checks all the boxes. Robinson confides that "coming from South Africa, where tourism is essential for conservation, I'm very pleased to be in Saudi Arabia, where tourism isn't essential for the oryx, and where there is nonetheless governmental

## The Slender, Curved Horns of a Dilemma

Tourism has become essential as a means of funding oryx conservation—as well as garnering prestige—but under truly wild conditions tourists would have to drive for days into the desert to view oryx, perhaps seeing the naturally shy and skittish animals only as white specks in the far distance. So an enclosure is created in order to give the tourists a relatively quick and easy oryx-spotting experience. But penning the animals distorts the science of conservation: Although oryx can survive without water, gaining moisture from the plants they eat, fences limit their access to such plants. So scientists must then provide water to ensure the oryx's survival. But drinking fresh water alters the balance of electrolytes within the oryx's body. In nature, they would roam to find mineral-rich foliage to compensate, but behind fences they cannot. So they must be supplied with artificial salt licks—and the problems multiply. Tourism demands a wild, or near-wild, experience, but it also creates a spiral of more and more intensive management merely to maintain the semblance of wild conditions.

Yet "free ranging" is a key point in international guidelines on reintroduction. Oryx can smell rain from enormous distances, and a barrier will, sooner or later, thwart their natural instincts to move toward it. "Mahazat al-Sayd, even though it's 2244 square kilometers [866 sq mi], is clearly not big enough," Robbie Robinson told me. "You get a number of years when there's no rain anywhere in there, so the oryx try to migrate—and get stopped by the fence."

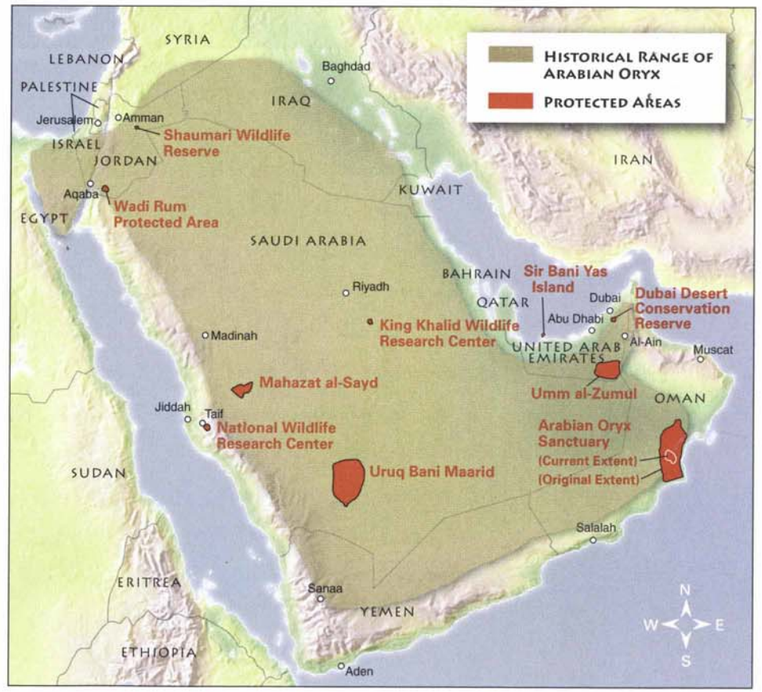
**Although managed habitats such as this part of the Arabian Oryx Sanctuary in Oman look wild, the oryx's future will require increasing resources of time and money for research, field data collection, assessment, intervention and enforcement of anti-poaching laws, as well as for maintenance of balanced relations among humans, oryx and other species.**

willingness to fund protected areas like Uruq Bani Maarid."

The baton for a sustainable future for the oryx has passed, for now, into Saudi hands.

**Matthew Teller** is a free-lance journalist and travel writer based in the UK. He has published widely on the Middle East, including for *CNN Traveler* and *The Times* of London, and is the author of several guidebooks. For this, his first *Saudi Aramco World* assignment, he visited 10 oryx reserves in four countries. His website, www.matthewteller.com, links to his blog, *Quite Alone*.

**Bill Lyons** (www.billlyons.com) lives in Amman, where he has photographed regularly for *Aramco World*, *Saudi Aramco World* and other editorial and corporate clients for more than two decades.




GEORGE STEINMETZ; OPPOSITE, TOP RIGHT: MATTHEW TELLER

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# Al-Maha: The Oryx in Arab Culture

Classified as one of the ungulates–that is, hoofed mammals that carry their weight on the tips of their toes, including horses, cattle and sheep–the Arabian oryx (*Oryx leucoryx*) is a white antelope with a desert range that once covered much of the Arabian Peninsula as well as the Levant and Iraq. It has several related African species that, though larger and darker, also inhabit arid zones. These include principally the gemsbok (*Oryx gazella*) in the Kalahari of southern Africa, the beisa (*Oryx beisa*) in eastern Africa, the scimitar-horned *Oryx dammah* in the North African Sahara and the addax (*Addax nasomaculatus*) of Libya and Algeria.

Surprisingly slight–weighing only around 70 kilograms (154 lb) and barely more than a meter (39") tall at the shoulder–the Arabian oryx is well adapted. Its white coat reflects the sun, helping it survive in some of the most extreme heat on Earth. In the wild, oryx endure months without drinking, instead absorbing moisture from the plants they graze. They are unaggressive, and their herds average 10 or 15 animals.

Bedouin have long attributed to oryx qualities of stamina, toughness, loyalty and self-discipline, and this legacy is articulated in early Arabic poetry. The ninth-century Baghdadi poet Ali ibn al-Jahm wrote of the oryx's almond-shaped eyes in a famous work sometimes entitled *Ayoun al-Maha (Eyes of the Oryx)*:

*The eyes of the oryx between Rusafa and Jisr*
*Spark desire from a place I know – and a place I don't;*
*They restore old love to me, even though I did not forget,*
*Yet they fuel my fire with more fire.*

Although Rusafa and Jisr refer to bridges across the Tigris in Baghdad, they also have metaphorical meanings linked to yearning.


Zuhayr bin Abi Sulma, in the sixth century, lyrically describes a female oryx with eyes "ringed with kohl," horns "smooth and sharp," successfully repulsing dogs and hunters. It was also Zuhayr who first used the oryx to symbolize human dignity, a motif popular among later poets. In the classic Arab tradition of story-within-a-story, a tribe in difficulty would send a poet to a neighboring tribe, where he offered a dramatic account of an oryx hunt, full of idealized language and symbolic meanings, which would end with the hunted oryx seeking sanctuary in a place of comfort and refreshment. "In this way," explains Ahmed Boug, director of the National Wildlife Research Center, part of Saudi Arabia's NCWRC, "a tribe could ask for help from its neighbors without actually having to ask."

This poetic connection survives in modern Arabic, where the standard word for oryx, *al-maha* (also a common woman's name), has several flamboyant synonyms, including *al-wudaihi* ("bright one"), *baqar al-wahsh* ("wilderness cow") and *ibn sola* ("child of beauty").

Today, businesses from media consultancies in Kuwait to fuel retailers in Oman use the oryx name or logo to associate themselves with dignity, fortitude and an essentially Arab identity. In Qatar, the oryx is the national animal: It adorns Qatar Airways aircraft tails, and a cartoon oryx was the promotional mascot of the 2006 Asian Games in Doha, where the athletes' torches were shaped like oryx horns.

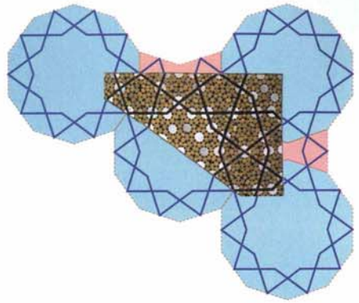
# Was the Original Unicorn an Oryx?

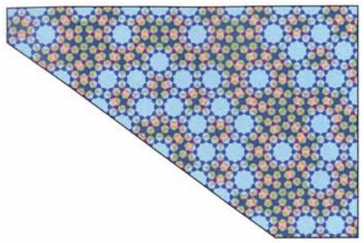
Shy, elusive, brilliant white and often seen only from a distance, the oryx certainly has two horns, slender and curved. But they can seem to merge into one when the animal is seen in profile, and that was apparently enough for Aristotle: "There are some [animals] that have but a single horn: the oryx, for instance," he wrote in the fourth century BC.

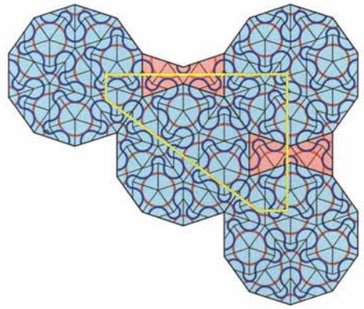
The idea endured, often mixing classical bestiaries with Arabic hunting poetry. The unicorn hunts of medieval European authors were noble, high-status pursuits that paralleled the prestige attached to oryx-hunting in the tales of the early Islamic period. Where Arab authors wrote of hunted oryx seeking refuge in caves and other natural hideaways, Europeans depicted hunted unicorns seeking refuge by resting their heads in the laps of maidens. The Bible several times refers to a horned animal of great fortitude named *reem* (or *re'em*) in Hebrew, and many commentators believe that this refers to the oryx: In modern spoken Arabic, *reem* means "gazelle," but dictionaries of literary Arabic define *reem* as "white antelope." And most curious of all, the translation of *reem* in the 1611 King James Version of the Bible is simply "unicorn."

# THE TILES OF INFINITY

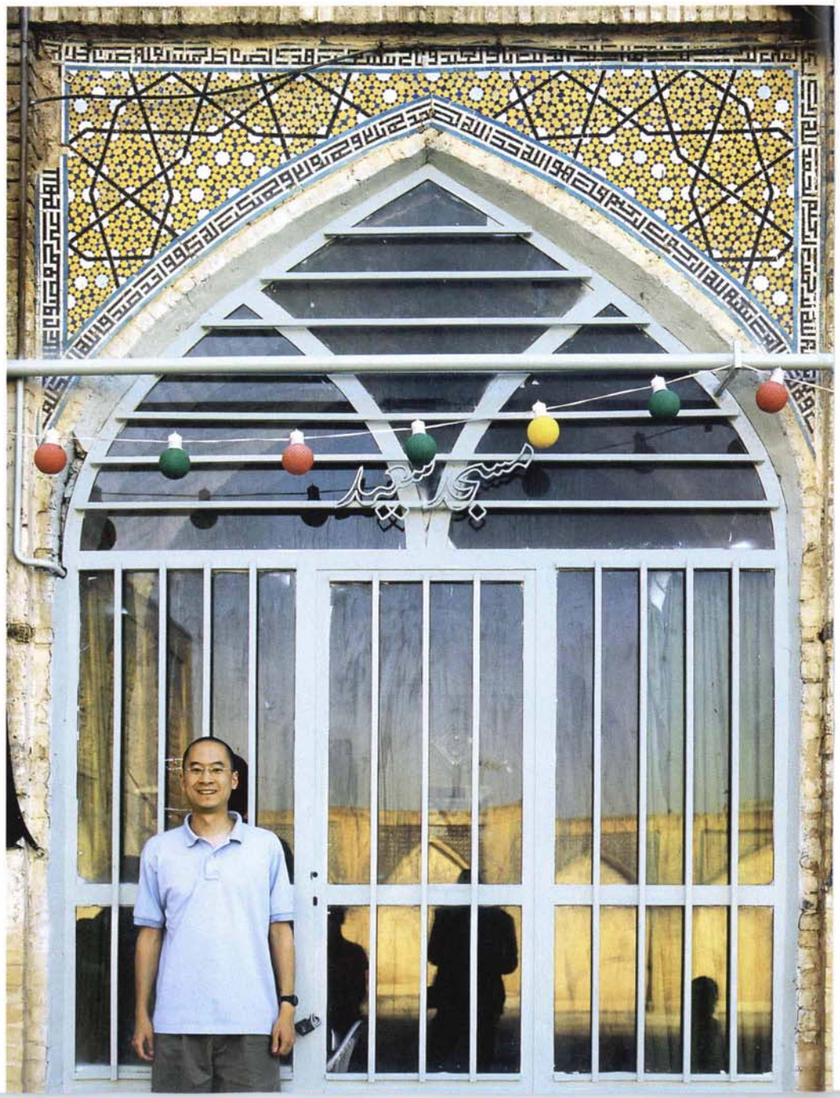
WRITTEN BY SEBASTIAN R. PRANGE
PHOTOGRAPHS AND ILLUSTRATIONS COURTESY OF PETER J. LU







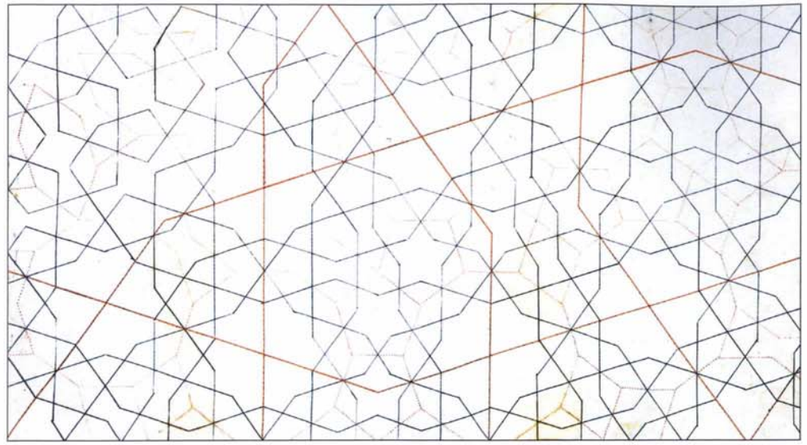
**Physicist Peter J. Lu,** below, **stands beneath tile spandrels at the Darb-i Imam shrine in Isfahan, Iran, also shown on the previous spread. Each spandrel maps to a nearly perfect Penrose quasicrystal pattern, which consists of strapwork—the heavy blue lines** above left **inscribed in large decagons (blue)—that overlies a pattern of smaller white decagons. To analyze it as a Penrose quasicrystal pattern, Lu divided it into Penrose's "kites" and "darts" (fine black lines** above right**) and then superimposed curving red and blue ribbons that, as they intersect each side, demonstrate a non-periodic pattern: It looks regular, but it is not actually repetitive. As the pattern expands toward infinity, the ratio of kites to darts approaches the golden ratio, or *phi*—about 1.618.**

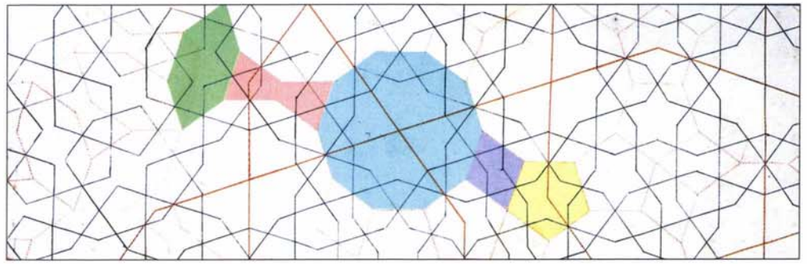


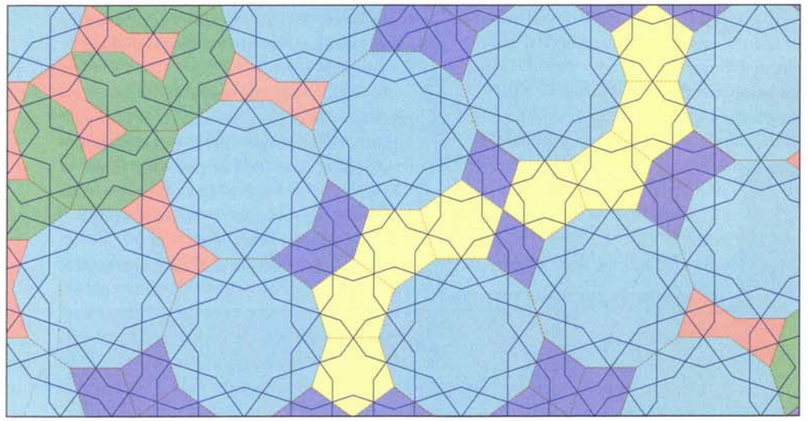
When Peter J. Lu visited Uzbekistan as a Harvard University graduate student in 2005, he found himself unexpectedly captivated by the complex tile patterns of a 15th-century *madrasa*, or Islamic religious school, in Bukhara. The intricate tilework on that building inspired him to dig into the history of Islamic art, and eventually to prove that a number of medieval Islamic designs had at their heart patterns that modern mathematicians have only recently been able to describe. In fact, the young physics whiz found on Islamic buildings the very geometric forms identified by British mathematician Sir Roger Penrose as the foundation elements for elaborate, non-repeating patterns. Lu's research shows that these patterns had been applied long before Penrose's discovery—in fact, more than 500 years earlier.

Conventional patterns that completely cover a surface, such as those found in floor tilings, are repetitive: Any patch can be moved a certain distance to cover an exactly matching part elsewhere in the pattern. Some shapes, such as hexagons, can only be arranged in such periodic patterns. Many other shapes can be arranged periodically as well as non-periodically, that is, in a pattern that does not repeat itself no matter how far a patch is moved. For many years, mathematicians believed that there were no shapes that could *only* be arranged non-periodically. In the 1960's, experts did discover sets of shapes that force non-periodic patterns, but they required elaborate rules and large numbers of different shapes—more than 20,000 in the template described in one published paper.

Penrose's breakthrough, in 1974, was to identify a set of only two shapes—nicknamed "kites" and "darts"—that create an exclusively non-periodic tiling, which became known as the Penrose pattern. Despite their non-periodic nature, the resulting configurations are not chaotic. Rather, they fit together in a way that is predictable but difficult for the brain to perceive. As the pattern made of the two Penrose shapes expands, the proportion of kites to darts approaches the golden ratio, or *phi* (≈1.618). The golden ratio, a name first used by Leonardo da Vinci (Latin *sectio aurea*, "golden section"), is a balance found in nature, as well as in esthetically pleasing artificial constructs, that has attracted the attention of geometers ever since the time of ancient Egypt.



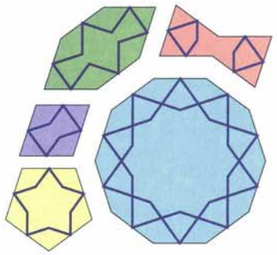




TOPKAPI SCROLL: COURTESY GÜLRU NECIPOĞLU

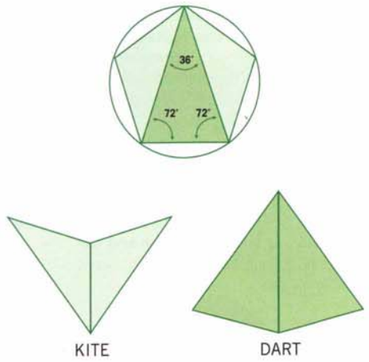
In 1984, a physicist for the first time observed a three-dimensional example of a Penrose pattern in the material world. A specific alloy produced in the laboratory showed the kind of symmetries and non-periodic patterns previously known only theoretically from Penrose's kites and darts. This discovery was described as a "quasicrystal" because it shared some defining properties of crystals but lacked their regular repeating structure. Subsequently, many more synthetic, laboratory-made quasicrystals were produced, and the first known natural quasicrystal was described in 2009. Penrose patterns were also applied in a number of man-made products including puzzles and, predictably, tiles. One manufacturer even chose them for its quilted toilet paper—and was promptly sued by Penrose for copyright infringement.

**In the Topkapı Scroll, which lays out principles of Timurid design, this pattern of five- and ten-pointed stars,** left, **demonstrates that, by the 15th century, craftsmen were using *girih* tiles to create complex patterns. The five girih tiles are inscribed in blue,** below, **in each of five equilateral polygons—a hexagon (green), a bowtie (pink), a decagon (blue), a rhombus (purple) and a pentagon (yellow). An example of each polygon is tinted in the Topkapı Scroll,** left center**; a fully tinted analysis, in which the girih tiles are outlined in blue and the polygons in red, appears** at left below.



The tilework on the Bukhara madrasa is an example of the stylized geometric strapwork—typically based on star or polygon shapes—that is emblematic of traditional Islamic ornamentation. This form of design is known as *girih* patterns, from the Persian word for "knot." It is generally believed that such designs were constructed by drafting zigzag outlines with only a straightedge and a compass. But Lu perceived something more: "I saw five-fold and ten-fold stars, which immediately aroused my curiosity about how these tilings had been made." He wondered how Islamic craftsmen had been able to design such elaborately symmetrical patterns centuries before the advent of modern mathematics.

Lu returned to Harvard with this question in mind and set to mapping the abundant pentagonal and decagonal motifs of the Uzbeki madrasa. Sifting through hundreds of additional images of other medieval Islamic buildings, he was able to identify five underlying shapes that account for the geometric complexity of their designs: a decagon, a pentagon, a hexagon, a rhombus and a "bowtie." Although these are not immediately visible, they form the basis for the most complex, or "knotty," girih designs. Lu describes these five shapes as "girih tiles" and regards them as the tools that enabled craftsmen to construct highly complex




**The kites and darts can be combined to make a non-periodic Penrose quasicrystal pattern originate when an isosceles triangle is inscribed within a pentagon (top). Notice that the result is not one triangle but three: the isosceles triangle (dark tint) and two identical obtuse triangles (light tint). The two obtuse triangles combine to make a kite; two of the isosceles triangles combine to make a dart.**

patterns over large surfaces without gaps or disruptions in their symmetry.

Of all the examples of Islamic tilework Lu examined, the most intriguing was on the portal of the Darb-i Imam shrine in Isfahan in central Iran, a building completed in 1453. Even amid the copious historical riches of Isfahan, the Darb-i Imam is renowned for the magnificence of its enameled tile decorations, and they prompted another breakthrough in Lu's understanding of medieval Islamic geometry. While reading an article on Penrose patterns, he suddenly recognized their resemblance to the designs on the huge entryway to the shrine. "I discovered this in the evening on Christmas Eve," he recalls. "I then stayed up all night to start mapping the tilings." The similarity of their underlying shapes to Penrose's kites and darts led Lu to see his girih tiles in a new light. He was astonished to find that the Darb-i Imam tilework formed a near-perfect Penrose pattern.

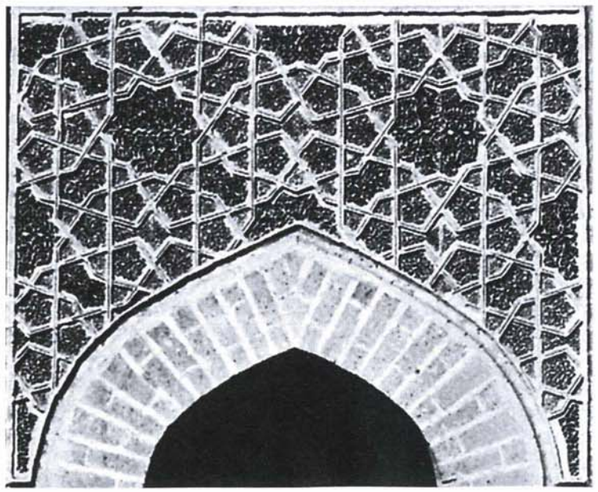
The girih tiles make possible large-scale patterns because each edge has the same length, allowing different combinations to be aligned. What is more, every edge is intersected at its midpoint by two decorating lines at fixed angles, which ensures that the lines continue across the edges from one tile onto another. A further innovation was achieved by dividing girih tiles into smaller ones to create overlaid patterns at two different scales, a method mathematicians call "self-similarity transformation." This kind of subdivision, combined with the symmetry imposed by the shapes of the girih tiles, creates non-periodic tiling, just like the Penrose patterns.

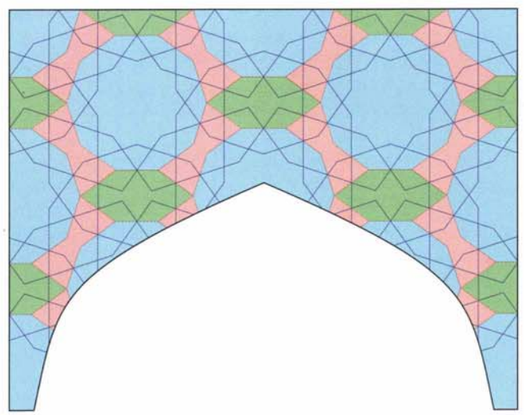
Lu contacted his undergraduate adviser—Paul J. Steinhardt of Princeton University, a pioneer in the study of quasicrystals—and they teamed up to write an article about this discovery, published in the journal *Science* in 2007. They argue that the introduction of girih tiles around the year 1200 marked "an important breakthrough in Islamic mathematics and design" that allowed for an entirely new way of conceptualizing and designing patterns. This paved the way for the further development of the subdivision that made possible the non-periodic pattern on the Darb-i Imam shrine. Their article received wide coverage in academic journals, as well as in newspapers as diverse as *The New York Times* and *Iran Daily*. Their findings were all the more remarkable for showing that the five girih tiles could be further reduced to just two shapes: the very same kites and darts described by Penrose.

This discovery raised two further questions: How much of the mathematics underlying the girih tiles was understood by the Islamic craftsmen who designed and used them more than 500 years ago? And was the use of Penrose patterns coincidence or the deliberate application of highly advanced mathematical knowledge?

Such is the nature of an institution like Harvard that an expert is never far away: Lu approached Gülru Necipoğlu, a professor of Islamic art and architecture with a special interest in tiles. She referred him to her 1995 book *The Topkapı Scroll: Geometry and Ornament in Islamic Architecture*. The scroll takes its name from the Topkapı Palace in Istanbul, the administrative center of the Ottoman Empire, where it was found. Believed to date from the late 15th or early 16th century, the scroll shows a succession of two- and three-dimensional geometric patterns over its 29.5-meter (almost 97') length. The patterns are not accompanied by text, but use grid systems and color-coding to highlight symmetries and distinguish three-dimensional projections, suggesting that the scroll was a repository of designs for master craftsmen rather than a showcase for potential patrons.

Crucially, the Topkapı Scroll does not represent the architectural style of the Ottomans, but rather the Timurid design traditions of Iran and Central Asia. The Timurid dynasty was of Mongol origin and ruled over a large empire encompassing much of Central Asia, Persia and Mesopotamia from the mid-14th century until 1506. Timurid architecture and design drew heavily on earlier Persian models, which developed into a distinct style particularly noted for its emphasis on geometry and symmetry.

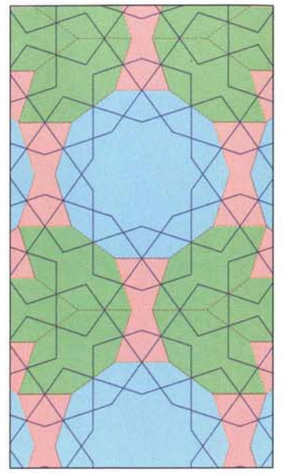




Above: **Girih pattern analysis of decagonal strapwork above an arch** (left) **in the Abbasid al-Mustansiriyya Madrasa in Baghdad, Iraq, which dates to between 1227 and 1234.**

H. SCHMID, *DIE MADRASA DES KALIFEN AL-MUSTANSIR IN BAGHDAD* (ZABERN)

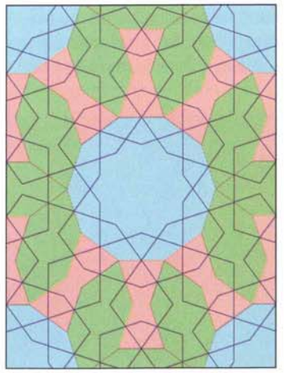
Because Isfahan's Darb-i Imam is an example of Timurid architecture, it can be linked to the designs in the Topkapı Scroll and thus offers direct insights into the level of understanding craftsmen had of the complex patterns they produced for the shrine. In fact, in the scroll's complex multicolored designs, Lu observed an underlying pattern drawn in faint red ink: He recognized the five girih tiles and now had direct historical documentation for their use. This proved that the pattern on the shrine was not a fluke but rather part of the design repertoire of master craftsmen in that region and period. It also confirmed Necipoğlu's view that the Topkapı Scroll had been used intensively by architects and artisans in the construction of buildings such as the Darb-i Imam.



Indeed, drawings such as those in the Topkapı Scroll could have served as pattern-books for the artisans who fabricated the tiles, and the shapes of the girih tiles then dictated how they could be combined into large patterns. In this manner, the craftsmen who actually did the tilework could construct highly complex designs without resorting to mathematics and without necessarily understanding their underlying principles. Nonetheless, while the efficiency of this method is illustrated by the high quality of the pattern at the Darb-i Imam shrine—when it is mapped to Penrose tiles, there are only 11 defects among 3700 tiles—it is the most mathematically complex pattern yet discovered, and Lu finds it "quite reasonable to believe that its particular designers knew what they were doing mathematically."

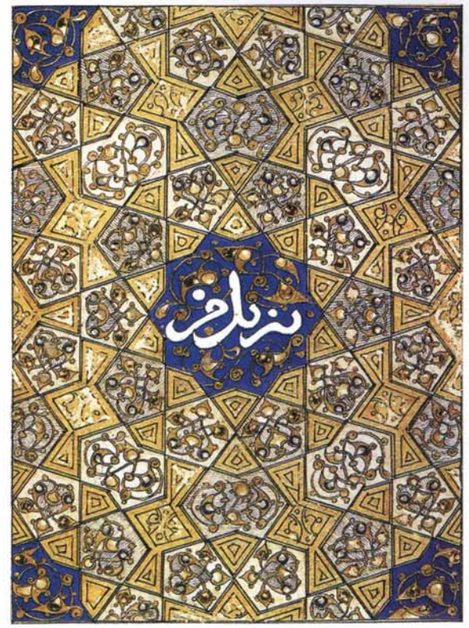
The achievement of the Darb-i Imam tiling shows that "Islamic designers had all the elements needed to construct perfect quasicrystalline patterns," according to the researchers. However, they also believe that these designers had only an incomplete understanding of these elements, highlighting the different priorities of the modern discipline of theoretical mathematics and the practical application of geometric processes by the master craftsmen of the past.

In her study of the Topkapı Scroll, Necipoğlu notes the parallel between the girih style and the contemporary Gothic style practiced by European artisans. Designers of both styles were concerned with using their inventories of geometric shapes to create "a maximum diversity of forms," she writes, a skill quite different from that of the mathematician. Much remains to be learned about the Muslim designers and craftsmen, none of whom has

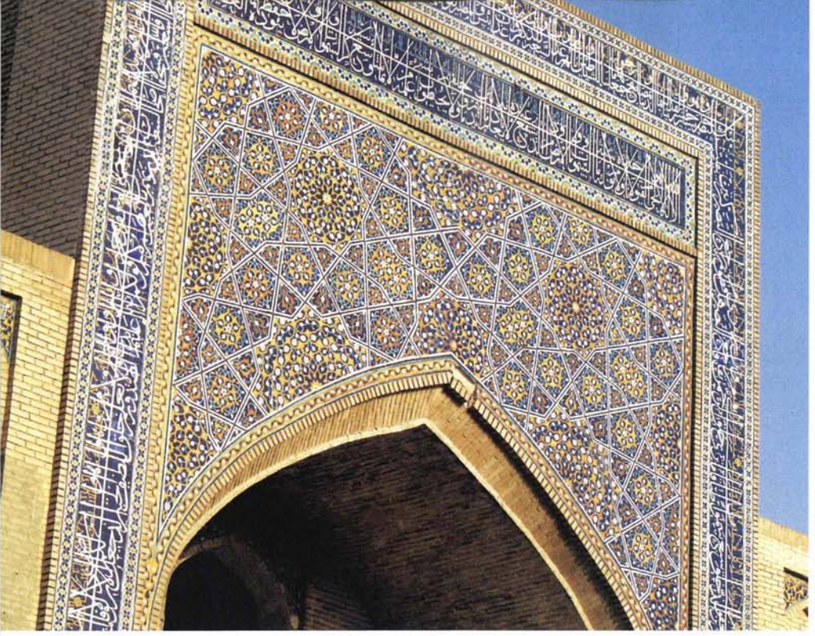


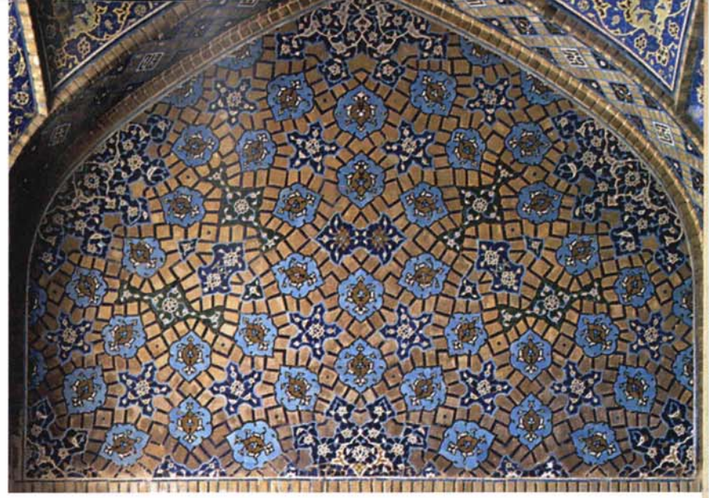
Above: **A decagon, surrounded by bowties and hexagons, forms the basis of this cover of a Mamluk copy of the Qur'an that dates to the early 14th century.**

Above left: **Girih pattern analysis of a decorated arch in the Sultan's Loge of the Ottoman-era Green Mosque in Bursa, Turkey, which was completed in 1424.**



TOP: W. B. DENNY / PETER J. LU; LOWER: DAVID JAMES: *QUR'ANS OF THE MAMLUKS* (THAMES & HUDSON)





On this panel in the Shah Mosque in Isfahan, Iran, ten-pointed stars—none of them shown completely—anchor the edges of a pattern in which four of the five girih shapes can be found. Both the stars and the scallop-edged hexagons are placed according to an underlying design of still more decagons and pentagons. The stars' incompleteness reminds the viewer that the pattern actually extends into infinity.

**In Bukhara, Uzbekistan, this decagonal pattern,** above, **ornaments the portal of the *khanqah* (lodging complex) of Nadir Divan Beg, built in the early 17th century and restored in the 1990's.** Right: **In the early 15th century, Timurid craftsmen in Samarkand produced this bas-relief pattern on the Ulugh Beg Madrasa.**

been identified by name in the historical records. Although they are anonymous, Lu and Steinhardt pay them tribute by concluding that their "geometrical sophistication led the medieval world."

The notion that the knowledge of Penrose patterns was anticipated–although never fully elaborated–in 15th-century Persia and elsewhere in the Middle East and Central Asia is not as unexpected as it might first seem. While many of the terms and concepts used in modern mathematics hark back to the Greek classical period, much of this ancient knowledge was lost to the Christian world for many centuries. Although the view of a European "dark age" has been rightly rejected by historians, it is true that a great deal of classical scientific knowledge had dropped out of circulation in medieval Europe. Islamic societies, on the other hand, were able to actively seek out, preserve and build on this knowledge. By this means, many of the scientific breakthroughs of Renaissance Europe were inspired and informed by the intellectual achievements of Islamic societies.

Take Euclid, the famed "father of geometry," whose theorems are still studied by schoolchildren. The translation of his text *Elements* into Arabic was sponsored by the Abbasid caliph Harun al-Rashid in the late eighth century. Subsequent caliphs continued to encourage learning by supporting the translation of the writings of Archimedes, Apollonius, Ptolemy and others. These translations were not prestige projects done for their own sake, but were made by mathematicians and scientists to facilitate their ongoing research. Access to this corpus of ancient knowledge allowed them to significantly improve upon it.

**Wrapping a column in the early–19th-century Tash Hauli palace in Khiva, Uzbekistan, a strapwork pattern of decagons and pentagons is filled with vegetal arabesques that maintain five-fold and ten-fold symmetry.**

Around 830, the Persian mathematician Muhammad ibn Musa al-Khwarizmi made a mathematical breakthrough: He incorporated Euclid's geometry into a unifying theory that became known as algebra (from the Arabic *jabara*). This spawned a wave of new mathematical ideas expounded by al-Khwarizmi's successors over the next centuries. The flowering of scientific brilliance from the ninth to about the 13th century–a period often described as the "golden age" of Islamic science–was promoted by the patronage of Muslim rulers and the intellectually stimulating atmosphere in their capitals. Scholars from all over the Islamic world gathered in cities such as Baghdad, Cairo and Córdoba to exchange ideas, peruse the great libraries and make names for themselves.

Not all of them were Muslims–many Jews, Christians and Zoroastrians made important contributions–nor did they all write in Arabic: Persian in particular remained an important *lingua franca* for scholars from different backgrounds.

ABOVE, CENTER: NEIL BANAS

Neither did these scholars limit their research to the works of the ancient Greeks. As the Islamic world expanded, it drew in scientific knowledge from the civilizations with which it came into contact, especially India and China. For example, mathematics benefited immensely from the adoption of the ancient Indian positional number system, in which the lowest-value digit is on the right (as in "25," where the five represents how many ones are in the number and the two represents how many 10's) and which includes the concept of "zero," the empty position. Muslim mathematicians adopted Indian numerals around the early ninth century: A few years before his famous book on algebra, al-Khwarizmi wrote a work entitled *On Calculation with Hindu Numerals*. The introduction of the Hindu–Arabic numeral system to Europe in the early 13th century is credited to Leonardo of Pisa (known as Fibonacci), who is thought to have learned about it from Muslims in North Africa. Like that system, many other mathematical concepts preserved or developed by Muslim mathematicians found their way north, providing the foundations for a reinvigoration of the sciences in Europe.

It's interesting that the famous number sequence named after Fibonacci–1, 1, 2, 3, 5, 8, 13, 21 and so on, where each term is the sum of the two previous terms–is closely related to the golden ratio, 1.618..., that is visible in the Penrose patterns. Specifically, the ratio of successive Fibonacci numbers converges on that number: 1/1 = 1, 2/1 = 2, 3/2 = 1.5, 5/3 = 1.666, 8/5 = 1.6, 13/8 = 1.625, 21/13 = 1.615 and so on.

For all their tantalizing glimpses into medieval scientific knowledge, the designs of the Darb-i Imam and other Islamic buildings must also be understood in their religious context. Geometric patterns in Islamic architecture and ornamentation were used as much for spiritual as for artistic reasons. As Robert Irwin writes in his study of Islamic art, such patterns may have been viewed "as exteriorized representations of abstract, even mystical, thought"–aiming to inspire contemplation or to make a statement about the imponderable harmonies of a divinely ordered universe. Sufism in particular is closely linked to the practice of geometry, above all in the form of symmetries, as a way of giving physical expression to mystical thought.

The girih designs are thus comparable to Gothic art and architecture in another sense, namely in their shared ambition to embody spiritual cogitation and emotion through geometry. The real significance of the magnificent tiling of the Darb-i Imam lies not in any kind of cultural one-upmanship about who first conceived a certain idea or technique, but rather in the remarkable trajectories of ideas and scientific endeavors through time.

These new discoveries thus remind us not only of the momentous achievements of Islamic societies in the past, but also of the history and value of cross-cultural interaction and exchange. Perhaps unsurprisingly, Peter Lu himself advocates taking a scientific approach to tracing this interaction. "Mathematics is the only universal language, and has shown itself consistently capable of connecting people through time and space," he says. His remarkable findings are a reminder not only of the historical interconnections between societies and cultures, but also of the promise held by further collaborations between scholars specializing in the sciences and the arts.

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Fibonacci series: M/J 07

**Islamic Art in Context: Art, Architecture, and the Literary World.** Robert Irwin. 1997, Abrams, 0-8109-2710-1, pb.

**"The Discover Interview: Roger Penrose."** Susan Kruglinski. *Discover* v30 n8 (September 2009): 54–57

**"Decagonal and Quasi-Crystalline Tilings in Medieval Islamic Architecture."** P. J. Lu and P. J. Steinhardt. *Science* 315 (2007).

**The Topkapı Scroll: Geometry and Ornament in Islamic Architecture.** Gülru Necipoğlu. 1995, Getty Research Institute, 978-0-89236-335-3, hb.

*Saracens landed on the coast below the Massif des Maures in the year 889.*

# The Saracens of St. Tropez

Written by Robert W. Lebling
Illustrated by Norman MacDonald

UNDER COVER OF DARKNESS, THEY BEACHED THEIR SMALL, LATEEN-RIGGED SAILING VESSEL ON THE ROCKY SHORE AND BEGAN THE SLOW, SILENT CLIMB to the manor house on the hill. Storm clouds shrouded the moon, darkening the coastal Mediterranean landscape; sporadic rain and gusting winds concealed the sailors' approach. They were 20 men, armed with daggers and short swords, and clad in the fighting tunics of al-Andalus–Islamic Spain.

They climbed carefully, avoiding the brambles that covered the slopes to their left and right. A few lights still burned in the manor house. The Provençal nobleman and his household had finished the last meal of the day. After listening to the songs of a visiting troubadour, the residents of the manor house were preparing to sleep. But it would not be long before the evening serenity of that coastal villa would be shattered.

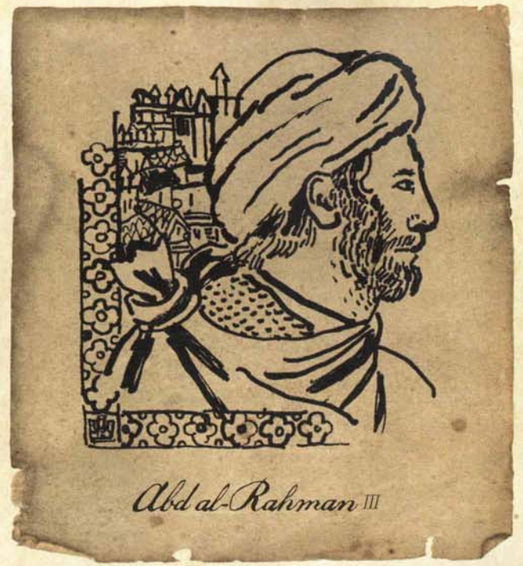
This was the opening act in an 85-year drama played out along the coast of Provence in the ninth and 10th centuries of our era. This little-known but significant projection of Arab military power into the land of the Franks was the second of its kind in less than three centuries. The first, launched almost two centuries before, is the one most of us know about. Conducted from al-Andalus by an army on horseback, it was thwarted by Eudes of Aquitaine at Toulouse in 721 and by Charles Martel at Poitiers in 732.

The second projection, overlooked by most of our history books, began as a small-scale military operation along the beautiful stretch of coastline now known as the French Riviera. Frankish chroniclers, in unabashedly one-sided and hostile accounts, sought to dismiss the operation as a "pirate raid." It may have appeared so to some at the time. But the passage of time and subsequent events proved these chroniclers wrong. Pirate raids are normally isolated, sporadic events. The operation on the Provençal coast, as we shall see, revealed itself eventually to be an integral part of the foreign policy of the Umayyad caliphate in Spain. The "raid" unfolded into something much more ambitious, giving the forces of al-Andalus, for the better part of a century, effective control of the coastal plain linking France and Italy and of the mountain passes into Switzerland–some of Europe's most vital trade and communication routes.

Arab chroniclers of the period–that is, those whose works have come down to us–have little to say about this unique occurrence on the Provençal coast. Perhaps they did not regard it as sufficiently important, compared with the momentous events then taking place to the southwest, in the Iberian Peninsula.

At that time, the Umayyad dynasty of al-Andalus, which had ruled Spain for scarcely a century, was being challenged from all directions. Revolts were under way in scores of Spanish cities, some led by Arabs, some by North African Berbers, and others by *muwalladun*, or Muslims of Spanish stock. The Umayyad amir 'Abd Allah, an educated, pious man who lacked political skills, struggled desperately to maintain his realm, but by 912 the amirate had virtually disintegrated, and 'Abd Allah controlled little beyond the walls of his capital, Córdoba.

In that year, he was succeeded by his talented grandson 'Abd al-Rahman III, who was destined to become one of the greatest leaders in the history of Islamic Spain. Over the coming years, 'Abd al-Rahman would end the rebellions, establish a caliphate in al-Andalus and preside over a "golden age" of prosperity that saw Córdoba become the leading intellectual and political center of Europe.



*Abd al-Rahman III*

*Arab chroniclers wrote little about these events, which perhaps paled alongside the challenges the Umayyad dynasty then faced on the Iberian Peninsula.*

All this occurred while Andalusi forces, building on a minor beachhead in Provence, were gradually extending their control into neighboring areas of France, northern Italy and even Switzerland. But if Arab historians are silent, the Europeans left records of the original incursion and its aftershocks, and from them we can reconstruct the story.

One of the most detailed accounts comes from Liudprand of Cremona, a 10th-century Italian cleric and diplomat. He described the 20 men who carried out the Provence operation as "Saracen pirates"; they would have viewed themselves as special forces of the caliphate. Their personal identities are lost to history. E. Lévi-Provençal, perhaps the greatest western historian of al-Andalus, believed such crews were often a mix of Arabs, Berbers, muwalladun and even Christians. They may have acted under specific orders from the Umayyad government at Córdoba; it is also possible they operated with greater freedom and flexibility under the Muslim equivalent of a letter of marque, with official authority to raid Frankish lands. Whatever the case, Liudprand confirms their role as an instrument of Andalusi foreign policy when he informs us that the base they eventually established in southern France operated under the protection of 'Abd al-Rahman III and in fact paid tribute to him.

The Saracens, as Andalusis and other Arab Muslims were known in those days, were quite sensibly attracted to the Provence region, whose natural beauty and fertility were enhanced by the fact that no kingdom or empire currently ruled it. The Mediterranean coast from Marseilles to Italy, with its rocky headlands and lush, wooded coves, studded with palm trees and brilliantly colored flowers, must have been as alluring to Muslim adventurers of the ninth century as it is to travelers today.

Indeed, the 17th-century Arab historian al-Maqqari related with some amusement the folk belief of an earlier age that the Franks would be barred from Paradise because they had already been blessed by their Creator with a paradise on earth: fertile lands abounding in fig, chestnut and pistachio trees, amid other natural bounties.

The Saracens established their beachhead on the coast of Provence in about 889, at a time of great confusion and misery. Just 30 years earlier, France's southern coast had been plundered and pillaged by Norse pirates. Entire towns had been leveled and many local inhabitants put to the sword. Duke Boso of Lyons, a usurper related by marriage to France's ruling Carolingian dynasty, took advantage of the chaos and, with the support of local counts and bishops, set up his own breakaway kingdom in Provence in 879. The Carolingian kings could not evict him. When Boso died in 887, his son and heir, Louis, was too young to rule effectively; local lords and princes began asserting their independence and challenging one another. The Carolingian empire was splitting into western and eastern Frankish kingdoms. There was no central authority along the southern French coast, and Provence was ripe for the plucking.

Saracen naval forces and corsairs struck often along these shores. Just as in later centuries British privateers—pirates—often worked hand-in-glove with the Royal Navy, so Andalusi corsairs plied the western Mediterranean in the sympathetic shadow of a large Saracen naval fleet, built up by the Umayyad government only a few decades before in response to the Norse raids that also struck the coasts of al-Andalus.

The 20 Saracens set sail from a Spanish port or island, apparently intent on a military target in the east. Whether the Gulf of St. Tropez was their primary target cannot be said for certain. According to Liudprand, stormy weather forced them to retreat into the gulf, where they beached the craft without being spotted. The gulf opens toward the east; the present-day fishing port of St. Tropez, fashionable vacation spot of artists, film stars and the well-to-do, is situated on the southern shore. The Saracens landed northwest of there and, drawn by the torch lights of the manor house, headed up the mountain ridge known as the Massif des Maures. Some say the ridge takes its name from the invading Arabs, who were also known as Moors; others claim it derives from a Provençal corruption of the Greek word *amauros*, meaning "dark" or "gloomy"—an apt description of the mountain's thick forests of cork oak and chestnut.

*Berbers from mountainous North Africa were probably employed in the Andalusi alpine forces.*

Before sunrise, the Andalusis stormed and captured the manor house and secured the surrounding area. When dawn finally broke, they could see, from the heights of the massif, towering Alpine peaks to the north, undefended but thickly forested slopes below and the broad blue expanse of the Mediterranean to the south.

The Saracens decided to hold their position. They began building stone fortifications on the surrounding heights. As further defense against Frankish attack, Liudprand says, the Arabs encouraged the growth of particularly fierce bramble bushes that proliferated in the area, "even taller and thicker than before, so that now if anyone stumbled against a branch it ran him through like a sharp sword." Only "one very narrow path" offered access to the Saracens' fortifications. "If any one gets into this entanglement, he is so impeded by the winding brambles, and so stabbed by the sharp points of the thorns, that he finds it a task of the greatest difficulty either to advance or to retreat," the cleric wrote in his history, titled *Antapodosis*, or *Tit for Tat*.

*In 911, the bishop of Narbonne was reportedly unable to return to France because the Saracens controlled all the passes in the Alps.*

Their defenses secured, the Andalusis reconnoitered the countryside. They sent messengers back to al-Andalus with word of their success, praising the lands of Provence and making light of the military ability of the local inhabitants. As a result, a new band of about 100 Andalusi fighters, certainly including cavalrymen (*fursan*) and their mounts, soon arrived from Spain to bolster the original 20.

Many more followed as the Andalusis asserted their military presence in the area and scored victories over scattered Frankish opposition. Administrators and supplies arrived from Córdoba. In time, the Saracen presence along the Riviera grew to such an extent that military expeditions sometimes involved thousands of troops. The Gulf of St. Tropez became a regular port of call for Andalusi naval and cargo ships in the western Mediterranean.

The Saracens called their base Fraxinet (in Arabic, Farakhshanit), after the local village of Fraxinetum, named in Roman times for the ash trees (*fraxini*) then common in surrounding forests. Today, this village survives as La-Garde-Freinet, a picturesque, unspoiled settlement tucked amid forests of cork oak and chestnut some 400 meters (1300') up in the Massif des Maures, between the Argens Plain and the Gulf of St. Tropez. About a half-hour's hike up from the village are the ruins of a stone fortress said to be the one built by the original 20 Saracens. Other high points in the area were also fortified by the Andalusis, but local authorities state that nothing remains of those structures.

Gradually, local Frankish lords, seeking to take advantage of the new political and military realities, sought the aid of the Andalusis in settling their private quarrels. The strategy backfired, according to Liudprand: "The people of Provence close by, swayed by envy and mutual jealousy, began to cut one another's throats, plunder each other's substance, and do every sort of conceivable mischief.... They called in the help of the aforesaid Saracens...and in company with them proceeded to crush their neighbors.... The Saracens, who in themselves were of insignificant strength, after crushing one faction with the help of the other, increased their own numbers by continual reinforcements from Spain, and soon were attacking everywhere those whom at first they seemed to defend. In the fury of their onslaughts...all the neighborhood began to tremble."

European chroniclers claim that the Saracens sacked the coastal territory around Fraxinet, today called the Côte des Maures, and then moved into neighboring areas in search of targets. First, pressing eastward, they "visited the county of Fréjus with fire and sword, and sacked the chief town," according to E. Lévi-Provençal. The town of Fréjus, a major seaport founded by Julius Caesar in 49 BC and given the name Forum Julii, was reportedly razed but its population spared.

*Andalusi colonists taught Franks to make corks for bottles from cork-oak bark.*

The Andalusis drove on, hitting one town after another along the Côte d'Azur. Eventually they looped back to the west, conducted operations against Marseilles and Aix-en-Provence, then headed up the Rhône Valley and into the Alps and Piedmont. Historians believe that North African Berber soldiers, experienced in mountain warfare, were probably used extensively in the Alpine operations. By 906, Andalusi forces had seized the mountain passes of the Dauphiné, crossed Mont Cénis and occupied the valley of the Suse on the Piedmontese frontier. The Saracens erected stone fortresses in areas they conquered—in the Dauphiné, Savoy and Piedmont—often naming them Fraxinet, after their base. The name survives to this day in these areas in various forms like Fraissinet or Frainet.

It did not take much longer before the Saracens were able to control direct communications between France and Italy. Pilgrims bound for Rome through such Alpine valleys as the Doire, Stura and Chisone often were forced to turn back in the face of Andalusi military actions. In 911, the bishop of Narbonne, who had been in Rome on urgent church business, was reportedly unable to return to France because the Saracens controlled all the passes in the Alps. By about 933, says Lévi-Provençal, "light columns, very mobile, held—at least during the summer—all the country[side] ... while the bulk of the Muslim forces was entrenched in the mountainous canton of Fraxinetum, in the immediate vicinity of the sea."

Frankish historical accounts often portray the Saracens as frightening and immensely powerful. For example, 19th-century historian J. T. Reinaud, drawing on the accounts of the period, observes: "One saw ample evidence forthcoming for the

oft-repeated saying that one Muslim was enough to put a thousand [Franks] to flight." This is a strange claim to make about a motley band of "pirates," as the Frankish historians often described them. The claim makes much more sense if the Saracens were in fact not pirates but rather a large and well-organized military force under the command of a government. As for fearing the Andalusis, those who feared them most were doubtless the clergy of Provençal, who stood to lose their power base if local populations turned to Islam, as had happened in al-Andalus.

Not all Provençals feared the Andalusis of Fraxinet, however. Some formed alliances with them. "There are...reasons to believe that a number of Christians made common cause with the


Muslims and took part in their attacks," Reinaud notes in his *Invasions des Sarrazins en France, et de France en Savoie, en Piémont et en Suisse*. If the villagers and townsfolk of Provence and neighboring regions feared the Saracens as much as contemporary chroniclers claim, they somehow managed nonetheless to cooperate with them in a wide range of social, economic and artistic fields.

The Arabs of Fraxinet were not simply warriors; careful reading of the chronicles reveals that many Andalusi colonists settled peacefully in the villages of Provence. They taught the Franks how to make corks for bottles by stripping the bark every seven years from the cork oaks that proliferate in the forests of the Massif des Maures. Today, the cork industry is the area's chief local enterprise. The Saracens also showed the Provençals how to produce pine tar from the resin of the maritime pine, and to use the product for caulking boats. Reinaud believes the Umayyads of Córdoba kept a naval fleet permanently based in the Gulf of St. Tropez, in part to facilitate communications throughout the western Mediterranean. The tar of Fraxinet would have been used by those sailors. Today in France, pine tar is called *goudron*, a word derived from the Arabic *qitran*, with the same meaning.

The Saracens also taught the villagers medical skills and introduced both ceramic tiles and the tambourine to the area, and Reinaud believes the Arab colony at Fraxinet had a "considerable influence" on the development of local agriculture. Some French scholars believe the Saracens of Fraxinet introduced the cultivation of buckwheat, a grain that has two names in modern French, *blé noir* (black wheat) and *blé sarrasin* (Saracen wheat). Furthermore, strong similarities have been noted between the poetry of the Provençal troubadours and that of Andalusi poets, but this particular case of cross-fertilization may have occurred even earlier than the Arab settlement of Provence.

We know little of the individuals who directed or took part in this Arab enterprise in France. Rarely are the Saracens of Fraxinet mentioned by name in the European chronicles of this period. Liudprand tells of one Arab military commander with the Latinized name Sagittus (perhaps Sa'id) who led an Andalusi fighting force from Fraxinet to Acqui, some 50 kilometers (30 mi) northwest of Genoa. But about all we learn of Sagittus is that he died in battle at Acqui in about 935.

A leader of Fraxinet itself, Nasr ibn Ahmad, is mentioned in the *Muqtabis* of Ibn Hayyan of Córdoba, the greatest historian of medieval Spain. According to that 11th-century chronicle, 'Abd al-Rahman III made peace in 939-940 with a number of Frankish rulers and sent copies of the peace treaty to Nasr ibn Ahmad, described as *qa'id*, or "commander," of Farakh shanit, as well as to the Arab governors of the Balearic Islands and the seaports of al-Andalus–all of them subject to the Umayyad caliphate. Nothing else is revealed about the Fraxinet commander.

The first serious Frankish effort to expel the Saracens from Fraxinet was made by Hugh of Arles, king of Italy, in about 931. Hugh, seeking control of Provence for himself, enlisted the aid of Byzantine warships on loan from his brother-in-law Leo Porphyrogenitus, emperor of Constantinople. The warships, hurling "Greek fire," attacked and destroyed an Andalusi fleet in the Gulf of St. Tropez. Meanwhile, in a coordinated land assault, Hugh's army besieged the fortress at Fraxinet and succeeded in breaching its defenses. The Saracen defenders were forced to withdraw to neighboring heights. But just when the end of the Andalusi colony in southern France seemed inevitable, local politics intervened.

*Byzantine ships on loan to Hugh of Arles attacked Saracens with early flamethrowers using "Greek fire."*

Hugh received word that his rival Béranger, then in Germany, was planning a return to France in a bid to capture the throne. The king, desperate for allies, sent the Greek fleet back to Constantinople and formed a hasty alliance with the Saracens he had just sought to expel. He signed a treaty conceding control of Fraxinet and other areas to the Andalusis and stipulating that Arab forces should occupy the Alpine heights–from Mont Genèvre Pass in the west to the Septimer Pass in the east–and block any attempt by Béranger to cross into France. Liudprand, ever hostile to the Saracens, was outraged by Hugh's actions; in the midst of his chronicles, the historian chides the king: "How strange, indeed, is the manner in which thou defendest thy dominions!"

After seizing the Great St. Bernard and other key Alpine passes, the Andalusi forces spread out into the surrounding valleys. Grenoble and the lush valley of the Graisivaudun were captured in about 945.

About 10 years later, Otto I, king of Germany and later Holy Roman Emperor, perhaps fearing the Saracens would score successes in his own realm, sent an envoy to the caliph at Córdoba, 'Abd al-Rahman III, urging an end to military operations in the Alps by the Andalusis of Fraxinet.

*King Otto I*

In the early to mid-960's, the Saracens began a slow but steady withdrawal from the Alpine regions. To some extent this was due to growing Frankish military pressure, and perhaps to the diplomatic initiatives of Otto I. But one modern scholar, Middle East specialist Manfred W. Wenner, suggests the withdrawal may have been prompted by a foreign-policy change in Córdoba. 'Abd al-Rahman III died in 961 and was succeeded by his son Hakam II, a peaceful man who did not share his father's enthusiasm for military operations in southern France and the Alpine regions. Wenner believes Hakam may have "withheld permission for reinforcements to leave for Fraxinetum from Spanish ports," making it increasingly difficult for the colony to maintain a military presence in the Alps.

By 965, the Andalusis had evacuated Grenoble and the valley of the Graisivaudun under continuing pressure by the troops of various Frankish nobles. The fertile farmlands and prosperous villages they relinquished were divided up among the Frankish forces who replaced them, in proportion to each soldier's valor and service. According to Reinaud, writing in about 1836, "even today such families of Dauphiné as the Aynards and Montaynards trace the turn of their fortune to this struggle with the Muslims."

As late as 972, the Saracens still controlled the Great St. Bernard Pass. In that year, they detained a party of travelers that included a political opponent, the famed Frankish cleric Maiolus, abbot of Cluny, who was traveling through the pass on his return from Rome. Maiolus and his large entourage were eventually released, but the incident provoked outrage throughout the Frankish realms and sparked further efforts to dislodge the Fraxinet colony and its satellites.

Shortly after 972, the Saracens were driven from the heights around the Great St. Bernard. One of the leaders of the opposing forces in this hard-fought battle was Bernard of Menthone, for whom the mountain pass was later named. (Its name at the time was Mons Jovis, Latin for "Mount Jupiter"—a term the Arabs of that era incorporated into their name for the entire Alpine region, Jabal Munjaws.) Bernard, of course, later founded the well-known hospice for travelers in the heights of the Great St. Bernard that exists to this day. Some scholars believe the Maiolus incident furnished the impetus for building that refuge. Bernard's name, incidentally, was also given to the celebrated dogs trained there to rescue travelers trapped in the winter snows.

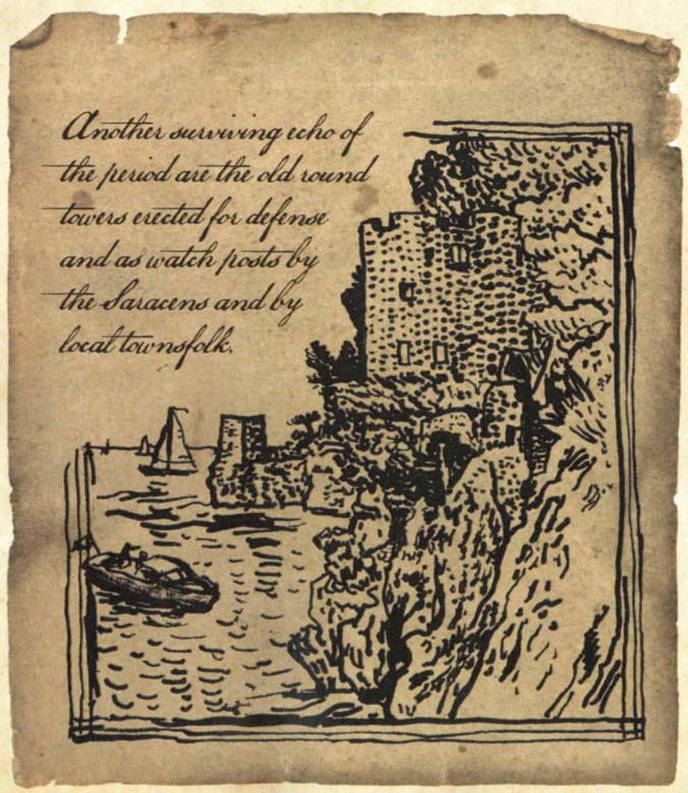
Along the Riviera itself, local lords gradually overcame their differences and, in about 975, joined forces with Count William of Arles, later marquis of Provence, in a bid to consolidate all of southern France under his rule. William was a popular leader, and managed to persuade warriors from Provence, the lower Dauphiné and the county of Nice to join his cause against the Saracens.

The Andalusis, realizing the seriousness of the threat being mounted against them, consolidated their forces at Fraxinet and "came down from their mountainous resort in serried ranks," as Reinaud says, to encounter the Frankish forces at Tourtour, near Draguignan, about 33 kilometers (20 mi) northwest of Fraxinet. The Saracens were driven back to their mountain stronghold, and the Franks laid siege to the fortress. The Andalusis, realizing their fate was sealed, abandoned the castle in the dark of night and fled into the surrounding woods. Many were either killed or captured by Count William's forces, according to contemporary accounts, and those who laid down their arms were spared. It is said that the Frankish army also spared the lives of those Andalusi colonists living peacefully in neighboring villages.

*Andalusis made later attempts to establish footholds along the coast—in 1003, 1019 and 1047—but never again were they able to repeat the success of Fraxinet.*

Fraxinet had served as the administrative capital of all Saracen settlements in France, northern Italy and Switzerland, and its castle is believed to have held vast quantities of treasure. All the booty from Count William's conquest was said to have been distributed among his officers and men. His second-in-command, Gibelin de Grimaldi of Genoa—an ancestor of Prince Ranier III, who ruled present-day Monaco until 2005—received the area where the hillside village of Grimaud stands today, overlooking the port of St. Tropez. Ruins of Grimaldi's feudal castle, built in the Saracen style, still crown the village.

Thus ended the Arab colonization of southern France. Andalusis made later attempts to establish footholds along that coast: They conducted military operations at Antibes in 1003, at Narbonne and Maguelone in 1019 and in the Lérins Islands off Cannes in 1047. But never again were the forces of al-Andalus able to repeat the stunning success of Fraxinet.




The mountainous regions of inland Provence are dotted with hundreds of old fortified hill villages, like Grimaud, whose very existence is a reminder of the "Saracen period." These villages were first built for protection against Saracen raids and later served to protect the Frankish villagers from marauders of their own faith. The peasants lived within their walls, venturing out to work their fields by day. By the 19th century, however, with the establishment of durable peace and order, peasants began leaving the hill villages and moving down into the valleys. Today, some of these villages lie wholly or partially abandoned, but many are being restored, their old stone structures converted into weekend or summer homes for the affluent or housing small colonies of artists and craftsmen. Old mines and remnants of forges at Tende in the Maritime Alps northeast of Monaco and at La Ferrière, near Barcelonnette, have been identified as sites where Saracens extracted iron ore and manufactured weapons.

Another surviving echo of the Fraxinet period is the old round towers erected for defense and as watch posts not only by the Saracens but also by local townsfolk. The Frankish towers mimic the style of Arab ones. Ruins of what are called "Saracen towers" are found all along the coast, as well as in nearby Alpine valleys.

These are the remaining physical traces of the Arabs of Fraxinet: courses of cut stone, jutting from the underbrush, as fragmentary and mysterious as the tale that underlies them. Beyond this, the Saracens of St. Tropez and their cohorts live on as part of the folk memory of Provence, remembered as soldiers, merchants and agents of change in a dark and troubled era.



**Robert W. Lebling** (lebling@yahoo.com), former assistant editor of *Aramco World*, is a staff writer and communication specialist for Saudi Aramco in Dhahran. He is author of the forthcoming *Jinn: Legends of the Fire Spirits From Arabia to Zanzibar.*

Canadian free-lance artist **Norman MacDonald**, a frequent contributor to *Saudi Aramco World*, used parchment paper and drew with twigs rather than brushes for a "medieval effect" in his illustrations.



**Related articles** from past issues can be found on our Web site, www.saudiaramcoworld.com. Click on "indexes," then on the cover of the issue indicated below.

Battle of Toulouse: M/A 93
Córdoba caliphate: J/F 93, S/O 03
Greek fire: J/F 95

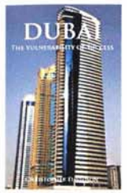

Quotations from Reinaud are taken from the English translation of his work, *Muslim Colonies in France, Northern Italy & Switzerland*, translated by Haroon Khan Sherwan and published in Lahore in 1955 by Sh. Muhammad Ashraf. Excerpts from the *Antapodosis* are from *The Works of Liudprand of Cremona*, translated by F. A. Wright and published in London in 1930 by George Routledge & Sons, Ltd.

## Chronology

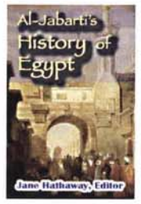
| | |
|---|---|
| **711** | Arabs enter Spain. |
| **717** | Al-Hurr's army enters France. |
| **721** | Al-Samh's forces routed at Toulouse. |
| **728** | Andalusi fleet raids Lérins Islands, off Cannes. |
| **732** | Abd al-Rahman al-Ghafiqi's forces lose Battle of Tours and Poitiers. |
| **759** | Franks recapture Narbonne. |
| **827** | Andalusis launch naval raid on Oye in Brittany. |
| **831** | Andalusis launch naval attack on Marseilles; sail up estuary of the Rhône. |
| **848** | Arles in Saracen hands. |
| **869** | Andalusis raid Provence and construct a harbor in the Camargue. |
| **889** | Twenty Andalusis sail up the Gulf of St. Tropez and found a colony at Fraxinet (Farakhshanit). |
| **906** | Andalusis cross the defiles of the Dauphiné and Mont Cénis. |
| **908** | Andalusis occupy the valley of the Suse. |
| **911** | Andalusis hold the Alpine passes. |
| **920** | 'Abd al-Rahman, uncle of 'Abd al-Rahman III, amir of al-Andalus, crosses the Pyrenees and reaches Toulouse; Marseilles, Aix, Piedmont attacked from Fraxinet. |
| **929** | Fraxinet forces advance to borders of Liguria. |
| **931** | Hugh of Arles invites Byzantine fleet to help him against the colonists, but then makes peace with them; Andalusis occupy Alpine heights. |
| **940** | Andalusis occupy and colonize Toulon. |
| **942-952** | Andalusi settlement at Nice; Andalusi occupation of Grenoble; Andalusi fortresses in Piedmont: Fressineto and Fenestrelle. |
| **965** | Andalusis evacuate Grenoble. |
| **970** | Evacuation of Savoy by Andalusis. |
| **973** | French town of Gap evacuated by Andalusis; Battle of Tourtour and Andalusi evacuation of most of Provence. |
| **975** | Andalusi evacuation of Fraxinet. |
| **1003** | Andalusis attack Antibes. |
| **1019** | Andalusis attempt to recapture Narbonne; Maguelone attacked by Andalusis. |
| **1047** | Andalusi raid on Lérins Islands. |

# Suggestions for Reading

**Readers of *Saudi Aramco World* who want to range more widely or delve more deeply** than a bimonthly magazine can do will find interesting material, most of it recently published, in this list. Without endorsing the views of any of the authors, the editors encourage varied and omnivorous reading as a path to greater understanding. The books listed here are available online, in libraries, from bookstores—we urge our readers to patronize independent bookstores—or from their respective publishers; International Standard Book Numbers (ISBN) are given to facilitate ordering. Please do not order books from *Saudi Aramco World*. The full-text electronic archive of "Suggestions for Reading" from 1993 to the present can be found on the magazine's Web site at www.saudiaramcoworld.com.




**Abu Dhabi: Oil and Beyond.** Christopher M. Davidson. 2009, Columbia UP, 978-0-231-70106-8, $35 hb.
The author of *Dubai: The Vulnerability of Success* traces Abu Dhabi's transformation from a modest 18th-century emirate to its present position: burgeoning cultural center, holder of close to a trillion dollars in sovereign wealth and more than eight percent of world oil reserves, about to implement new economic initiatives and become an important factor in both first and third world economies. He describes the system of "tribal capitalism" created by the ruling family to align old political allegiances with modern engines of growth, and also considers coming challenges to the emirate's success.




**Al-Jabarti's History of Egypt.** Jane Hathaway, ed. 2009, Markus Wiener, 978-1-55876-446-0, $98.95 hb; 978-1-55876-447-7, $32.95 pb.
Abd al-Rahman al-Jabarti, born in Cairo in 1753, combined biographies and historical accounts by earlier chroniclers, covering events in Egypt as far back as 1688, with his own observations and research covering the period from roughly 1776 until his death in 1825. Printed in Arabic in 1879-80, *The Marvelous Compositions of Biographies and Chronicles* has long been regarded as the best primary source about Egypt under Ottoman rule. The present volume is composed of excerpts and brief contextual commentaries and will appeal to general readers. The sections describing the French occupation of Egypt (1798–1801) and its re-occupation by Ottoman forces are particularly interesting.

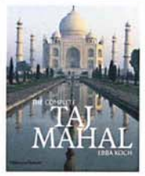
—KYLE PAKKA

**American Priestess: The Extraordinary Story of Anna Spafford and the American Colony of Jerusalem.** Jane F. Geniesse. 2008, Talese/Doubleday, 978-0-385-51926-7, $26 hb; 2009, Anchor, 978-0307277725, $17.95 pb.
The American Colony Hotel in Jerusalem has long been regarded as an island of neutrality in a highly contested sea, a place where people could set aside their differences for a while in convivial surroundings near the Damascus Gate. Its origins as a kind of way station for a group of devout Christians awaiting the return of the Messiah are less well-known. The American priestess of the title is Anna Spafford. She and her husband, a Chicago lawyer, were swept up in the evangelical fervor of the late 19th century, attracted followers and relocated to Jerusalem in 1881. After the death of her husband, the group, which came to be called the American Colony, was ruled by Anna—a "superb despot" in the words of Geniesse. While the Colony made enemies of a succession of US consuls and other Christian aid groups, it earned a reputation for offering food, shelter and compassion to anyone who asked for it and for caring for the starving, sick and wounded during World War I. The group's large communal house evolved into a traveler's hotel with an unmatched reputation for serenity and sophistication. Geniesse walks a fine line, balancing her sources between the critics and supporters of the Colony, faithfully recreating her characters' words and actions in the context of their times.

—KYLE PAKKA


**A Brief Introduction to Astronomy in the Middle East.** John M. Steele. 2008, Saqi, 978-0-85356-428-4, $11.95 pb.
Professor John Steele, whose specialty is the history of Mesopotamian astronomy, traces the science back to the Babylonians, beginning with the origins and development of schemes for modeling planetary motion, and discusses their lunar calendar of 29- and 30-day months. The conquests of Alexander the Great allowed Greco-Roman astronomers to draw on these sources and construct ever more accurate models. Early Islamic practice relied on astronomical observations to determine the times of prayer and the direction of Makkah. Steele reveals how medieval Islamic advances in astronomy, and the design of precise instruments such as the astrolabe, led to later breakthroughs by Renaissance figures like Copernicus and Kepler. Perhaps the most important legacy from the Middle East is the very idea of astronomy as a science and the application of mathematics to celestial observations.

—CHARLES SWEENEY

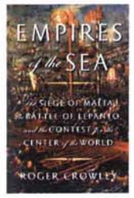



**The Complete Taj Mahal.** Ebba Koch. 2006, Thames & Hudson, 978-0-500-342-09-1, $75 hb.
Ebba Koch's study of the Taj Mahal is both scholarly and engaging. Its language is straightforward, its images varied and its structure practical—internal page references, for example, serve as "hyperlinks" so that readers may follow a thread without hunting through the index. By way of context, Koch summarizes the development of Mughal gardens, palaces and funerary monuments (and their relationship to property laws). She walks us through 17th-century Agra and the love that prompted emperor Shah Jahan to build the Taj Mahal. By the time she delves into the construction techniques, floor plans and the symbolism of the mausoleum, we know enough to believe her opening statement: In building the Taj Mahal, "the typical was used to create the outstanding." The same can be said about Koch's book.

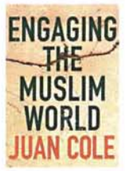
—LEE LAWRENCE

**Covering the Moon: An Introduction to Middle Eastern Face Veils.** Gillian Vogelsang-Eastwood and Willem Vogelsang. 2008, Peeters, 978-90-429-1990-7, €78 hb.
In a period when the subject is apt to be polemical, it is very refreshing to find a work that concentrates on the veil as an item of costume. *Covering the Moon* does not limit itself to Middle Eastern veils, but ranges as far as China and Saharan Africa. The book opens with a useful summary of the history of veiling, and its great strength is its wonderful illustrations: historic prints and miniatures, photographs taken over the past century and a half and, of course, numerous images of the veils themselves, many of which are extremely decorative. The book's liveliness is enhanced by quotations from original sources, including travelers' accounts and several autobiographies by Muslim women. The careful analysis and naming of veil types and veil parts in different regions and periods provides a very useful glossary of terms. They observe that the traditional styles of veiling are vanishing, tending to be superseded by a global model based on Saudi practice. This makes it all the more valuable that they have recorded a very important part of the costume of the Muslim world.

—CAROLINE STONE




**Empires of the Sea: The Siege of Malta, the Battle of Lepanto, and the Contest for the Center of the World.** Roger Crowley. 2008, Random House, 978-1-4000-6624-7, $30 hb; 2009, Random House, 978-0-8129-7764-6, $16 pb.
The "kings-and-battles" style of history makes wonderful reading, especially when recounted by an enthusiastic and well-read teller. Crowley's tale is of an inflection point in history, when the Ottoman Empire at its height attempted to sweep the western Mediterranean—"the center of the world"—into its control. Malta was a strategic fulcrum in that attempt, and the Ottoman siege begun in March 1565 ended six bloody months later in defeat. At the Battle of Lepanto in 1571, a shaky alliance of Venice, Spain, the Vatican and the Knights of St. John overpowered the Ottoman navy and put to rest the notion of Ottoman invincibility. These events, and the death of Süleyman the Magnificent in 1566, ended the rapid expansion of Ottoman power and essentially fixed the Muslim–Christian division of the Mediterranean world for the next 200 years.

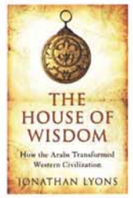



**Engaging the Muslim World.** Juan Cole. 2009, Palgrave Macmillan, 978-0-230-60754-5, $26.95 hb.
Juan Cole has drafted a persuasive and convincing read, tackling the thorniest modern issues involving America, Islam and Muslims, and advocating a rational way forward. In doing so, he deftly probes what he calls "Islam anxiety" in America and "American anxiety" in the Muslim world. On the issue of oil, for instance, Cole encourages the reader to accept that the US need for oil from Muslim lands will continue, and urges an enlightened foreign policy that assures a steady supply. Cole's straight and sensible talk stems from his acute understanding of Islam and Muslims. He lays out a plan based on facts for engaging the world's Muslims, most of whom would welcome American outreach, he argues. If a reader could check out only one book on the post-9/11 age, this should be the one.

—ASMA HASAN

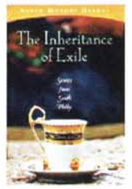
**Hoshruba. Book One: The Land and the Tilism.** Muhammad Husain Jah. Musharraf Ali Farooqi, tr. 2009, Urdu Project, 978-0-9780895-5-1, $24.99 pb.
Imagine *The Lord of the Rings* told from the viewpoint of the Dark Lord Sauron, and in eight volumes—totaling more than 8000 pages—instead of three. That is *Hoshruba*, a vast, magical Urdu epic penned in India in the 19th century. The story centers on Afrasiyab, a sorcerer-emperor who rules over Hoshruba, a fantasy world or *tilism* where anything can happen. Look for deceit, betrayal, romance, war, bizarre plot twists and, of course, magic. This cycle of tales, born in Lucknow, is the brainchild of storyteller Mir Ahmed Ali, who wanted to thrill audiences with a turbocharged, freewheeling variant of the much older Indo–Persian Amir Hamza epic. The first published version of the tales was written by Jah, another Lucknow storyteller, in the early 1880's. These adventures are crafted for English readers in a comfortable style, and packed with color and amazement, zipping by at breakneck speed.

—ROBERT W. LEBLING



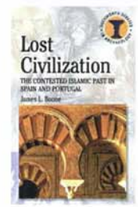

**The House of Wisdom: How the Arabs Transformed Western Civilization.** Jonathan Lyons. 2009, Bloomsbury, 978-1-59691-459-9, $26 hb.
Books about the transformative Arab influence on western civilization are not unusual, but this one focuses on the personalities responsible for setting the transformation in motion, showing how specific works of Arab knowledge were accepted and utilized by European scholars. The "House of Wisdom" is the research center and library built in Baghdad by the Abbasid caliph Al-Ma'mun, but for the author it is a symbol of a much larger intellectual endeavor in the Arabic language that was eventually bequeathed to Europe. The setting for this knowledge transfer is a topsy-turvy world (from our perspective) in which Europe is underdeveloped and riven with violence, superstition and intolerance, but Arab lands are centers of science, culture and sophistication. Enter the English scholar Adelard of Bath, who traveled the "crusader lands," learned Arabic and began a major effort of translation and study that helped set Europe on the path to the Renaissance.

—ROBERT W. LEBLING



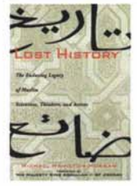

**The Inheritance of Exile: Stories from South Philly.** Susan Muaddi Darraj. 2007, Notre Dame UP, 0-268-03503-2, $20 pb.
Darraj is a rare breed: a scholar of literature *and* a talented writer of fiction. Her book centers on the lives of four first-generation Arab-American women, viewed through novellas about each. Laced together in the style of the modern classic *A Girl's Guide to Hunting and Fishing*, *The Inheritance of Exile* is a layered and addictive work that captures the pressures, attitudes and even the recipes of the Arab-American community. It follows the four from school to lives as modern American women, enabling the reader to attain a real sense of growing up female and Arab in America. Most surprising are Darraj's heroes: Throughout, they are the Arab fathers, brothers and lovers who stand by their wives, sisters and girlfriends through thick and thin, with unconditional affection, whereas the white American males appreciate the girls as exotic but frequently disappoint them.

—ASMA HASSAN



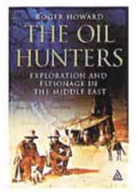

**Lost Civilization: The Contested Islamic Past in Spain and Portugal.** James L. Boone. 2009, Duckworth, 978-0-7156-3568-1, $21.60 pb.
Archeologist James Boone reviews the scholarly literature on how the 800-year Muslim occupation of the Iberian Peninsula is today being reexamined in light of newly unearthed physical evidence—everything from bilingual Arabic–Latin dinars and *tajine*-style conical plates to Rifian house architecture, the growth patterns of Muslim agricultural settlements and the spatial relationships between Arab castles and their satellite villages. The focus on the period's material culture balances the more rarified social and artistic views of the civilization of al-Andalus.

—LOU WERNER




**Lost History: The Enduring Legacy of Muslim Scientists, Thinkers, and Artists.** Michael Hamilton Morgan. 2007, National Geographic, 978-1-4262-0092-2, $26 hb.
This book, intended for a popular rather than an academic audience, aims to recover the lost history of interaction between western civilization and the many golden ages of Muslim thought. These include not only the intellectual flowering in the Arab heartland that ended with the fall of Baghdad in 1258, but times of great progress in Spain, Persia, Central Asia, Ottoman Turkey and Mughal India, lasting up to the 18th century. The author, a former American diplomat who has established a foundation to promote cross-cultural understanding and leadership among youth, juxtaposes scenes of modern life with related earlier events to show how figures from the past laid the groundwork for some of the most basic elements of present-day achievements.

—CHARLES SWEENEY

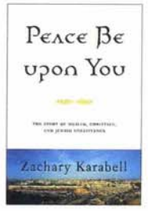



**The Oil Hunters: Exploration and Espionage in the Middle East 1880–1939.** Roger Howard. 2008, Continuum, 978-1-84725-232-6, $26.95 hb.
As oil grew in importance during the Industrial Revolution, exploration in the Middle East was spurred partly by the region's relative proximity to Western Europe. Beyond labyrinthine concession negotiations, any effort to find and bring oil to market faced a daunting list of

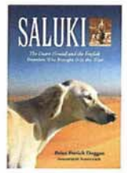
challenges: rugged, roadless terrain; extremes of weather; bandits; poor communication and supply links to the outside world; isolation and illness–compounded by the difficulties of working in foreign lands with language and cultural barriers. The wonder isn't that the explorers discovered oil, but that they dared look for it in the first place. Howard captures the perseverance, fortitude and vision–the "exceptional stuff"–of such well-known figures as William Knox D'Arcy, Calouste Gulbenkian, Charles Crane and Frank Holmes, often drawing upon their letters, journals and books to detail the hardships they faced. —KYLE PAKKA

**Palestine in Late Antiquity.** Hagith Sivan. 2008, Oxford UP, 978-0-19-928417-7, $120 hb.
Sivan offers a sweeping and exuberant "travel guide" to Palestine and all the varied ethnic and religious groups living and interacting there between the years 300 and 650, exploring especially the region's conflicts, which she describes as mostly intra- rather than inter-communal. Her panoramic descriptions of single landscapes or cities, seen across time, are illuminating.


**Palestinian Costume.** Shelagh Weir. 2009, Interlink, 978-1-56656-727-5, $40 pb.
*Palestinian Costume* is a model of how such works should be done. Based on many years of personal research among the Palestinians, beginning in 1965, but drawing on material obtained from informants going back to the start of the 20th century, Weir explains the origins, purpose and meaning of the articles of costume, as well as their appearance. The result is a fascinating contribution to the study of a living culture, rather than simply a museum record. The numerous illustrations range from old photographs to details of brilliantly colored embroidery. This is a book to delight the traveler, the textile enthusiast and the scholar alike.
—CAROLINE STONE

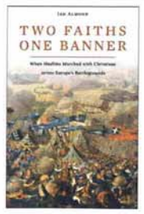



**Peace Be Upon You: The Story of Muslim, Christian, and Jewish Coexistence.** Zachary Karabell. 2007, Knopf, 978-14000-4368-2, $26.95 hb; **Peace Be Upon You: Fourteen Centuries of Muslim, Christian, and Jewish Conflict and Cooperation.** Zachary Karabell. 2008, Vintage, 978-1-4000-7921-6, $14.95 pb.
It is easy to look at past centuries through the lens of current events and conclude that Muslims, Christians and Jews have always been in conflict. Zachary Karabell argues that this notion is both simplistic and dangerous. With demanding prose that reflects his multidisciplinary perspective, he brings the reader from the dawn of Islam in the seventh century to the present day, examining periods when the three religious communities coexisted peacefully and periods when they were in conflict. This nuanced and surprising journey reveals that pragmatism, not doctrine, usually drove relations among the three Abrahamic faiths. He notes that "vibrant societies are often the product of unexpected and jarring interactions with strangers" and urges us to focus on the often-overlooked eras when people went about their daily lives cooperating with one another. It is in those long years of concord, he argues, that we may find a model for a peaceful future.
—KAY CAMPBELL




**Saluki: The Desert Hound and the English Travelers Who Brought It to the West.** Brian Patrick Duggan. 2009, McFarland, 978-0-7864-3407-7, $45 pb.
Long the premier hunting hound of the East, the saluki was virtually unknown in England until the turn of the last century, when Florence Amherst and General Frederick Lance joined with other British officers and travelers to promote Kennel Club recognition of what was then a decidedly exotic breed. Breathing life into this diverse group of enthusiasts–and their salukis–is the work of this well-researched volume. Through 250 pages, the reader joins in the activities of the Amherst family, attends colonial jackal hunts and pays brief visits to such illustrious saluki owners as Sir Austin Henry Layard, Lady Anne and Wilfred Blunt, Gertrude Bell, Vita Sackville-West and Violet and Major H. R. P. Dickson. It is a fascinating journey from the time the sun never set on the British Empire to the darkness of World War II. The photographs are wonderful as well. —JANE WALDRON GRUTZ

**The Shiites: A Short History.** Heinz Halm. Allison Brown, tr. 2007, Markus Wiener, 978-1-55876-436-1, $86.95 hb; 978-1-55876-437-2, $26.95 pb.
The author, an internationally renowned expert at the University of Tübingen, combines history, comparative religion and political interpretation to elucidate Shi'ism and related political developments in the Middle East for western readers. He highlights three aspects of Shi'a Islam: its historical development, its rituals and practices and the rule of the clergy.




**Two Faiths, One Banner: When Muslims Marched with Christians Across Europe's Battlefields.** Ian Almond, 2009, Tauris, 978-1-84511-655-2, £19.50 hb.
This timely book does what every historian should aim for: to look again at the accepted wisdom of the past, forcing us to throw out much of what we thought we knew. The author examines five historical moments–11th-century Spain, 13th-century Sicily, 14th-century Anatolia, 17th-century Hungary and the 19th-century Crimea–and finds something quite unexpected, especially in light of today's hardening rhetoric. In each of these places where an East–West confrontation has long been taken as a given, subpopulations of Christians and Muslims fought side by side, on each side–not simply as vassals, peasant conscripts or mercenaries, but as allies with shared interests and mutually respected objectives. Almond forces readers to question their own absolute assumptions about the fault lines of religious conflict.
—LOU WERNER

**The Veil: Women Writers on Its History, Lore, and Politics.** Jennifer Heath, ed. 2008, University of California, 978-0-520-25518-0, $21.95.
Heath edits this series of short essays exploring the veil, or the headscarf that many religious women wear, and includes a number not relating to Muslim women at all–pieces that treat veiling among Hasidic women, Amish women and Catholic nuns. For example, Laurene M. LaFontaine's brilliant essay "Out of the Cloister: Unveiling to Better Serve the Gospel" examines the Vatican II decision that brought nuns out of the habit. Other articles explore the veil historically, looking at its non-Muslim roots and its wide presence across cultures, particularly in ancient India, as well as the poignant struggles faced by many veiled Muslim woman, especially American Muslims. Heath's creative approach works with most essays, such as an excerpt from Marjane Satrapi's seminal graphic novel *Persepolis*, but others may be too abstract for the general reader to appreciate. —ASMA HASAN

**Voyage to the Pharos.** Sarah Gauch. Roger Roth, ill. 2009, Viking, 978-0-670-06254-6, $16.99 hb.
An early Greek merchant ship and the Pharos lighthouse of Alexandria both come colorfully to life through the eyes of young Dino as he accompanies his father, a ship's cook, on a voyage from their home in Rhodes to Alexandria, out-rowing pirates and braving a storm along the way. Vividly written and illustrated for children aged five to nine, this is an excellent tale for either a classroom or a bedtime read-aloud. The author includes a helpful page of factual background on the lighthouse, from its construction in 285 BC to the discovery of its ruins in the harbor in 1994.

**Who Owns Antiquity? Museums and the Battle Over Our Ancient Heritage.** James Cuno. 2008, Princeton UP, 978-0-691-13712-4, $24.95 hb.
Should an imperial Roman artifact made and recovered in Libya belong to Italy? Should a Uighur object manufactured in Urumqi before Chinese rule belong to China? The director of Chicago's Art Institute argues that antiquities should belong not to states, as current laws have it, but to the people of the world. The growth of nationalism since World War II has been accompanied by a proliferation of "nationalist, retentionist cultural property laws," ostensibly to curb theft of archeological artworks but actually to support state ideologies, he argues. These policies do not in fact reduce looting or the sale of undocumented artifacts, Cuno maintains, but do make it very difficult for museums around the world to acquire the kinds of artworks they have traditionally sought. He makes an impassioned defense of "encyclopedic museums" such as the British Museum, the Louvre and the Met, whose collections allow viewers to compare and contrast many different cultures, giving visitors a sense of how peoples have developed, interacted and benefited each other. —ROBERT W. LEBLING



# Suggestions for Viewing

**Char Simons** is a member of the Middle East Studies Association's film festival committee and a visiting faculty member at The Evergreen State College in Olympia, Washington. Her e-mail address is simonsc@evergreen.edu.

**Bliss.** Abdullah Oğuz, dir. 2007, Turkey, 105'. Turkish with English subtitles. First Run Features, http://firstrunfeatures.com/bliss_educational.html. $24.95 individual, $395 institutional/education (available January 2010).
Set against the impressive backdrop of Turkey's natural wonders, an ex-soldier/would-be executioner in an honor killing and his wrongly accused victim make a journey of self-discovery in which they confront the demons of their past. This unconventional road movie takes an unexpected turn when they meet an academic who is also looking for a second chance in life. Adapted from internationally acclaimed author and folk musician Zülfü Livaneli's novel *Bliss*, the film is a tale about choosing between society's harsh, traditional dictates and finding one's own path.


**Chahinaz: What Rights for Women?** Samie Chala, Patrice Barrat, dirs. 2008, Algeria, 52'. French/English with English subtitles. Filmakers Library (www.filmakers.com). $295 purchase, $85 rental.
This documentary focuses on the worldwide struggle for women's rights viewed through the eyes of Chahinaz, an upper-middle-class Algerian college student who loves her country but struggles with the inferior legal status of women there and elsewhere. She explores efforts to effect change by interviewing women around the globe, including a journalist in India, a young American evangelical Christian, Sheikha Haya Rashed Al-Khalifa of Bahrain and Mary Robinson, former president of Ireland. She thus puts the fight for women's rights into a universal framework, showing that the issue is not unique to Muslim cultures.


**Secret Ballot.** Babak Payami, dir. 2002, Iran, 123'. Farsi with English subtitles. Fabrica (www.iranianmovies.com). $14.95 individual, $29.95 institutional.
This impressionistic satire highlights a day in the life of an idealistic, well-educated female election official and a soldier who try to collect votes from residents of a remote island in southern Iran on election day. The election official has some success getting an odd assortment of characters to vote, but a question keeps coming up: Do these civilians need or want any say in national politics? She gets her answer in the form of a metaphor: a red stoplight in the middle of nowhere. The official wants to run the absurd light, but the soldier uses her own words against her–just because they are far from the rest of Iranian society doesn't mean they are exempt from its rules. The film offers a brilliant and humorous look at the question: What effects do national politics really have on daily lives?

**Dishing Democracy: Arab Social Reform via Satellite TV.** Bregtje van der Haak, dir. 2007, all Middle East, 57'. English. Films for the Humanities and Sciences (www.films.com). $169.95.
This film profiles *Kalam Nawaem* ("Sweet Talk"), a smart, edgy and wildly popular Cairo-based talk show aired by the Middle East Broadcasting Center. Its four women hosts–a veteran Egyptian journalist, the first Saudi woman to appear on international satellite TV, a Lebanese and a Palestinian–are changing the way the Middle East views itself. All working mothers, the hosts are diverse in age and political views. They discuss controversial issues, ranging from homosexuality to the link between poverty and terrorism, with intelligence and grace.

**Recycle.** Mahmoud al Massad, dir. 2008, Jordan, 90'. Arabic with English subtitles. Icarus Films (www.icarusfilms.com). $398.
What is the correct response of Muslims to foreign occupation of Islamic lands? The question is debated in a rundown neighborhood of Zarqa, Jordan, birthplace of Abu Musa al-Zarqawi, the leader of al-Qaeda in Mesopotamia. This film chronicles Abu Ammar, the father of eight, a student of Islam and a former *mujahid* from the Afghan–Soviet war, who struggles to support his family by collecting cardboard for recycling. Everyday conversations with Abu Ammar's friends, customers and family offer insights into the political and economic disenfranchisement and disillusionment that can cause people to engage in violence. Interspersed are scenes of typical life in Jordan that illustrate the complex and competing forces at work among the masses.

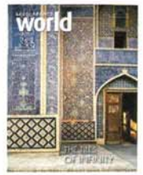
**Santa Claus in Baghdad.** Raouf Zaki,dir. 2007, U.S./Iraq, 40'. Arabic with English subtitles. www.santaclausinbaghdad.com. $40 individual, $250 institutional, including study guide.
This charming yet heart-wrenching tale of expectations, hope and love amid the UN sanctions against Iraq in the 1990's revolves around two subplots. One focuses on 16-year-old Amal's farewell gift for a popular teacher: a book of Kahlil Gibran poems that had belonged to her teacher's mentor. The other centers on Amal's little brother Bilal and his belief in Santa Claus. When his uncle arrives from the US with a suitcase full of badly needed medicines, but no toys, Bilal's hopes are dashed. "My son hasn't had a toy all his life. I can't face myself," his father cries.


**Tehran Has No More Pomegranates.** Massoud Bakhshi, dir. 2007, Iran, 68'. Farsi with English subtitles. Documentary Educational Resources (www.der.org). $39.95 individual, $145 institutional.
This documentary blends archival footage and interviews with ordinary Tehranis to paint a dynamic, ironic portrait of a capital in constant reform. Noting that the city's history has been written by either foreigners or "Iranians with no credibility," the film attempts to set the record straight on the political and social evolution of Tehran–and Iran. Laced with brilliant touches of humor and irony, it is an excellent example of how ingenious Iranian filmmakers are "shooting between the lines" to address sensitive issues.

**Detroit Unleaded.** Rola Nashef, dir. 2007, U.S., 20'. Free with newsletter signup.
A young man named Sami believes his family's Detroit gas station will provide him with a place to meet his girl, Naj, away from family pressures and friends. His cousin Mike is sure it holds the key to an empire built on cigarette papers and fake perfume. This gritty, daylong view of a neighborhood convenience store probes relationships between its Arab-American owners and their African-American customers by exploring themes of race, economics, friendship and love through the identities and encounters that shape the Arab-American and immigrant experience.


**Iron Island.** Mohammad Rasoulof, dir. 2005, Iran, 90'. Farsi with English subtitles. Farabi Cinema Foundation (www.iranianmovies.com). $16.95 individual, $31.95 institutional.
Grizzled Captain Nemat presides over dozens of homeless, marginalized Arab families and workers who have formed a community on a mothballed, rusting tanker off the Iranian coast. He dispenses largess, settles disputes and cuts backroom deals, controlling residents with absolute power. This works as long as everyone acquiesces. However, violent crises strike when young lovers attempt to defy his authority, and when business interests seek to seize the slowly sinking ship, evict the residents and sell it for scrap. What future has this sinking city?

# Classroom Guide




FOR STUDENTS

We hope this two-page guide will help sharpen your reading skills and deepen your understanding of this issue's articles.

FOR TEACHERS

We encourage reproduction and adaptation of these ideas, freely and without further permission from *Saudi Aramco World*, by teachers at any level, whether working in a classroom or through home study.

—THE EDITORS

WRITTEN BY JULIE WEISS

**Julie Weiss** is an education consultant based in Eliot, Maine. She holds a Ph.D. in American studies. Her company, Unlimited Horizons, develops social studies, media literacy and English as a Second Language curricula and produces textbook materials.

## CLASS ACTIVITIES

*The world is a complex place—so complex, in fact, that it can be hard to see, let alone understand, its many elements and aspects. This Classroom Guide focuses on seeing and understanding complexity, from a multi-layered ancient city that's modernizing, to the complicated process of saving an animal species from extinction, to the tiling found on some medieval buildings that mathematicians have only recently begun to understand. In the activities that follow, you'll identify elements of complicated situations and images, explore what makes it difficult to see them in all their complexity, discuss the benefits that come from deeper understanding, and examine the problems that arise when one fails to take complexity into account.*

### Theme: Understanding Complexity

**What are the elements of two specific complex situations?**

Both "Istanbul's Opening" and "Rx for Oryx" describe very complicated situations. The former describes a city that one artist calls "multi-layered." The latter describes efforts to save the oryx from extinction. Start with "Istanbul's Opening." Read the article, which describes the flowering of Istanbul's arts scene. Working with a group, list the following on chart paper: theater, museums, literature, architecture. After each item, leave space. With your group, fill in the spaces with information from the article about each of the cultural forms/institutions on the list. When you're done, look at your chart. What does it reveal about Istanbul today? Write an answer on your chart. Make it one sentence that starts: "Istanbul today..." Then compare your chart with another group's to see if you have similar understandings of the article. Discuss and clarify any differences.

With your group, answer these questions: Do you think there's a connection between Istanbul's multi-faceted culture and the fact that half of the city's population is under 30? If so, what might it be? How do you think your community would be different if half its residents were under 30? Brainstorm what it might be like, and share your ideas with the rest of the class. What does your imagined youthful community have in common with Istanbul? How is it different? What accounts for the differences?

Now turn your attention to "Rx for Oryx." Read the article. With your group, organize what you've read by making a web. In the center, write "Saving the Oryx." From the center, spin out the many factors that the article suggests must be taken into account in order to achieve the goal of saving the oryx.

Once you've done that, spin your web further. Based on the different factors you have identified on your web, what actions have different organizations in the Middle East (including governments) taken to preserve the oryx? Add those actions to the web, connecting each to any specific factors they relate to. Jot down a preliminary answer to the question: "What actions have been taken as a result of seeing the complex circumstances involved in saving the oryx?"

**What makes it difficult to see situations in all their complexity? What are the consequences of failing to see many facets of a situation?**

When you look at your web, you'll notice that not every factor on your web was considered in every location where oryx preservation efforts have been undertaken. Based on what you've read, discuss which of the factors people have had the most difficulty recognizing. Next to those factors on your web, write why you think it has been so difficult to see them. For example, the Omani government failed to see that tribal tensions might hobble their plan to protect the oryx. Why do you think that was the case? What made it difficult to see that tribal relations might affect the success of the plan to save the oryx? What action might have been taken to prevent the problems that arose? What have other oryx preservation efforts learned from Oman's experience? What have they done differently as a result?

Then think about the consequences of not seeing the importance of each factor. What, for example, was the unintended consequence of the Omani government's failure to see the importance of tribal rivalries? How did that consequence affect the success of the government's oryx preservation plan? Are there other situations in the article where you can see the potential for other unintended consequences? On your web, use another color to write next to each factor what you think might happen if this factor were to be overlooked.

**How do stereotypes limit people's ability to see the complexity of situations and other people?**

Turn your attention again to "Istanbul's Opening." Part of the article discusses stereotypes. Find a definition for *stereotype* and write it down. As a class, identify and list the stereotypes that artists in Istanbul confront. How do the stereotypes differ from the artists' own understanding of their city, country, and region? How do the stereotypes interfere with people's ability to see Istanbul as it is, rather than how they imagine it to be?

Take the role of one of the artists, and write or present orally a statement explaining what the stereotypes are, what problems they raise for you as an artist and how you deal with them. Use the information in the article from artists, as well as your empathetic imagination, to complete the task.

To find out one way that people are dealing with stereotypes, read "The Art of Volunteerism" on page nine. Working in pairs, imagine one of you is a person in the living library, while the other is a borrower. How would you feel as the borrower? How would you feel if you were the person being questioned by the borrower? Do you imagine that the living library is effective in combating stereotypes? If so, what makes it effective? If not, why don't you think it would work?

**What are the benefits of seeing a situation in its complexity? What difficulties arise from seeing it that way?**

"Istanbul's Opening" says that artists find the city's complexity beneficial as well as challenging. Elif Shafak put it this way: "This complexity makes the city more difficult to understand but all the more stimulating for artists and writers. Wherever you turn, there are stories piled up." Use information about Istanbul and one of the examples of art created there to illustrate Shafak's point. Make notes and have volunteers present their analyses to the class. As a class, discuss whether you think the benefits of understanding Istanbul's complexity outweigh the difficulties, or vice versa.

Think back to the oryx. You have already considered some of the problems that arose from not seeing the facets of the situation sufficiently. Now look at the article and at your webs and answer the question: "How have efforts to save the oryx been helped by a thorough understanding of the circumstances in which preservation efforts have taken place?" Write your answer as an informational caption that could accompany one of the photographs in the article.

Of course, it's not always easy to tell whether something is an advantage or a disadvantage. "Rx for Oryx" raises challenging questions about how preservation efforts are affecting the oryx population—and not just the numbers of oryx that exist, but how they behave. Re-read the part of the article that addresses how eco-tourism has changed the oryx habitat and consequently oryx behavior. What are some of those changes?

## VISUAL ANALYSIS

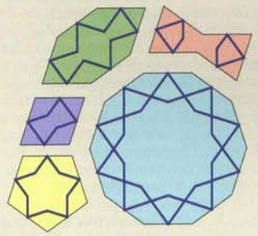
In the preceding activities, you have looked at the difficulty, and the value, of understanding the complexity of situations. What about visual complexity? "The Tiles of Infinity" shows and explains an excellent example. To conduct this visual analysis, you will first need to read "The Tiles of Infinity." You may wish to do so with a partner so that you can discuss any parts you don't understand. Highlight in the article the explanation of the Penrose quasicrystal pattern, and what makes it unique. To help you understand it, let's look at some of the visual images and the captions that describe them. Page 28 shows the two shapes that Penrose identified as making possible non-periodic tiling: "kites" and "darts." Look at the two shapes and read the caption that explains how they are formed.

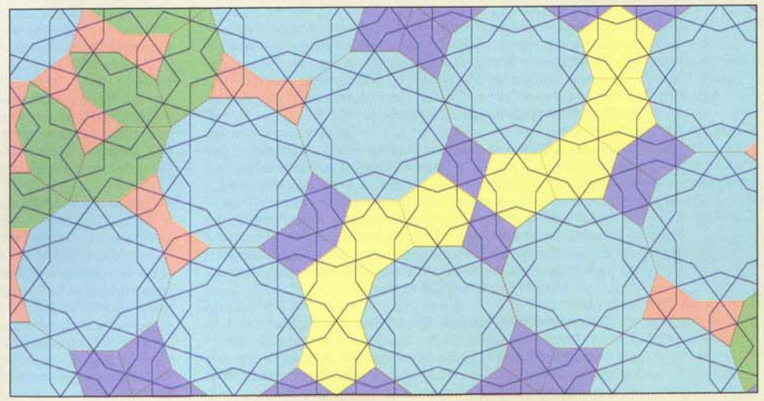
Then turn to page 27. The right-hand column shows five shapes that can be made from these two basic shapes. Label the hexagon, bowtie, decagon, rhombus and pentagon. Trace with your finger or a pen the kites and darts that make up the shapes. Notice the colors that have been given to the shapes—you will use them to analyze the next image.

Then look at the image on the bottom left on page 27, from the Topkapı Scroll. With your partner, or as a class, use the color coding for the five shapes to locate and identify them. What do you notice about any patterns the shapes create? What you observe should fit with the explanation of Penrose patterns that you read. Does it?

Next, look at the solid blue lines. What do they show? How do they relate to the different-colored shapes you've already identified? Write a sentence that explains what the solid blue lines show. Then look at the dotted red lines. What do they show? What can you perceive in the tiling because the dotted red lines are there? Write another sentence, this one explaining what the dotted red lines show.

Now that you can see some of the complexity of the Penrose patterns, think about some of the questions you considered earlier about the value of such understanding. How does seeing and understanding the Penrose patterns affect your perceptions of the tiling on the buildings that the photographs show? Does it increase your appreciation for the tiling? Would you want to explain to someone who doesn't know about Penrose quasicrystal patterns what you can see in the tilings? Or maybe you find that knowing about the underlying complexity of the tiling affects you in a negative way. If so, explain how it affects you and why you don't like it. Overall, do the benefits of understanding the Penrose pattern outweigh the difficulties, or vice versa? Why?





## Enamels of the World, 1700–2000

features some 320 pieces in the inaugural presentation of a remarkable new facet of The Khalili Collections, now best known for their Islamic art. The enamel collection views the subject in a global context rather than within the confines of national boundaries or individual activity, and the overview focuses on enamelwork of the past 300 years, encompassing objects produced in all the major centers of the art, including the Islamic lands. It offers an unparalleled opportunity to survey enamelwork of a specific country in its own context and also as part of a wider history, and to judge the impact of travel in the activities of itinerant craftsmen who introduced new techniques and styles to the lands they visited. The richness of the collection also ensures that the work of individual enamelers may be studied in detail. Tickets: www.hermitagemuseum.org. State Hermitage Museum, **St. Petersburg, Russia**, December 8 through March 14.

**This gold enameled box, only 8.9 centimeters (3½") in diameter, was crafted in Qajar Iran in about 1800. It is signed and inscribed, "Painted by the most humble Muhsin of Aleppo."**

CURRENT **September**

**Afghanistan:** *Hidden Treasures from the National Museum, Kabul* explores the cultural heritage of ancient Afghanistan from the Bronze Age (2500 BC) through the rise of trade along the Silk Roads in the first century of our era. Among the nearly 230 works on view, all from the National Museum of Afghanistan in Kabul, are artifacts as old as 4000 years, as well as gold objects from the famed Bactrian Hoard, a 2000-year-old treasure of Bactrian grave goods excavated at Tillya Tepe in 1978 and long thought to have been stolen or destroyed, but rediscovered in 2003. The earliest objects in the exhibition, from Tepe Fullol in northern Afghanistan, are fragmentary gold vases dated between 2500 and 2200 BC. A second group, from the former Greek city Aï Khanum, reflects Mediterranean influence between the fourth and second centuries BC, and includes Corinthian capitals; bronze, ivory and stone sculptures representing Greek gods; and images of Central Asian figures carved in Hellenistic style. Trade goods from a third site, at Begram, date from the first century and include ivory statues and reliefs, as well as painted glassware, vases and bronzes, many imported from Roman, Indian, Chinese and East Asian markets. The Tillya Tepe group consists of some 100 first-century gold objects, including an exquisite crown and necklaces, belts, rings and headdresses. Metropolitan Museum of Art, **New York**, through September 20; Canadian Museum of Civilization, **Ottawa**, October 23 through March 28; Kunst- und Ausstellungshalle der Bundesrepublik Deutschland, **Bonn**, June 11 through October 3, 2010; British Museum, **London**, Spring 2011.

**The Beautiful Has Come:** *Portrait Masterpieces from the Egyptian Museum of Berlin* presents three portrait busts from the workshop of a craftsman conventionally known as Tuthmosis, who worked in the mid-14th century BC in the new capital, Akhetaton, of the "heretical" monotheistic pharaoh Amenhotep IV. A much earlier portrait bust also on display makes clear the anomalous nature of the art and sculpture of Amenhotep's time. Catalog. State Hermitage Museum, **St. Petersburg, Russia**, through September 20.

**Nagas:** *Hidden Hill People of India* documents a people divided into a number of tribes and subtribes that speak as many as 30 different languages and live in the low Himalayan hills of northeastern India and Myanmar. Photographer Pablo Bartholomew offers a visual anthropology of these former headhunters now faced with both tradition and transition, particularly the preservation of their traditional culture and their interaction with western religion and influence. Rubin Museum of Art, **New York**, through September 21.

**Adventures With Hamza:** *The Hamzanama. Research and Conservation* commemorates the end of a 10-year project to conserve 60 folios from a 16th-century Mughal manuscript purchased by the museum in 1873. The exhibition documents the individual steps of restoration and preservation, and presents new information about the illustrated manuscript's origins, use and alteration, that was revealed in conservation, adding to its importance as a touchstone of Mughal painting. The manuscript was commissioned by Emperor Akbar the Great and originally included 1400 folios, of which only 200 remain. The tales in it describe the adventures of Hamza ibn 'Abd al-Mutallib, the uncle of the Prophet Muhammad. Museum für Angewandte Kunst, **Vienna**, through September 27.

**From the Land of the Taj Mahal:** *Paintings for India's Mughal Emperors in the Chester Beatty Library.* Among the most remarkable of Mughal paintings and calligraphies are those commissioned by the Emperors Jahangir (1605–1627) and Shah Jahan (1627–1658) for display in lavish imperial albums. A window into the world-views of the emperors, these exquisite images depict the rulers, the imperial family in relaxed private settings, Sufi teachers and mystics, allies and courtiers, and natural-history subjects. Many folios are full-page paintings with superb figural borders; others are collages of European, Persian and Mughal works collected by the emperors. Produced by the atelier's leading artists, they reveal the conceptual and artistic sophistication of the arts of the book at their apex in the early 17th century. The exhibition brings together 86 masterpieces—many not previously exhibited in the United States—from the renowned Dublin collection. Catalog $45. **Denver [Colorado]** Art Museum, through September 27.

**Palestine c/o Venice**, a collateral event of the Venice Biennale, presents seven artists working in Palestine and around the world who represent a microcosm of contemporary artistic production, responding to current social, cultural and political realities. The exhibition's title underscores the chronic impermanence that Palestinian artists must surmount by "creative resistance." Multimedia, video, animation, sound, photography and performance works are included. Convento Ss. Cosma & Damiano, **Venice**, through September 30.

CURRENT **October**

**To Live Forever:** *Egyptian Treasures from the Brooklyn Museum* uses some 120 pieces of jewelry, statues, coffins and vessels dating from 3600 BC to the year 400 of our era to illustrate the range of strategies and preparations that the ancient Egyptians developed to defeat death and to achieve success in the afterlife. The exhibition explores the belief that death was an enemy that could be vanquished, a primary cultural tenet of ancient Egyptian civilization. The exhibition explains the process of mummification, the economics and rituals of memorials, the contents of the tomb, the funeral accessories—differentiated by the class of the deceased—and the idealized afterlife. Exhibits include the vividly painted coffin of a mayor of Thebes, mummies, stone statues, gold jewelry, amulets and canopic jars. Chrysler Museum of Art, **Norfolk, Virginia**, October 9 through January 3; **Brooklyn [New York]** Museum, New York, February 12–May 2.

**Encompassing the Globe:** *Portugal and the World in the 16th and 17th Centuries* brings together approximately 200 extraordinary objects reflecting the unprecedented cross-cultural dialogue that followed the establishment of Portugal's world trading network in the 16th and 17th centuries. Portugal was the first European nation to build an extensive commercial empire, which soon reached to Africa, India, China, Southeast Asia, Japan and Brazil, and led to the creation of highly original works of art, some intended for export and others for domestic consumption in their countries of origin. Initially displayed in princely "wonder cabinets"—the ancestors of the modern museum—and now scattered throughout the world, the paintings, sculptures, manuscripts, maps, early books and other objects assembled here provide a rich image of a "new world" during its formation. Museu Nacional de Arte Antigua, **Lisbon**, through October 11.

**Silk Ikats of Central Asia** *From the Collection of the Islamic Arts Museum Malaysia* is an exhibition of late 19th-century robes, tunics and textile panels that presents the remarkable artistic achievement and technical virtuosity of the silk designers, dyers and weavers of Central Asia. Within and ouside the borders of Central Asia, ikat textiles had political and social value, and were used as payment for services rendered, as dowry and bride price, in diplomatic exchanges and as gifts to monarchs. Great pride was taken in the esthetic quality and bold originality of the designs of these fabrics, which came to symbolize the exoticism of the Islamic world. Art Gallery of New South Wales, **Sydney, Australia**, through October 11.

**Dance of Fire:** *Iznik Tiles and Ceramics* is designed to give a comprehensive picture of this unique art form, tracing its development from the earliest examples, dating from the 15th century, to the last ones from the 17th century. The wide range of exhibits illustrates the outstanding creativity of the Iznik craftsmen, the extraordinary diversity of their decorative repertoire, their skilled use of color and their constant search for technical innovation. The juxtaposition of pieces made from the same clay, shaped by the same potter and sometimes fired in the same kiln is important from the point of view of both art history and the history of technological change in Ottoman pottery manufacture. Sadberk Hanım Museum, Büyükdere, **Istanbul**, through October 11.



**Garden and Cosmos:** *The Royal Paintings of Jodhpur* features 56 paintings from India that reveal a unique art tradition of the royal courts between the 17th and 19th centuries. During this period, the region of Jodhpur, in modern-day Rajasthan, produced a distinctive and inventive painting style. Paintings produced for the private enjoyment of the maharaja and his court brought traditional Rajasthani styles together with styles developed in the imperial court of the Mughals. The paintings range from miniatures to monumental artworks depicting the palaces, wives and families of the Jodhpur rulers. Later works depict epic narratives, and demonstrate the devotion of Maharaja Man Singh to an esoteric yogic tradition. Jodhpur artists rose to the challenge of creating images for metaphysical concepts and yoga narratives, which had never previously been the focus of the region's court art. British Museum, **London**, through October 11; Art Gallery of New South Wales, **Sydney, Australia**, October 29 through January 26.

**Walls of Algiers:** *Narratives of the City* examines a complex history through 19th- and 20th-century photographs, postcards, illustrated books and drawings. Legendary for its white walls cascading to the Mediterranean, Algiers served as an experimental site where intricate colonial strategies were rehearsed and tested, from the time of the French conquest in 1830 until independence in 1962. These policies changed the city, creating an urban duality that separated the "Arab" quarters (the Kasbah) from the new French settlements. The exhibition also features historical voices drawn from government and military reports, scholarly essays, travel accounts, novels and poems. Getty Center, **Los Angeles**, through October 18.

**Tutankhamun: The Golden King and the Great Pharaohs** is [another] extensive exhibition of more than 140 treasures from the tomb of the celebrated pharaoh and other sites. It includes his golden sandals, created specifically for the afterlife and found on his feet when his mummy was unwrapped; one of the gold canopic coffinettes, inlaid with jewels, that contained his mummified internal organs; and a three-meter figure depicting Tutankhamun as a young man. Providing context and additional information are 75 objects from other tombs in the Valley of the Kings, including objects related to Khefren (Cheops), Hatshepsut and Psusennes I. Children's Museum of **Indianapolis**, through October 25; Art Gallery of Ontario, **Toronto**, November 24 through April 18.

CURRENT **November**

**Chalo! India:** *A New Era of Indian Art* explores the present state of Indian contemporary art and the great changes it has gone through in recent years, examining the work of artists who attempt to question the reality of the society and age in which they live by taking subject matters from their everyday surroundings and transforming them through their art into a theatre of life. With more than 100 works by 27 artists, the exhibition encourages visitors to discover the great diversity of Indian contemporary art: "Chalo!" means "Let's go!" in Hindi. Essl Museum of Contemporary Art, **Vienna**, through November 1.

**Treasures of the World:** *Jewellery of India Under the Grand Moguls* includes more than 400 pieces of jewelry from the Mughal epoch that constitute the core of one of the great Islamic art collections of the late 20th century. The 13 sections of the exhibition not only display those amazing and in some cases unique works but also inform the viewer about materials and techniques. More important, the museum is already home to a magnificent collection of Mughal jewelry and applied arts, much of it presented to Czarina Elizabeth in 1741 by the Persian ruler Nadir Shah, who two years earlier had looted the imperial treasuries on his invasion of northern India. The conjunction of these two collections is a unique opportunity to study a period of unmatched esthetic splendor and technical skill. State Hermitage Museum, **St. Petersburg, Russia**, through November 8.

**Moving Perspectives:** *Shahzia Sikander/Sun Xun.* Trained in Pakistan and in the US, Shahzia Sikander (born 1969, Lahore, Pakistan) deftly reinterprets miniature painting by isolating and abstracting formal compositional elements often found in this densely layered and intricate art form. The dynamism of her paintings is set in motion in her video works, where the repetition of abstract forms becomes a buzzing hive, calligraphy whirls in and out of view, and imaginary curves morph into vivid landscapes. Similarly, Sun Xun (born 1980, Fuxin, China) creates hundreds of paintings and drawings by using old newspapers or entire blank walls. Sackler Gallery, **Washington, D.C.**, through November 8.

**Shrunken Treasures:** *Miniaturization in Books and Art* highlights more than 30 small-scale manuscripts and rare books, ranging from Books of Hours and copies of the Qur'an to almanacs and books of poetry, and explores the many reasons for miniaturizing art, from the need for portability, through the desire to concentrate supernatural powers, to the ambition to make boundary-stretching works of art. Walters Art Museum, **Baltimore**, through November 8.

**A Collector's Passion:** *South Asian Selections from the Nalin Collection* highlights the breadth of the holdings of Dr. David Nalin and explores South Asian art through a single collector's point of view. Rubin Museum of Art, **New York**, through November 9.

**Palestine:** *Creation in All Its States* follows on the IMA's 1997 show "Contemporary Palestinian Artists"—and the selection of Jerusalem as the Arab cultural capital for 2009—to present contemporary artists from Palestine or the diaspora who are working to identify elements of a distinctively Palestinian esthetic through the lens of their uniquely complex historical and political situation. The current exhibition adds depth by allowing comparisons of the work of women artists (Reem Bader, Rana Bishara, Rula Halawani, Mona Hatoum, Noel Jabbour, Raeda Saada, Ahlam Shibli), "grand old men" (Kamal Boullata, Samia Halaby, Laila Shawa, Suha Shuman) and "young lions" (Fawzy Amrany, Hazem Harb, Steve Sabella). Institut du Monde Arabe, **Paris**, through November 22.

**Rhythms of India:** *The Art of Nandalal Bose* is the first comprehensive exhibition outside Asia to survey the expansive repertoire of Nandalal Bose (1882–1966), the father of modern art in India. It features close to 100 of Bose's finest paintings, executed in a variety of styles and media, and reveals how Bose contributed to the success of India's non-violent struggle for independence through his close association with Mahatma Gandhi. The exhibition thus explores the crucial period of India's transition from British colony to independent nation through the lens of the country's premier artist of the time, and reveals how he laid the foundation for modern visual culture in India. Art Institute of **Chicago**, through November 29.

CURRENT **December**

**The Life of Meresamun:** *A Temple Singer in Ancient Egypt* focuses on the life of a priestess-musician in Egypt—probably Thebes—in about 800 BC. Centered on her coffin and mummy—recently scanned and "virtually" unwrapped—the exhibit illustrates the duties of a temple singer and explores what her life was like inside, as well as outside, the temple. Her temple duties are illustrated by such ritual objects as a sistrum, an ivory clapper, a harp and cult vessels; the section on her life outside the temple includes an examination of the social and legal rights of women in ancient Egypt and the professions open to them. Examples of domestic objects include dishes, jewelry and cosmetic vessels, while home religious rituals are illustrated by objects related to ancestor cults and fertility. Catalog. Oriental Institute Museum, **Chicago**, through December 6.

**Breaking the Veils** is an international art exhibition showcasing 51 women artists from 21 Islamic countries, designed to challenge contemporary stereotypes about the lives of women in the Islamic world and celebrate their artistic contribution in shaping a rich cultural heritage. Yale University Institute of Sacred Music, **New Haven, Connecticut**, through December 11.

CURRENT **January**

**Hanging Fire:** *Contemporary Art From Pakistan* examines the complex combination of influences forming contemporary artists in the country's urban centers of Karachi and Lahore. Though a country struggling with political and social instability, Pakistan has seen a vibrant yet little-known contemporary art scene flourish over the last two decades. The first major US museum survey exhibition devoted to contemporary art from Pakistan, *Hanging Fire*, curated by Salima Hashmi, explores this seeming contradiction with 55 works by 15 artists, comprising installation art, video, photography, painting and sculpture. Asia Society Museum, **New York**, through January 3.

**Cultural Exchange on the Northern Silk Road** exhibits visually stunning objects from the famous Turfan Collection that reveal the links among the oasis towns of the northern Silk Road. These objects include silk fragments with ornamental patterns, fragments of paintings adorned with gold and clay sculptures. The accompanying texts shed new light on the close ties among the various workshops and reveal the cultural exchange that occurred in terms of iconography and style. Staatliche Museen zu **Berlin**, Museen **Dahlem**, through January 3.

**Perspectives:** *Anish Kapoor.* The "Perspectives" series of contemporary Asian art resumes with "S-Curve" (2006) by internationally renowned Indian sculptor Anish Kapoor. Consisting of two two-meter-high, five-meter lengths of highly reflective polished steel, gently curved to create a continuous convex and concave wall, the work recalls the exploration of form that Kapoor most famously presented in "Cloud Gate" in Chicago's Millennium Park. Known for his sublime approach to pure form, space and materials since the early 1980's, Kapoor continues to examine spatial perception and the immateriality of the object through this work. Sackler Gallery, **Washington, D.C.**, through January 3.

**Rajasthan:** *Kings and Warriors.* The "land of kings" in northwestern India was far larger than its current extent before the arrival of the Mughals in the 16th century. After military conflict was past, however, the noble courts of Bundi, Kota, Udaipur, Jaipur and Jodhpur still had to confront the artistic innovations of the Mughals, and court artists created largely religious paintings that combined their own local style with the more naturalistic style of the Mughals. Museum Rietberg, **Zurich**, through January 10.

**Intervention #11:** *Eylem Aladoğan* includes the Turkish–Dutch artist's recent graphic work and an installation created especially for this exhibition. She uses commercial materials and modern techniques in her work, letting her "state of mind" guide her choice of materials and allowing their characteristics and limitations in turn to help shape the content of her art. Her work is often multilayered in both materials and in meaning. Museum Boijmans van Beuningen, **Rotterdam**, through January 10.

**Ayşe Erkmen:** *Roommates* refers to the room under the museum's glass cupola, where she has inserted a modest but disconcerting element: Swags of blue-gray, umber and gold fabric swoop and step among the steel beams overhead, turning the space's outer skin into a visual topic and creating a transition zone between outside and inside in which her work lives. The Istanbul-born artist lives and works there and in Berlin, and all her work is site-specific. Kunstsammlung Nordrhein-Westfalen, **Düsseldorf, Germany,** through January 17.

**The Two Qalams:** *Islamic Arts of Pen and Brush.* In Arabic, the word *qalam* originally meant the calligrapher's reed pen. Calligraphers were and are esteemed in Islam because their pens write the sacred words of the Qur'an.

The attitude toward painters, however, has not always been so positive since their brushes could depict—thus create—human and animal figures. Persian poets of the 16th century countered this negative perception by describing the painter's brush as a second *qalam*, equivalent to that of the calligrapher's pen. The two *qalams* came together in the vibrant bookmaking workshops of the Islamic courts of Persia and India, where calligraphers and painters collaborated to produce a wealth of illustrated manuscripts and elaborate albums filled with specimens of beautiful writing and painting. As seen in the 16th- through 19th-century album pages in the exhibition, the arts of pen and brush often merged with exquisite results. **Philadelphia** Museum of Art, through January.

CURRENT **February**

**Textile Tales:** *Ottoman Textiles in the MAK* presents artful embroidery from the 16th and 17th centuries, decorative scarves or turban wraps with intricate embroidery, lavishly patterned silk fabrics and an example of 18th-century silk ceremonial clothing with subtle embroidery. Not all the textiles shown originated within the Ottoman Empire: some come from European regions which the dynasty brought under its control for shorter or longer periods, including Greece, Romania, Bulgaria, Hungary, Serbia, Armenia and, very nearly, Austria. Museum für Angewandte Kunst, **Vienna**, through February 7.

**An Enduring Motif:** *The Pomegranate in Textiles* presents a cross-section of textiles from the museum's collection that feature this richly symbolic fruit. Originating in Persia several thousand years ago, the pomegranate has been revered for centuries as a symbol of health, fertility and resurrection. Ancient Egyptians were buried with pomegranates in hopes of a second life. In Greek mythology, the fruit is associated with Persephone. Judaism esteems the pomegranate as a symbol of righteousness and fruitfulness. In Christianity, representations of pomegranates are often woven into fabrics used for church vestments and hangings. Islam's four gardens of paradise—described in the Qur'an—contain pomegranates, and according to Islamic legend, each fruit contains one seed that has descended from paradise. Buddhists view pomegranates as one of three blessed fruits. **Philadelphia** Museum of Art, through February 21.

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## Sahra

Sahra is a gala charity concert celebrating Middle Eastern and North African culture and helping the region's children, at which more than 100 master musicians and dancers from a dozen countries will perform. Algerian-born recording artist Khaled, originator of the "pop rai" music genre, will sing, as will Assala, considered the successor to the legendary Fairouz; her current releases are in the musical style of the Arabian Gulf. Iraqi Rida Al Abdulla, who has performed professionally from the age of eight, released a fourth album in 2009 that breaks new ground in integrating western and Arab instrumentation, rhythms and production style. Other performers at the concert include Palestinian–American *'ud* virtuoso Simon Shaheen and Lebanese–American flute master Bassam Saba. Profits from the concert will be donated to charities that work for children in the Middle East and North Africa. For tickets: MGM Grand 866.740.7711 or Jarir Bookstore 877.995.2747. MGM Grand, **Las Vegas,** November 21.

**Assala, Rida Al Abdulla and Khaled are among the headliners at the Sahra concert.**

CURRENT **March and Later**

**Tutankhamun and the Golden Age of the Pharaohs** includes 130 works from the Egyptian National Museum, among them a selection of 50 spectacular objects excavated from the tomb of Tutankhamun, including one of the canopic coffinettes, inlaid with gold and precious stones, that contained his mummified internal organs. An additional 70 pieces in the exhibition derive from the tombs of royalty and high officials of the 18th Dynasty, primarily from the Valley of the Kings. These additional works place the unique finds from the tomb of Tutankhamun into context and illustrate the wealth and development of Egyptian burial practice during the New Kingdom. The exhibition is more than twice the size of the 1979 "King Tut" exhibition and is on an "encore tour" of US museums. Tickets: +1-877-888-8587. De Young Museum, **San Francisco**, through March 28.

**Splendor of Damascus:** *Textiles and Artifacts of Traditional Syria* is an exhibition of costumes, textiles, brasses, ceramics and musical instruments from Syria and Palestine. Antiochian Heritage Museum, **Ligonier, Pennsylvania**, through March.

COMING **September**

**Dutch New York Between East and West:** *The World of Margrieta van Varick* explores the life, times and possessions of a 17th-century New York shopkeeper. Born in the Netherlands, Margrieta van Varick spent part of her life in Malacca (now Malaysia) and arrived in Flatbush in 1686 with an astonishing array of eastern and European goods. A 1696 inventory—the heart of the exhibition—documents her personal and commercial belongings, but no other information about her is known. The exhibition reveals much about van Varick's time and place, demonstrates ways in which much else about her can be inferred, and examines why various of her possessions, including those from the Muslim East, might have been in the hands of a Flatbush minister's wife and shopkeeper. Catalog. ⓘ 212-501-3011 or programs@bgc.bard.edu. Bard Graduate Center, **New York**, September 17 through January 3.

COMING **October**

**The World of Islam in the Collection of the Aga Khan Museum** exhibits more than 180 works of art in leather, stone, gold, bronze, ivory, glass, ceramic, textile, parchment and paper from the 14 centuries and the vast geographical span of the Islamic world. CaixaForum, **Barcelona**, October through January.

**Alexander the Great and the Opening of the World:** *Asia's Cultures in Transition* follows the conqueror through Central Asia and focuses on the extensive cultural, economic and social changes unleashed by his passage. The exhibition includes objects lent by Uzbek museums (Samarkand, Tashkent and Termes) and the Tajikistan's National Museum of Antiquity as well as the Louvre, the British Museum and the Berlin Museums. Reiss-Engelhorn Museums, **Mannheim, Germany**, October 3 through February 21.

**Grass Roots:** *African Origins of an American Art* features approximately 225 humble but beautifully crafted coiled baskets that teach about the creativity and artistry of Africans in America from the 17th century to the present. The exhibition traces the parallel histories of coiled baskets in Africa and the Americas starting from the domestication of rice in Africa two millennia ago, through the history of the trans-Atlantic slave trade and the Carolina rice plantation, to the present. Fowler Museum at UCLA, **Los Angeles**, October 4 through January 10.

**Arts of Islam:** *Treasures from the Nasser D Khalili Collection* presents nearly 500 objects from the world's most comprehensive Islamic-art collection: manuscripts, paintings, rugs, ceramics and glassware, metalwork, jewelry, lacquerwork and works in wood and stone. The exhibition is organized under three themes: "Faith, Wisdom and Fate" deals with the relationship between art and the sacred; "Patronage" reflects the development of court arts, whose influence spread into broader society; and "A Universe of Forms and Colors" explores the burgeoning of creation for the sake of sensory delight, a foretaste of paradise. Institut du Monde Arabe, **Paris**, October 6 through March 14.

**Genghis Khan and the Mongol Empire** features artifacts from the reign of the legendary leader, including a newly discovered mummy and tomb treasures. Genghis conquered an empire three times the size of Julius Caesar's or Alexander's, but also established national parks, a postal system and the concept of international law, and set the boundaries of some modern nations. His empire was the safest and most tolerant of lands Approximately 200 artifacts are on display, including Mongolian costumes, headdresses and instruments from the National Museum of Mongolian History, and imperial gold, metal ornaments, beads and a tombstone from Russia's State Hermitage Museum. **Denver [Colorado]**, Museum of Nature and Science, October 10 through January 10.

**Maharaja:** *The Splendour of India's Royal Courts* opens with the period of chaos and adventure that followed the collapse of the Mughal empire in the early 18th century and closes at the end of British rule in 1947. It explores the extraordinary culture of princely India, showcasing both Indian and western works that reflect different aspects of royal life. The exhibits include paintings, photography, textiles and dress, jewelry, jeweled objects, metalwork and furniture, and are explored within a broader historical context of princely life and ideals, patronage, court culture and alliances. Victoria and Albert Museum, **London**, October 10 through January 17.

**Persian Visions:** *Contemporary Photography From Iran* presents more than 60 images that provide a revealing view of Iranian life and experience. The 20 artists featured are among Iran's most celebrated and include Esmail Abbasi (references to Persian literature), Bahman Jalali, Shariyar Tavakoli (family histories), Mehran Mohajer, Shoukoufeh Alidousti (self-portraits and family photographs) and Ebrahim Kahdem-Bayatvin. Some have lived abroad and returned to view their homeland from a changed perspective. Anti-exotic and specific, these images make up the first survey of contemporary Iranian photography to be presented in the United States. Haggerty Museum of Art, **Milwaukee, Wisconsin**, October 15 through January 17.

DAWN ELDER WORLD ENTERTAINMENT

**Heroes and Villains:** *The Battle for Good in India's Comics* examines the legacy of heroes and heroines of ancient Indian mythology in contemporary South Asian culture through the comic-book genre, which can be understood as an ongoing dialogue between American and South Asian visual culture. The exhibition presents a selection of vintage Indian and American comics and contemporary pencil-and-ink–drawn character explorations from the current Virgin Comic series *Ramayan* and *Devi*, as well as a selection of historical Indian court paintings, underlining the continuity of the heroic narrative tradition in Indian art. **Los Angeles** County Museum of Art, October 15 through February 7.

**Content and Strategies for Teaching About the Arab World** is the theme of a one-day teachers' workshop conducted by Arab World and Islamic Resources and School Services (AWAIR). ⓘ www.awaironline.org or awair@igc.org. Rice University, **Houston**, October 17.

**The Secrets of Tomb 10A:** *Egypt 2000 BC* introduces the concepts of the afterlife in the Middle Kingdom (2040–1640 BC) by a journey through the remarkable tomb of Djehutynakht and its many objects. In a 1915 excavation, the MFA found, in jumbled disarray, the largest Middle Kingdom burial assemblage ever discovered. The tomb was filled with the funerary equipment of a local governor and his wife, and contained four beautifully painted coffins, one of which may be the finest painted coffin Egypt produced and a masterpiece of panel painting. Additionally, it included Djehutynakht's jewelry, walking sticks, canopic jars and other objects, plus models of what must have been the governor's estate. Most of the objects have never been displayed before. Museum of Fine Arts, **Boston**, October 18 through May 16.

**Women of the Muslim World:** *What We Can Learn From Their Contemporary Art* is the theme of this one-day teachers' workshop in conjunction with the art exhibition "Breaking the Veils" running concurrently at Yale University. Conducted by Arab World and Islamic Resources and School Services (AWAIR), this workshop comes complete with curriculum resources and hands-on activities while teachers and students are actually viewing this remarkable exhibition. ⓘ www.awaironline.org or awair@igc.org. Yale University, **New Haven, Connecticut**, October 24.

**The Silk Road:** *A Trip Through Life and Death* tells the story of the great cultural and technological exchanges that took place 2000 years ago along the Silk Roads. Silk and other luxury products were not the only goods traded: Ideas, technologies and religions were also exchanged by merchants, craftsmen and soldiers. Europe learned about silk, paper, printing and porcelain from China; China acquired horsemanship, Buddhism, glassworking and silver- and goldsmithing. Visitors will take part in a historical and geographic voyage: The first dealing with the rise of the Silk Roads, Chinese efforts to control traffic along them and their resurgence in modern times. In the geographical voyage, the visitor will "travel" westward from Xi'an across passes, deserts, mountains and steppes to Kashgar. Musée du Cinquantenaire, **Brussels**, October 23 through February 7.

**Falnama:** *The Book of Omens* is the first exhibition ever devoted to a category of extraordinary illustrated texts known as Falnama (Book[s] of Omens). Notable for their monumental size, brilliantly painted compositions and unusual subject matter, the manuscripts, created in Safavid Iran and Ottoman Turkey in the 16th and early 17th centuries, remain largely unpublished. Yet, whether by consulting the position of the planets, casting horoscopes or interpreting dreams, the art of divination was widely practiced throughout the Islamic world, and these texts were the most splendid tools ever devised to foretell the future. The exhibition sheds new light on their artistic, cultural and pious significance, displaying some 60 works of art on loan from international public and private collections. Catalog. Sackler Gallery, **Washington, D.C.**, October 24 through January 24.

**Nubian Vault Adobe Workshop** gives participants hands-on instruction in building the classic self-supporting Middle Eastern adobe-brick vault, roofing a nine-by-three-meter structure. ⓘ swan@adobealliance.org. **Presidio, Texas**, October 27 through mid-November.

COMING **November**

**And Diverse Are Their Hues:** *Color in Islamic Art and Culture* is a three-day symposium featuring scholars of Islamic art, architecture, literature and philosophy who will present papers on questions ranging from the practical and political reasons for certain color choices in manuscripts, carpets, ceramics and buildings to the phenomenology of color in medieval optics, Sufi mysticism and the Islamic garden. Keynote speakers are well-known art historians Sheila Blair and Jonathan Bloom. Registration is free and open to the public. ⓘ www.islamicartdoha.org. **Córdoba, Spain**, November 2–4.

**The Sharjah World Book Fair** is a 10-day culture-bridging event that showcases books published by more than 750 publishers from nearly 50 nations. Its goals are to encourage reading, especially among younger people, and to make quality books available at affordable prices. More than 400,000 visitors are expected at the 28th annual fair. **Sharjah, United Arab Emirates,** November 11–22.

**The Qur'an:** *Text, History and Culture* is the topic of the Sixth Biennial Conference on the Qur'an. It will focus on textual study of both the Qur'an itself and the history of the religious, intellectual and artistic activity that developed around it, but will also deal with Qur'an-related non-textual cultural, sociological and anthropological studies. ⓘ www.soas.ac.uk/islamicstudies/conferences/quran2009/. School of Oriental and African Studies, **London**, November 12–14.

COMING **December**

**The Elementary School Level:** *Content and Strategies for Teaching Arab Studies* is the theme of this one-day teachers' workshop conducted by Arab World and Islamic Resources and School Services (AWAIR). Chicago Public Schools is one of the growing number of systems where Arabic is offered as a language program beginning at the elementary-school level. There will also be a full-day program for high-school teachers in the International Baccalaureate Schools program. ⓘ www.awaironline.org or awair@igc.org. **Chicago**, December 4.

**Kantha:** *The Embroidered Quilts of Bengal*. Stitching *kanthas* was an art practiced by women across Bengal, a region today comprising the nation of Bangladesh and the state of West Bengal, India. Lovingly created from the remnants of worn garments, kanthas are embroidered with motifs and tales drawn from a rich local repertoire and used especially in the celebration of births, weddings and other family occasions. The exhibition presents some 40 examples created during the 19th century and the first half of the 20th, when this vibrant domestic art flourished, and encompasses works by women of diverse backgrounds—rural and urban, Hindu and Muslim. **Philadelphia** Museum of Art, mid-December through July.

COMING **January and later**

**The Seventh International Congress on the Archaeology of the Ancient Near East**, the major international forum for Near Eastern archaeology, will be hosted jointly by the British Museum and University College London. ICAANE is held every two years in a different country and attracts 600 to 700 participants each year. ⓘ www.7icaane.org or admin@7icaane.org. **London**, April 12–16.

**PERMANENT**

**The Saudi Aramco Exhibit** relates the heritage of Arab-Islamic scientists and scholars of the past to the technology of today's petroleum exploration, production and transportation, set against the background of the natural history of Saudi Arabia. **Dhahran, Saudi Arabia**.

*Information is correct at press time, but please reconfirm dates and times before traveling. Most institutions listed have further information available at their Web sites. Readers are welcome to submit information for possible inclusion in this listing. Some listings have been kindly provided to us by* Canvas, *the art and culture magazine for the Middle East and the Arab world.*

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