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Figure 3. Redevelopment of Chicago's South Side (5). Courtesy of Michael Reese Hospital.

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General References


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ISLAMIC ARCHITECTURE AND URBANISM

Many people have preconceived ideas about Islamic architecture as consisting of a distinctive style. Much has been written on the development, spread, and qualities of this style, and it is suggested that the reader refer to the bibliography for information of that kind. It is more appropriate in this encyclopedic context to discuss the essential underlying factors that have shaped the traditional built envi-
ronment in Islamic culture. Therefore, this article is not about style, nor about buildings in isolation. It is, instead, about the interaction of societal values—which in Islamic culture are directly rooted in religion—with decision making, the production process, and the resulting built form. The context of the discussion is holistic, beyond the building scale, to produce a clear understanding of the relationship of the part to the whole, the building to its immediate surroundings and to the urban scale. An understanding of the reciprocal effects of the overall built environment and the various levels of the environment, down to single buildings and their design, is crucial to a comprehension of architecture in the context of Islamic culture.

The levels of the environment to be stressed are the city, neighborhood, clusters of buildings, and the single building. That order is not always critical to the following discussions, but the relationship between levels should be kept in mind, particularly when trying to interrelate the impact of values underlying decision making and the nature of the production and construction processes. Thus, a clear understanding of the overall system that prevailed in traditional Islamic societies, as well as the changes that have occurred in contemporary times, is fundamental.

The first part of the article is a discussion of the traditional system that produced the built environment, and is followed by a survey of the changes that have occurred in contemporary times, using the case of Saudi Arabia as a focus for discussion to illuminate why most contemporary urbanism and architecture produced in the Islamic countries cannot be described as Islamic. The third part discusses ways of learning from the past and recycling the traditional experience toward the goal of reestablishing authenticity and identity for contemporary and future architecture in Islamic countries.

THE TRADITIONAL SETTING

Pre-Islamic settlement patterns, building typologies, construction techniques, and related decision-making processes influenced the emergent pattern of built form in Islamic cultures. One of the verses in the Quran, the holy book of Islam, is interpreted by some Muslim scholars as an instruction to accept local traditions and conventions, provided they do not contravene Islamic values, ethics, or codes. The Quran is considered by Muslims to be the word of God as revealed to the Prophet Mohammed. The applicable verse (from Surah, or chapter, 7 titled Al-A'raf, verse number 199) uses the Arabic term urf to refer to an established local tradition for how something is to be done.

From the sketchy evidence available, the predominant pattern of settlement in Medina, the city in Arabia where the Prophet Mohammed chose to settle during the last decade of his life, was similar to the ancient Mesopotamian model of clustered courtyard buildings (1). Evidence of this tradition dates back to about 2500 B.C. in towns such as Ur, an ancient city in Southern Mesopotamia, (now contemporary Iraq). Archaeological digs in Ur were undertaken by the architect-archaeologist Leonard Woolley in the late 1920s; his findings were published in the early 1930s (2). Part of Woolley's discovery was the Omen Text, which contains various omens, some relating to building design; these may reflect some of the values of the people of that ancient time. Consider the following examples.

If a house blocks the main street in its building, the owners of the house will die; if a home overshadows or obstructs the side of the main street, the heart of the dweller in that house will not be glad.

If the water in the court runs to the back, expense will be continued; if the water in the court runs to the middle of the court, that man will have wealth.

Woolley published portions of the plan of Ur. Figure 1 reproduces a segment, along with, for comparative purposes, part of the plan of Tunis Medina as documented in the 1960s. Contemplation of the complex plan pattern raises the question of how the common wall problems were addressed and resolved. Later it will be shown how this and other problems related to this pattern and type of construction were addressed by Islamic law. Pre-Islamic legal precedents seem to have existed, as evidenced by the work of some scholars (3,4).

After these brief notes on the pre-Islamic pattern, consider now the system of building and urbanism as it evolved in Islamic culture. Islam was proclaimed by the Prophet Mohammed soon after 610 A.D. in Makkah, 450 km (280 mi) south of Medina, where the Prophet finally settled in 622 A.D. That date represents year 1 of the Islamic calendar.

The next decade in Medina, which came under the guidance and leadership of the Prophet, is considered very important as a source of example and precedent for all aspects of Islamic community living, including building. A number of cases are recorded of the Prophet's attitude to specific problems related to building activity. This is also true of the caliphs who succeeded him, including Omar bin Al-Khattab, the second caliph, who ruled during the period 634 to 644 A.D. This guidance concerning building proved to be particularly crucial for the Maliki School of Law, which evolved under Malik ben Anas (712–795 A.D.), who lived all his life in Medina and whose followers live to this day in the maghreb countries of Libya, Tunisia, Algeria, Morocco, and also in Andalusia on the Iberian peninsula until the early 1500s.

During the first three centuries of Islam, a number of schools of thought and approaches to law were formulated. Under the Sunni branch of Islam, the survivors today are grouped into four schools: Hanafi, Maliki, Shafi'i, and Hanbali. Followers of Sunni Islam constitute the majority in the Muslim world, although in Iran, parts of Iraq, and some communities in Syria and Lebanon, the people are followers of Shi'ism and have their own school of law. It is important to note that the legal differences about building are minor, and result from different interpretations by the various schools of law. Thus, the discussion based on the Maliki School in North Africa would largely hold true for other regions of the Muslim world.

Eighty-three years after the Prophet's death on June 8, 632, Islam already encompassed a vast territory stretch-
ing from the shores of the Atlantic Ocean and the Pyrenees to the borders of China—an area greater than Rome’s at its zenith. This was achieved under the leadership of Abd al-Malik (685–705 A.D.) from his seat in Damascus, and his four sons who succeeded him.

Across this vast geographic area, three factors influenced the nature of building and planning as it evolved within the framework of Islamic civilization. First, the urban models of pre-Islamic cultures and civilizations in territories converted to Islam influenced the evolution of the structure and form of subsequent Islamic cities. This was particularly true in the region known as the Fertile Crescent and in Iran. Second, the camel was the primary means of transportation, predominating in the Middle East between the fourth and sixth centuries A.D. (5). This important and often forgotten factor had a major impact on the street system and urban form of the Islamic city. Finally, the location of most territories of the Islamic world between latitudes 10 and 40°, and the resulting similarity in macroclimatic conditions, contributed toward certain unifying influences in building practice.

Some historians agree that three discernible urban models evolved within the framework of Islamic civilization. These are the renewed or remodeled pre-Islamic city; the planned and designed city; and the spontaneously created and incrementally grown city.

The renewed city is found most often in previously held Roman territories, and is exemplified by Damascus and Aleppo. Earlier structures and configurations were altered to suit the social requirements of the Muslim community. The pre-Islamic Southwest Arabian model of isolated multistory structures, such as Sana’a and particularly prevalent in Yemen, is also classified under this model grouping.

Research is required to determine why this type did not spread beyond the few localities in which it arose.

The second type of city was preplanned and designed by Muslim rulers to be the capital of a dynasty or, more typically, as the seat of a palace complex and its related facilities. A prime example of a city constructed as a complete entity was the original round city of Baghdad, while Al-Abbasiyah, south of present Kairouan, was a palace complex; neither survives today. The model influencing the plan and design of this second type of city can generally be identified by the geographic location. In the case of the mashreq (eastern regions), pre-Islamic models had a distinct influence, whereas in the maghreb (western regions), the influences on the ruler and his experiences determined the model and approach followed. After the collapse of a dynasty, the tradition was to abandon this type of city or palace complex, with the result that today they remain as ruins or are completely obliterated and require restoration by archaeologists.

The third model of the Islamic city proved to be the most enduring and pervasive, and today most of the older areas of capitals and major towns in the Muslim world evolved out of this model (Figs. 2 and 3). The best examples of the old quarters or medina survive in the maghreb countries, but in some instances are severely threatened today by the automobile.

Although the organizational principles of this model predate Islam by at least 2500 years and were particularly common in southern Mesopotamia, the strength, characteristics, and longevity of this city type reflect the manner in which building activity was pursued in Islamic society. The initial model for this building process occurred in Medina since the Prophet’s arrival there in 622 A.D. Note
that this article focuses on this predominant model, found most often in the Maghreb countries, and built under the guidance of the Maliki school of law.

Viewing the city as a process and a product is an effective analytical–evaluation and planning tool, and is indispensable for the study of the Islamic city. The process encompasses the decision making in building activity as guided by Islamic values. Looking at the city as a product clarifies how a complex, heterogeneous, and sophisticated built form is achievable with a simple set of physical organizational components, and a related mechanism of verbal communication used in building decisions. The essential urban elements are the courtyard building, the street system, and the elements above the street.

The Courtyard Building. This is the basic module used for housing and public buildings. The ratio of building area to plot is 1:1 (Fig. 1). In housing, the courtyard takes up approximately 24% of the ground coverage, and the building is one, two, or occasionally three stories in height. Public buildings differ in their ratio of courtyard size to ground coverage, and the height is one story, as in mosques, but frequently is two stories, as in a funduk or khan (hostels for merchants). It should be noted that the Prophet affirmed the use of this plan type by building his mosque–residence soon after his arrival in Medina in the form of a square courtyard structure.

The Street System. Street systems are primarily of two types: the through, open-ended street, which was considered a public right of way and had to be wide enough for two packed camels to pass; and the cul-de-sac which, according to Islamic law, is considered to be the private property of the people living on it.

Elements Above the Street. The elements usually found above the street were a sabat, a room actually bridging the street, and the buttressing arches spanning between walls on either side of the street to provide structural strength and support (Fig. 4).

In addition to this basically simple set of organizational elements, the Islamic city evolved a sophisticated communication system in the form of a language or vocabulary of building design that operated at all scales of the built environment. At the scale of the city, it identified urban elements such as building types, public squares, and other uses. At the building scale, it identified spatial configurations and related uses, as well as details of construction, decoration, and symbolic motifs. An important attribute of this language was that it integrated a physical component's form and function into its name. This vocabulary was known and popular among most segments of society involved in building activity, and it was an effective communication device between users and builders. Regional variations in the design vocabulary existed, but the language was unified by the similarity of the built form and its constituents.

The process can best be appreciated by viewing the dynamics of building decision making as affecting two scales of the city: citywide and neighborhood. Decisions about the citywide scale were usually made by the ruler or government; they concerned the birth, growth, and revitalization of a city, and would include the location of the
building activity became the concern of the science of fiqh from its very early development. Fiqh is the Arabic term for jurisprudence, or the science of religious law in Islam. It concerns itself with two spheres of activity: ibadat, dealing with matters concerning ritual observances; and muamalat, the legal questions that arise in social life (e.g., family law, law of inheritance, of property, of contracts, criminal law, etc.), and problems arising from building activity and related procedures. The latter were viewed by the fiqh in the same light as other problems resulting from human activities and interaction. In essence, therefore, fiqh is the science of laws based on religion and is concerned with all aspects of public and private life and business.

The bulk of the knowledge developed by the fiqh for most aspects of human relationships, including those of building activity, appeared in the first 300 years of Islam, although subsequent generations developed and refined it. The source of most guidelines stemmed from Qur'anic values and from the Hadith which are the sayings and tradition of the Prophet particularly during the decade of his leadership and rule in Medina. (The term sunnah is more commonly used to mean the total traditions of the Prophet, including his deeds and life-style, as well as his sayings). Note that the recorded nature of most guidelines in the fiqh literature is implicit in the numerous cases also recorded which include the judgments of local kadiis (judges), and the opinions of muftis (specialists on the law who can give authoritative opinions on points of doctrine).

A set of guidelines documented in the literature of the Maliki school of law are identified and discussed elsewhere (6). Examples follow.

Avoid harm to others and oneself.
Accept the concept of interdependence.
Respect the privacy of the private domain of others, particularly avoiding the creation of direct visual corridors.
Respect the rights of original or earlier usage.
Respect the rights of building higher within one's air space.
Respect property of others.
The rights of preemption by adjacent neighbors.
Seven cubits as the minimum width of public thorough-streets (to allow two fully loaded camels to pass).
Avoid locating the sources of unpleasant smells and noisy activities adjacent or near to mosques.

In addition, other guidelines operate as a self-regulating mechanism on the behavior of the individual and community. A prime example is the concept of beauty without arrogance, which strongly influenced the manner in which exterior facades and elevations were regarded and treated. This concept is attributed directly to the Prophet Mohammed in the form of the saying, "No person with an atom of arrogance in his heart will enter paradise." According to Muslim, the renowned Hadith scholar, a man said: "A person likes to wear good clothes and shoes." The Prophet answered: "God is beautiful and He loves beauty" (Fig.
Figure 5. A residential street in the city of Rabat, Morocco, showing blank exterior walls and buttressing arches. Photograph by Papini, M. H. A. T., Rabat.

By tradition, and allowing for beauty without arrogance, an owner was permitted to decorate only the front door of a building, to express his attitudes and identity (Fig. 6). In contrast, the interiors of buildings were decorated, particularly the facades of the courtyard. The sophistication or level of such decoration depended on the financial ability and taste of the owner (Fig. 7).

Quranic verses and sayings of the Prophet used as the source for building guidelines can be found elsewhere (6). In most cases these verses and sayings were specifically pointed out by the author of a fiqh manuscript to back up or elaborate on the reasons and rationale behind a kadi’s decision or an opinion of a mufti. A mufti is a specialist on law who can give an authoritative opinion on points of doctrine; his considered legal opinion is called *fatwa*.

To appreciate the interaction between the mechanisms of the building process, consider the following simulation, which includes one example for each component of a five-part framework devised here to represent the physical factors that shaped the traditional Islamic city, particularly at its neighborhood scale. (This framework encompasses all building activity issues touched on in the fiqh literature of the Maliki school of law.) The components are: (1) streets, including through streets and cul-de-sacs, and related elements; (2) locational restrictions of uses causing harm, such as smoke, offensive odor, and noise; (3) overlooking elements, including visual corridors generated by doors, window openings, and heights; (4) walls between neighbors, and their rights of ownership and usage; and (5) drainage of rain and waste water.

Imagine that a man wants to build on a vacant lot or

Figure 6. A typical front door to a medium-size, middle-class house in Tunis. Note the studded decoration, knockers, and small inset door for daily and frequent use. Photograph by the author, 1977.

Figure 7. Typical decorated courtyard of a palace in Tunis. Taken in the main courtyard of the restored Dar Lasram palace. Photograph by Wisam Hakim, 1975.
to reuse a site on which a dilapidated house stands. If the intention is to rebuild a structure for the same use, then he can proceed with no objections; if the plan is to build a public bath or bakery, however, then he will more than likely be faced with objections from the neighbors. The reasons given are that such new public uses will create harm in three ways; (1) by generating additional traffic on the street(s) providing access to the facility, thus causing the people living nearby to have to adjust to this new condition; (2) by the nuisance of the smoke generated; and (3) by diminishing the value of the adjacent houses because of the impending adjacent public uses and the nuisances that will result.

Two frequently cited sources supporting these complaints are used by the fiqaha (plural of fiqh, a jurisprudence scholar), for preventing the change in use. The Quran says: “And diminish not the goods of the people, and do not mischief in the earth working corruption” (26:183). From the sayings of the Prophet comes: “Do not harm others or yourself, and others should not harm you or themselves” (cited by Ahmad and Ibn Majah).

After exploring other uses of the site, the owner decides to build a house. He asks a local builder to construct it; the two will communicate with each other about the design requirements by using the local design language. This is done by identifying each part according to its name in the design language. To illustrate, examples from the local language in the Tunis region are used: the owner requires one skifa (entrance lobby with entry doors placed so that no one can see directly into the courtyard from the outside), with two dukkana facing each other (built-in benches provided in the skifa, traditionally used by the male owner or occupant to receive casual visitors or salesmen). He specifies that the wust al-dar (open courtyard in the center of the house) should have under it a majin (cistern for the collection of rainwater from the roofs), and one burtal (a colonnaded gallery off the courtyard giving importance and sometimes sun protection to the room behind) off the main room. Around the courtyard he asks the builder for three bit trida (simple rooms) and one bit bel-kbu u mkasar (a primary room common in middle- and upper-middle-class houses), which is usually located opposite the entrance to the court. This primary room is divided into (1) a central alcove called a kbu, usually containing built-in seating and elaborate wall and ceiling decorations, and used to receive close relatives and friends; (2) two small rooms symmetrically located on each side of the kbu called maqura, and used as bedrooms; and (3) two alcoves, constructed opposite each other, with built-in beds and/or storage. The built-in beds could be placed on one or both sides of the alcove, and are usually framed with a decorative wooden structure called hanut hajam. This listing could continue on to the smallest details of decoration and finishes (Fig. 8).

If the house is relatively complex, then the builder will more than likely sketch out the plan and any other details, but for his own use and not to communicate with the owner. When the design language is not adequate for both owner and builder to clarify a point, then either one, but more commonly the owner, takes the other to see a house to indicate what he has in mind.

The builder is expected to know about the customs and traditions of building practice and the principles to be followed and respected. Surprisingly, the detailed implications of the building guidelines were not common knowledge among the lower ranks of builders. Often, references are made in ancient manuscripts to implemented building decisions that were violations and were later ordered by the local kadi to be demolished or corrected in response to a neighbor’s complaints. It seems, however, that the more established and older builders with many years of experience, who were often hired by affluent clients, had detailed insights.

Having determined the usage of the site and using the

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**Figure 8.** Examples of traditional housing design elements and their associated vocabulary, or design language, from the Tunis region (7).
design language for planning purposes, the builder and
owner examine the likely effects on their requirements
and decisions of existing surrounding buildings. If a win-
dow exists on one of the neighbor’s walls, for example,
then its location had to be considered out of the respect
due to the principle of the earlier rights of usage. The
new house had to avoid creating a direct visual corridor
from the existing window into its private domain; in effect
it had to block potential overlooking problems.

A neighbor’s wall could be used, however, to insert
beams for support, rather than building another, adjacent
wall. This practice was specifically encouraged by the
Prophet: “A neighbor should not forbid his neighbor to
insert wooden beams in his wall” (cited by Abu Hurairah).
Nonetheless, there were elaborate guidelines to be re-
spected in using a neighbor’s wall, and the associated prob-
lems of subsequent maintenance rights. For example, the
ratio of the wall to be used depended on its ownership.
In the case of rebuilding a dilapidated house, correct recog-
nization of the ownership of adjacent walls was therefore
vital. Careful examination of the wall was guided by
criteria that determined whether ownership was single
or joint. The most common of these criteria was to discover
the nature of the akd or wall bond at the corners or junction
of two walls, by examining the materials and mortar to
resolve whether the two walls were built together. This
practice, which was sanctioned by the Prophet, is traceable
to the decade of 622–632 A.D. in Medina, and is still followed
today in the older parts of Islamic cities under the local
custodial law, or urf.

The question of drainage of rain and waste water also
had to follow certain rules and guidelines. Drainage of
rainwater was a particularly delicate problem because ex-
cess water was not to be barred from others. This principle
is directly attributed to two sayings of the Prophet: “If
you deny excess water, you will deny the benefits of pas-
ture” (cited by Abu Hurairah), and “Muslims are partners in
two things: water, pasture, and fire” (cited by Abu
Dawood and Ibn Majah via Ibn Abbas).

As to the relationship of houses to streets, assume that
one side of a house adjoins a through street, and the owner
wants more space. One option is to build a sabat (room
bridging the street). To support the structure on the oppo-
site side the owner could acquire permission from the
owner of the facing building, but the granting of such
permission was not totally irrevocable and thus this alter-
native depended on the owner’s perception of his future
relationship with his opposite neighbor. More than likely
the owner would choose to use columns for support, keeping
the owner totally independent of his neighbor. Another
option would be to use columns for supporting both sides,
opening up the future possibility of being able to sell the
sabat to the owner of the opposite building, and generally
upgrading the marketability of the house (Fig. 4).

The preceding illustrations provide only an overview
of the issues involved in the typical building process. Many
other cases, some of them extremely involved, may be
found elsewhere (6). This discussion is adequate, however,
to illuminate the fact that the built form was a direct
outcome of the dynamics of decision making, using specific
mechanisms, and as governed by fiqh guidelines derived
from the Islamic values embodied in the Quran and the
Hadith.

THE CONTEMPORARY SITUATION

In most Islamic countries major changes have resulted
in a shift from the traditional system of construction and
design to a contemporary, so-called modern system. Back-
ground, forces of change, and motivation differed from
country to country, but in most instances change was the
direct result of the intervention and influence of non-Mus-
lim colonial powers, primarily the British, French, and
Italians. This coincided with the introduction of contempo-
rary technology in transportation and construction, and
new building materials. Planning patterns and architec-
tural styles introduced by these colonial powers came to
be models to be emulated. The notion was that the use
of modern technologies and materials meant also employ-
ing the colonials’ system of planning and design. Western
ideas and techniques for dealing with land subdivision,
the distribution of buildings, and their design were synony-
mous with modernism and progress.

Unfortunately, well-documented cases of the architec-
tural transformations of various Islamic countries is scarce, but it is very clear that, despite the differences and
discrepancies in the processes of change, remarkable
similarities are manifest in the end result, the contempo-
rary built environment. To understand this phenomenon,
a brief description follows of the changes that have oc-
curred in Saudi Arabia over the last three decades.

Saudi Arabia is a mashreq country, historically consid-
ered to be part of the eastern region of the Islamic world,
as opposed to the maghreb countries, those in the western
region whose traditional system was the basis of the discus-
sion above. Although the Islamic schools of law in effect
in the two regions are distinct (the Maliki in North Africa,
and the Hanbali in Saudi Arabia), these and other schools
of law traditionally shared more similarities than differ-
ences in matters related to cities and building. The regions’
historical continuity in legal matters is supported by a
comparison of the traditional morphology in North Africa
with that found in central and eastern Saudi Arabia.

The case of Saudi Arabia is interesting for a number of
reasons (1,8,9):

1. The country was not under colonial rule by non-Mus-
lims. Parts of the country, primarily the Hijaz (the
western region bordering the Red Sea) and for
shorter periods Al-Hasa (in the east, bordering the
Arabian Gulf), were under Islamic Ottoman Turkish
rule, during which time the traditional Islamic sys-
tem of building and planning continued without
change.

2. The changes that occurred later were primarily insti-
gated by the Saudis themselves, with the clear objec-
tive of creating a modern built environment, as a
result of a rapid shift in the perception of what a
new, good, built environment should be and how it
should look. This perception was diametrically op-
posed to that produced by traditional settlements and their architecture.

3. Reliable information, including three valuable doctoral dissertations, is available on the changes in Saudi Arabia. The information in the second part of this article relies, to a large extent, on these sources.

Underlying the changes in Saudi Arabia's built environment was the introduction of the grid as a street pattern and of the villa as a dwelling type. Following is a brief description of how they were introduced in Saudi Arabia and the process by which they were developed and institutionalized.

The Introduction of the Grid Pattern

In the Eastern Province of Saudi Arabia, the development of the cities of Dammam and Al-Khobar resulted from the expansion and growth of the oil industry. The Arabian-American Oil Company (ARAMCO) played a major role in the planning and development of these two cities, as well as other communities (1,8,9).

The initial growth of Dammam and Al-Khobar in the late 1930s and early 1940s was not planned in an orderly fashion. As the population grew, people took over any available land and erected basic shelters and fences from local materials. Following the traditional pattern, streets were narrow and irregular. When the physical development of the two towns increased substantially in the mid 1940s, the government felt they needed to be laid out in a controlled way. In 1947, the governor of the Eastern Province therefore requested assistance from the oil company in producing layouts for both Dammam and Al-Khobar. In response, ARAMCO's surveyors prepared land subdivision plans and actually staked out the streets and blocks. Original plans, covering only limited areas, were laid out in a gridiron pattern. For information on historical developments, see Ref. 10 (Fig. 9).

When Dammam was made the provincial capital of the Eastern Province, the pressure for development increased. Government offices moved from the old capital

![Figure 9. Road network of Al-Khobar (left) and Dammam (right) on the eastern coast of Saudi Arabia. The sketches are based on information from the decade 1956–1966 (8).](image)
of Hofuf in 1952; by the end of that year, Dammam comprised 525 acres, plus the 400 acres of ARAMCO's subdivided plan, and its population was 25,000 (10). Engineers then engaged by ARAMCO to develop their own communities were made available to local government agencies. These engineers, in cooperation with the municipality of Dammam, developed a major street plan for the city that is still being followed today. They also developed a layout scheme for another 1000 acres, which were subdivided and sold off by the municipality of Dammam. Subsequent subdivided areas were laid out by the municipality following the earlier gridiron layout—in some areas only roughly, but in others with precisely the same dimensions (10).

Similar techniques were used in ARAMCO's planning and layout of Al-Khobar; the city was taken as a model of modern planning for many years, and its planning established numerous unfortunate precedents. Al-Khobar was the first Saudi Arabian community to be wholly planned, and to use an overall grid plan. It was also the first to start the demolition process of the traditional fabric within its boundaries. For other reasons as well (8), it led the way as a model that other Saudi cities followed from the 1950s through the 1970s (Fig. 9).

Riyadh, the capital of Saudi Arabia, was founded on the ruins of several communities around 1740, but assumed little prominence until Abdul-Aziz Al-Saud took over as its independent governor in 1902 and began his campaign for the consolidation of modern Saudi Arabia. From that time, Riyadh was the permanent residence of the king and it also eventually became the capital of the kingdom, although Makkah, the religious capital, continued to house most government agencies until the 1950s (11).

Riyadh preserved its size during the first 30 years of Abdul-Aziz's reign. Only after the consolidation of the kingdom, however, did the king himself in the 1930s take first steps toward developing the city, which involved the construction of a number of projects outside the city core. One of the prominent later developments that had profound impact on the city is a housing complex known as Al-Malaz built in the late 1950s.

When the government decided in 1953 to move its agencies from Makkah to Riyadh and, subsequently, to build ministries along the road to the city airport, housing for the transferred government employees became necessary. The site of Al-Malaz, 4.5 km northeast of the city center, was chosen and the housing project was initiated by the Ministry of Finance. The ministry was assisted by the U.S. Corps of Engineers in the planning and design of Al-Malaz (9). In 1957, when the transfer of the agencies actually took place, the project was under way and some parts had been completed. The project consisted of 754 detached dwelling units, or villas, and 180 apartment units in three apartment buildings; the houses were sold to employees under a long-term payment plan, while the apartments were rented on a permanent basis.

Al-Malaz contained a public garden, a municipal hall, and a public library. It also housed the buildings, originally planned as schools, for the newly founded university. It also had a race course, a football field, and a public zoo; supporting facilities such as schools, markets, and clinics were planned, although they were built by agencies other than the finance ministry.

The physical organization of Al-Malaz follows a gridiron plan with a hierarchy of streets, rectangular blocks, and large lots, which in most cases take a square shape. Thoroughfares are 30 m wide, main streets 20 m, and secondary or access streets 10 and 15 m. A 60-m boulevard divided the project into two parts. Most blocks are 100 × 50 m. The typical lot size is 25 × 25 m, but within some blocks there are a variety of widths, such as 25 m, 37.5 m, and 50 m. The depth of 25 m, however, remains constant in almost all blocks.

Comparing the new and traditional patterns, reproduced to the same scale in Figures 10 and 11, it is clear that new values in the concept of space and land use were introduced at Al-Malaz. The new pattern has a low density, one-fifth the traditional density; areas assigned to streets are three times as great, and only half of the area of the development is reserved for private lots, as compared to more than 75% in the traditional pattern.

Al-Malaz covers an area of 500 hectares and its impact on Riyadh was enormous: it was seen as a city by itself, a new town in town, and thus named New Riyadh. The project's introduction of new patterns and typologies meant the grid as a street pattern and the villa as the new house type became powerful models for the developments of the 1960s and 1970s in every Saudi Arabian city and town.

Al-Malaz became a model reproduced in later developments for three main reasons. First, the project was sponsored by the government, and was a governmental state-
ment on how a modern neighborhood should be planned. It was taken for granted by others that what is good and suitable for Riyadh must be good for other cities in the country. Second, Al-Malaz was seen as a symbol of modernity, in sharp contrast to the traditional. It was the only project at that time to use new materials and techniques, hence its subsequent imitation. Finally, in contrast to royal residences built shortly before it, Al-Malaz was constructed for government employees who were part of the public. In the 1950s and early 1960s, these employees were highly regarded by other segments of society, and their life-style admired. Almost everyone dreamed of settling into a new and similarly planned neighborhood. Riyadh now covers an area of more than 300 km² with an estimated density of 50 persons per hectare. Almost all of this area follows the grid pattern and has the villa as its dominant building type.

Land Subdivision: Lots and Villas

The ARAMCO Home Ownership Plan, a loan program initiated in 1951 (12,15), played a major role in spreading the concept of the dwelling as a detached building, and determining the subdivision of land. Under the program, the government provided the land, either as a grant or for a nominal price passed on to the employees, and ARAMCO undertook the planning and subdivision. ARAMCO also gave employees interest-free loans, the terms of which stated that the employees could choose their own designs and contractors.

To qualify for the loan, an employee had to submit a design for the house, that was to be implemented precisely, without any major changes. Due to a lack of Saudi architects at that time, employees had to rely on foreign ARAMCO architects. Employees could choose from a catalog of designs, which reflected the alien cultures and tastes of the designers. According to statistics gathered in the early 1970s, 15–25% of the houses in most Eastern Province cities are of this catalog type (13,16). Subdivision of land, whether in Dammam, Al-Khobar, or other communities, consisted of lot sizes ranging from 400 to 900 m², which is very large compared to traditional lot sizes. These lots tended to be roughly square in shape, and the villas planted in the middle of each (Fig. 12).

Again, the Al-Malaz project and the ARAMCO Home Ownership Plan set up the pattern and shape of lots, introduced the villa as the favored house type, and became models for other developments. In fact, as early as 1938 in some cases, these models were institutionalized by the government: the square lot through decrees, directives, and circulars, and the villa through zoning regulations and related setback requirements, all of which were legitimized later by master plans that incorporated these implementation devices.

The Process of Psychological Institutionalization

Government media played an important promotional role in influencing attitudes toward the models of planning and design being introduced. This promotion occurred primarily through the press, various other publications, and broadcasting, although television was not operational nationally as an effective medium until the early 1970s. Dialogue in the media was not possible, however, because of
an unwritten code forbidding criticism of the government (9).

Implementation then followed with the adoption of the system of land subdivision and related building regulations. An important note regarding cultural conditioning: It could not be expected that a conservative government and system such as that of Saudi Arabia would openly express enthusiasm for practices of Western civilization. In fact, almost all official statements for major projects or development policies stressed the conformity of the goals and policies to Islamic law and the society's cultural heritage. On the other hand, terms such as tammadon (civilization), al-tataur al-minmari (architectural progress), al-imarah al-muasirah (contemporary architecture), and al-taqaddom (modernization and progress) are among the many terms used to raise the general level of aspiration and to provide a climate for national development. By associating such terms with the actual architecture and planning built and practiced in the country, there is no doubt as to the Western models to which such terms refer.

It is not surprising that Saudi Arabia, a culture that strongly adheres to Islamic traditions, has in fact, through certain events and processes, rejected the established, traditional, building and planning conventions that had strong ties to Islamic law. As a result of the prototypes initiated by the government (with the assistance of ARAMCO in the Eastern Province, the U.S. Corps of Engineers in Riyadh, and reinforced by a concerted media campaign), traditional building practices, associated forms and configurations, and traditional materials such as adobe were soon viewed by most people as substandard, and the new building conventions implemented by new technologies as superstandard (17). A rejection of tradition resulted. Accordingly, a questionable side effect was that a concern with tradition was posited firmly against opportunities in all-or-nothing terms, without selective consideration of how new technology, building materials, and patterns of land use might be adjusted and molded to suit established conventions rooted in the society's religion and values (18).

The scale of contemporary developments coupled with the centralization of authority and decision-making processes also had a major impact on the abandonment of the traditional system. Traditional environments had grown incrementally, over relatively adequate periods of time; the decision-making processes were decentralized. That is, the owners of property and their project builders were directly involved in the day-to-day decision making and monitoring of the building as it took shape. Another factor in the eyes of contemporary government officials and their Western consultants was the apparent inadequacy of traditional practices in coping with large-scale modern building projects, which were to be built in very short periods of time. (The experience of Turkey in the nineteenth and early twentieth centuries is illuminating for an understanding of similar changes and attitudes (19).) This was certainly not true for housing projects, yet housing also did not benefit from traditional practices, as these projects followed similar processes of implementation.

Centralization of decision making in almost all contem- porary projects in Saudi Arabia meant that determinations about the configurations of large-scale developments were made by a very small group on behalf of many, and in the absence of a known user group (20). In housing projects, this contrasted with the traditional system, in which decisions were made by owners and builders, in which neighbors were considered, and in which modifications took place through an incremental, decentralized system.

Two studies document in detail the implementation devices and procedures used by the government in Saudi Arabia to institutionalize the contemporary Western system using the grid pattern, villas, apartment and other building types, and the distribution of these citywide (1,9). Among the devices was the drawing up of master plans, notably the plan undertaken by Doxiadis Associates for Riyadh. Statutes and other regulations are other devices that have had an impact: these include the statutes of the Makkah municipality, the Roads and Buildings Statutes, regulations pertaining to apartment buildings, and the specific zoning regulation introduced by the Doxiadis master plan of Riyadh in the 1970s. This was followed by zoning regulations proposed by the new master plan for Riyadh by SCET International in the 1980s. These proposed regulations, particularly those related to the protection of visual privacy in housing areas, are specifically worked out to suit the cultural requirements of an Arab-Islamic city (21). An evaluation of their effectiveness, assuming that they have been adopted and implemented, should stress that specific legal and implementation devices must be compatible with the values of the people for whom they are intended.

LEARNING FROM THE PAST

It has now been seen how the traditional system produced environments compatible with people's values and culture, so that the resulting built environment could be described as directly influenced and molded by Islamic culture. In contrast, contemporary events, such as those in Saudi Arabia, have created a situation that precludes a linkage between people's values and design and the resulting built form.

An attempt will be made now to indicate ways in which it might be possible to recycle and reintroduce traditional experiences into contemporary building and planning activities in many Islamic countries. The goal is to re-establish cultural aspirations and identity in the built environment produced today and in the future. The lessons and experiences to examine for possible recycling and emulation are grouped in two areas: those related to procedure, and those directly related to the organizational system of planning, design, and morphology.

Lessons Derived from the Procedures of Building

These lessons can be grouped into the following categories: impact of decisions by the governing authority; how Islamic a traditional city is, as was made possible by the role of the qāh and its special attributes; and the principles that governed the building production process.
The Impact of Decisions by Governing Authorities. Traditionally, the decisions of the governing authority always had an important effect on the location of important buildings and the alignment of primary streets, thus establishing the overall framework of the city. It should be noted, however, that these decisions were made within an established framework of design norms and planning—organizational relationships. Historically, these were influenced by cultural values and unified by similar approaches arising from the exchange of knowledge among Islamic regions.

Decisions by today's governments in the Islamic countries have even more impact, but are usually based on proposals and recommendations developed by foreign consultants. The input from these consultants for the most part ignores or is insensitive to local traditions and trends; foreign prototypes are usually imposed without consideration of cultural norms and values. In some cases this has been due to specific instructions from a client or his representative to ignore traditional architecture. The problem of outside influence is compounded by the fact that various regions of the Islamic world today are aligned to different foreign countries or systems, thus complicating city planning and building. For example, in Tunisia, Algeria, and Morocco, the French approach is followed; in Libya and, until recently, Egypt, the Soviet approach; and in Saudi Arabia the influence comes from the United States. In Iraq and the gulf states, the British approach seems to be predominant.

As has been seen in the focus on housing, the traditional experience and its decentralized decision-making processes offered many positives. Yet most contemporary housing is produced as a result of decisions from the top, as opposed to grass roots decisions, and requirements drawn up without apparent consideration of the culture's Islamic values and its deep-rooted intentions. Even the design requirements that are linked to loans and mortgages preclude design preferences and significant alterations by users. Thus, the role of the individual in shaping his house and immediate environment in cooperation with neighbors is virtually eliminated—a situation diametrically opposed to that of the Islamic past.

The findings by many researchers and housing specialists in many countries concerning the significance and positive attributes of grass roots housing decisions support the urgency of changing implementation strategies in this area.

The Traditional Islamic City and the Role of the Fiqh. The nature of the fiqh guidelines and their application depended on intent and/or performance, and not on prescriptive standards. Thus people in the traditional setting involved in building decision-making operated within a flexible framework of performance criteria. Each design situation could be resolved according to the conditions in the specific locality and the requirements of the people concerned. As long as the intent of the guidelines was met, the peculiar configurations of the solution would be acceptable. This approach directly influenced the three-dimensional outcome and quality of the built environment.

The earlier, brief discussion of the fiqh influence on traditional settlements raises a central question: how can the link be made between the fiqh and contemporary activities of building and urbanization? In many Islamic countries today, particularly since the introduction of the automobile and Western techniques of city planning, urbanization activities have gradually become detached from the traditional umbrella of the fiqh and the urf. The ignorance of foreign consultants and even government officials in Islamic countries about the deep-rootedness of Islamic values in the traditional processes of building activities is compounded by the quasi-technical nature of master planning and architectural design packaging. In short, what has happened, and is continuing, is the implantation of an alien approach, the generally gradual, but occasionally sudden, displacement of traditional practices legitimized by the policies of modernization.

This displacement occurred at various times in different places during the nineteenth and twentieth centuries, depending on when European influence or colonization occurred. Design decisions based on quasi-technical regulations came into conflict with traditional law. In certain cases, the municipal technical code allowed a situation that the sharia (religious) court later rejected (1). The dislocation of the fiqh from building and urbanization activities in the name of modernization is now gradually being recognized as inappropriate. The challenge and task for the future is to reintegrate the fiqh into building and planning, which can be accelerated when adequate new approaches are developed by interdisciplinary teams of fuqaha and those involved in urbanization and building. It is encouraging to see the recent interest in building topics by fiqh graduate students in Saudi Arabia (22,23). It should be possible to externalize Islamic values in contemporary and future architecture; the results would be exciting and unpredictable, with potential for unique models and approaches.

The Production Process. The traditional building and urban production process in Islamic cultures is markedly different from that followed today, as the example of Saudi Arabia illustrates. Effectively, what has occurred in Saudi Arabia and most other Islamic countries is the abandonment of principles and practices of production that ensured quality in the built environment and the adoption of processes that render it impossible to achieve what Christopher Alexander describes as the "quality without a name" (24). Alexander has pointed out that (25):

The production system which we have at present defines a pattern of control which makes it almost impossible for things to be done carefully or appropriately because, almost without exception, decisions are in the wrong hands, decisions are being made at levels far removed from the immediate concrete places where they have impact ... and, all in all, there is a colossal mismatch between the organization of the decision and control and the needs for appropriateness and good adaptation which the biological reality of the housing system actually requires.

Alexander goes on to identify seven principles that "are essential to the production of houses under all circumstances, and must be followed, whether other necessary social changes are made or not" (26).
Indeed, the traditional production process followed in most Islamic cultures over a period of more than 1000 years in large part embodied these principles. They can be reintroduced effectively in the contemporary production of houses. The initiative in the centralized and autocratic systems of government operational in most Islamic countries today must come from the responsible government agencies and their local representatives. Essentially, they must create situations in which it will be possible to recycle and reintroduce an age-old and successful tradition of production.

Lessons Derived from the Organizational System and Built Form

These lessons can be grouped under three categories: compatibility with ecology and climate; organizational system and planning; and architectural design, style, and decoration.

Compatibility with Ecology and Climate. Much has been written about the traditional use of natural building materials, cooling and heating devices, and the environmental attributes of compact courtyard housing (27–29). These historically were used extensively in the Middle East, as were specialized facilities such as the natural ice-maker. These all provide excellent precedents and impetus for contemporary designers in an approach to building and community design that is passive, that relies minimally on mechanical devices for cooling and heating and uses the least possible energy and other resources for manufacturing materials and production.

Contemporary literature on the Islamic tradition of landscaping, its approach and foundations in the culture’s value system can help lead landscape designers to a sensitive understanding and appreciation of the deep-rooted Islamic structure, its rationale, and ultimate manifestation in built form that is essential for intelligent recycling (30).

Organizational System and Planning. A study of aerial photographs of traditional towns and villages reveals the astonishing similarity in organization and clustering across the vast territory of the Islamic world. Although security and defense were major determinants in maintaining the compactness of towns and in surrounding them with walls, it is in the use of land and the three-dimensional distribution of space that the interesting lessons lie for architects and planners. The residential and commercial sectors contain the most relevant lessons.

Design and configuration are essential features of the typical unit in the residential sector. Rooms surround a courtyard open to the sky, with almost all windows open onto this interior court. The structure has one or two stories, and sometimes a basement for summer use in regions such as Iraq and Iran. In other regions, such as Tunisia, a cistern is built under the court to collect winter rainwater for year-round household use.

Clusters of houses are created by adjoining homes; at least three external walls of each house abut other houses. Access to these clusters is by narrow cul-de-sacs that branch off from a network of through streets. The cul-de-sacs are owned and maintained by the people who use them and are regarded as private property. Occasionally, rooms bridge the public through streets, usually to create extra space in a dwelling. Often, these rooms link two properties owned by the same family, but that are across the street from each other.

There are many benefits to this form of residential design and organization. The courtyard floor and earth beneath it act as a combined radiating and storage unit. The walls on four sides shade the court and protect it from direct sunlight during the greater part of the day, particularly if the height of the walls is greater than the width of the courtyard in the direction of the sun. The courtyard floor, however, is left open to the sky (the zenith) for heat radiation during the day and particularly during the night. The earth beneath the court acts as a radiating heat sink, which in turn attracts more heat from surrounding areas in contact with it (27).

In addition, this form of housing provides high standards of privacy and security within a physical setting, which can promote neighborly social interaction among the occupants. The clustering of housing is economical because most external walls are shared. There are, of course, alternative technical solutions to these party walls that can solve problems of ownership, maintenance, acoustics, and fire. This housing form provides medium densities of between 11 and 14 units per acre, yet provides large living areas in each unit: from 1345 to 1840 ft² for a single-story house, to 2690 and up to 3680 ft² for a two-story house. These figures were based on a prototype design the author developed. On average, the courtyard house creates 45% more living area than that provided in the typical tract-built single family house in the United States, yet achieves three times the density.

As for the commercial sector, the central market or shopping center of each traditional Islamic city is composed of a web of covered pedestrian malls called suq in Arabic, bazar in Farsi, and carsi in Turkish. Each mall is composed of repetitive cells opposite each other and separated by a 10–20-ft walkway covered by vaults with skylights at intervals, creating pleasant and cool environments for shopping. Security during nights and holidays is easily maintained by locking gates strategically located at entry points to the mall system. Typically, various other facilities adjoining the web of market malls are all linked together by an overall access system. The mosque is usually in this area, as are the public bath, hotels, individual workshops, and storage facilities for the various shop owners (Fig. 13).

Architectural Design, Style, and Decoration. Much has been published in the West about Islamic architecture and decoration. For the purpose of this article, the issue to be addressed is how traditional building design, including its technologies, can prove to be of relevance to contemporary and future building activities. Since the early 1970s, a growing interest in tradition and historical precedents has been evident among architects in many countries, particularly in the United States. Clients have also been sympathetic and receptive. In some Islamic countries, particu-
Figure 13. The area of the suq south of the main Zaytuna Mosque in Tunis. Note the manner in which the shops are inset on the west and south sides of the mosque, and on the north and west sides of the Madrasa complex. The tinted areas of the access system represent covering by vaulting or sabat, a room bridging over the street (6).

larly in Iraq, this was certainly evident a decade earlier. A number of Iraqi architects experimented by using traditional motifs in contemporary design and architecture. Mohammed Makiya, Kahtan Madafi, Rifaat Chadirji, and the late Kahan Awni, all of Baghdad, Iraq, were probably the most serious in the pursuit of this approach since the early 1960s (Fig. 14).

Departure from the strict doctrines of the modern movement in architecture faced much opposition and criticism; nevertheless, the trend toward linkages with the past continues to fill a vacuum that contemporary architectural design, following the ideology of the modern movement, is unable to fill. In the Islamic countries, as well as in other cultures, the need for expressing local cultural identity through architecture is growing stronger. The question of how this ought to be done without creating superficial results remains paramount. Moreover, the problem of contemporary and future building types without historical precedents, such as office buildings, airports, and bus terminals, requires careful study in terms of recycling traditional architectonic and decorative elements.

Once again, the impact of decisions by governing authorities, which is the first issue related to building procedures, requires serious consideration at the policy level both by national governments and in local-level jurisdictions. Also an important issue is whether or not to reapply the fiqh in planning and building activities. There is today much discussion and awareness of the government's role, but less of the fiqh, primarily due to the lack of knowledge of traditional practice. Both issues, however, will continue to grow in importance.

The question of decision making within a framework of performance criteria, addressed in the discussion of the second issue, is the responsibility of government agencies and the architect. The implementation of performance regulations in lieu of Western-style prescriptive standards will require, in some instances, sophistication that might not be available in certain countries or localities. It is, however, the responsibility of government, as the primary client in most Islamic countries today, to instruct local or foreign consultants who are retained to develop such mechanisms of control. This is true despite the fact that most contemporary structures and sectors of the city were built using the typical mechanisms of zoning and other prescriptive types of regulations. It is not too late to convert the system to performance-based mechanisms of control.

The third issue concerning the production process might be more difficult to implement, as centralized authorities are reluctant to create situations in which their influence is reduced. It is, however, possible for a government to help initiate an appropriate process on an experimental basis.

The scale of the first project(s) might be small, in order to monitor the results and ensure success. Hope of success rests in the time when powerful individuals in some Islamic countries realize that decentralization will enhance the chances of achieving a contemporary equivalent of genuine Islamic architecture and urbanism.

These three issues encompass most of the deep-rooted programmatic, production modes and ideologically based sources for recycling tradition in contemporary and future Islamic environments. The traditional organizational system and built form offer lessons on ecological and climatic compatibility, the nature of planning and physical organization, and architectural design and decoration. Broken down further, the lessons cover planning, function, space, technology, building materials, problems of style, image making, and the meaning of the architecture produced, which are the concerns that are most difficult to handle. Yet, these are not ungraspable if intelligently approached from the careful understanding of traditional experience.
History and tradition do provide a fertile base from which to learn and, when necessary, from which to recycle experiences of process and built form. The matrix of experiences are numerous and at different levels, however. Some cannot be recycled without a total commitment at the policy level by government; others are recyclable at the cluster or building scale with few participants and decision makers involved. Contemporary examples of the latter can be found that use partial aspects of traditional experience. In other words, only a very small segment of the wide spectrum provided by history has so far been used, most of it unsuccessfully. Much must yet be accomplished.

CONCLUSION

The case of the traditional Islamic city as discussed in the first part of this article provides numerous critical lessons (6). Obviously the fields of architecture and urban planning would be the ones most concerned with this knowledge, particularly as it relates to their respective values and theories. In addition, those involved in the creation and delivery of housing will also find these lessons important.

The traditional system of building and urban activities was an incremental and constantly rebalanced process of development involving the synthesis of religious and sociocultural conventions. The system was self-regulating, so that any significant departure or contravention of the principles and conventions created a situation where corrective action had to be undertaken; in the absence of such action, the intervention of the Kadi (local judge) provided the prescription for normalizing the conflict within the system, in line with the established norms and principles operational in the community.

Specifically, three experiences are valuable to the contemporary context. The first is the importance of the legal framework as the prime shaper of the urban environment, particularly environments at the scale of the neighborhood. Certainly this is also true today with zoning ordinances, subdivision regulations, and building codes. However, the nature of the legal framework is where the Islamic city can provide new experience and insight. The fiqh building guidelines were derived from societal values based on religious beliefs and were supported by adequate elaboration of the intent of each principle. Specific numerical prescriptions were not indicated and only rarely cited as an example of how a specific problem ought to be resolved. In essence, the guidelines functioned as performance criteria, as opposed to contemporary building and planning laws, which are based on standards. The former is qualitative, intent oriented, and responsive to changes in requirements or site conditions, whereas the latter is quantitative, numerically oriented, and not suitable to changes in requirements or location. Not only is the performance criteria approach more sophisticated in terms of addressing each building problem within its own context, but the aggregate results it helps to create as built environment are various and complex. Laws based on standards address all problems uniformly, with results of monotony and sameness in the built environment. The best examples are the thousands of suburbs which were developed in the West during the twentieth century and particularly since World War II.

The second lesson is the use of a building "design language" as a communication and design decision-making aid. The components of the language integrate the three-dimensional form and function of the design element being communicated. This mechanism helps the user and builder to communicate with each other. It also preserves and perpetuates design configurations and forms which have proved their durability through experience without hindering diversity in the individual design solution. Recent research in architecture is rediscovering this attribute.

The third primary lesson is in the nature of the physical organization. As mentioned earlier, the system of courtyard buildings serviced by cul-de-sacs and through streets pre-date Islam; however, Islamic civilization developed and refined this system and spread it across a vast geographic area, aided by the simultaneous development and acquisition of fiqh knowledge.

Some highlights of the attributes of this organizational system follow. The courtyard plan form is able to accommodate diverse uses. The densities created in housing are efficient without sacrificing the privacy of the individual unit. Streets as an access network are maximally utilized, as in the central portion of Tunis Medina. All streets take up 12.5% of the gross built up area and only 13.3% of those are cul-de-sacs serving 28.5% of all buildings, i.e. a relatively low proportion of cul-de-sacs serving a high proportion of buildings. Sabats (rooms over streets) are used to create extra space for private users, simultaneously providing cover to the public in the streets. In the central portion of Tunis Medina, 8% of all streets are covered by sabats, in addition to 7.5% covered by vaulting, providing coverage to a total of 15.5% of the city's streets.

There are numerous attributes in addition to those mentioned above, such as the use and details of decoration and ornament in the realm of art. Another important attribute which has received some attention before is the energy saving attributes of the built form within an arid region context, aided by energy saving practices and devices such as the wind tower, air vent, cisterns for storing water and keeping it cool, and the ice maker (28). Other practices were the collection and storage of rain water in cisterns under the courtyard of buildings, the effective use of basements as living quarters during the hot season, and the recycling of building materials.

In the second part of the article it is shown that a new, foreign system was introduced and adopted under the notion and aspiration of modernism. This modern system is based on preconceived prescriptive standards conceived and based on experiences of other cultures whose values are different from the local culture importing the system. The organizational nature of the system is legitimized by master plans and related zoning regulations. These regulations prescribe street widths, setback requirements, densities, building heights, lot sizes, and so on. They are designed to tell people what to do, thus inhibiting flexibility, responsiveness, and sometimes innovation in response to specific local constraints and conditions. In contrast, the traditional system allows for variety and
innovation in response to specific local conditions of the built environment. The contemporary prescriptive system allows only for what is prescribed regardless of the unique requirements of the locality and site, thus promoting sameness, repetitiveness, and monotony. This explains the contrast in quality between traditional and contemporary sectors of Islamic cities, particularly those found in North Africa where the modern European sector was built adjacent to the medinas or traditional towns, such as in Tunis, Rabat and others.

In Learning from the Past, the possibilities of recycling aspects of the traditional experience for improving contemporary and future architecture and urbanism were examined. Although the discussion addressed Islamic environments, there are universal benefits; it is hoped that the value of this information will be of interest and use to peoples of other cultures today and in the future.

Amos Rapoport clearly points out the relevance and importance of this information, when he says (31):

The broader our sample in space and time, the more likely we are to see regularities in apparent chaos, as well as to understand better those differences that are significant. Thus, the more likely we are to see patterns and relationships, and these are the most significant things for which to look. Being able to establish the presence of such patterns may help us deal with the problem of constancy and change. . . . It is very important to understand constancies as well as change, since our culture stresses change to an inordinate degree. Also, if apparent change and variability are an expression of invariant processes, this is extremely important because the reasons for doing apparently different things remain the same.

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ISOZAKI, ARATA

Arata Isozaki (b. 1931) is a late twentieth-century Japanese architect who inherited the tradition of Corbusian Modernism through Kenzo Tange. Isozaki is one of the principal architects of his time and was responsible for the shift from functionalism to formalism—mannerism. Isozaki's work represents a developmental, thematic search for self-realization. Considered by critics to be enigmatic in his use of architectural elements, his work is more readily understood when viewed in the context of the Japanese culture, and particularly the rigorous methodology applied in the mastery of Zen Buddhism. In most of his work, Isozaki is seeking an altered state of perception through changes in scale, alignment, perspective, or cultural context. This altered state of perception may be likened to the Zen concept of satori, or enlightenment. This condition is achieved by Isozaki through creating an oppositional relationship either within his work, or between it and the supporting context. Isozaki forces a confrontation between rationalism and intuition. He often uses cultural historicism as a vehicle to demonstrate and create opposition in his work. Rarely are these oppositional devices intended to be threatening; they more accurately are the outcome of sophisticated whimsy. Arata Isozaki's architectural intention is to provide the observer with the opportunity to see the forest by looking at the trees.

Arata Isozaki was born on July 23, 1931 in the city of Oita. This small provincial center is located on the north shore of Kyushu, the southernmost island in the Japanese archipelago. To date, most of the architectural work produced by Isozaki is located on Kyushu, even though most of his professional career has been spent in Tokyo, 500 mi to the north.

Throughout history, Kyushu has served as a cultural gateway to Japan. Almost all Chinese influences have entered the Japanese island chain through Korea across the Sea of Japan to Kyushu. Western influence has also entered Japan through this portal. The Portuguese navigators used Kyushu as the eastern terminus for their trading routes in the sixteenth century. They traded for silk with the Japanese and brought Christian missionaries to Japan.

Although politically isolated from the central power structure of Japan located in Tokyo, Kyushu has played an important role in the introduction of foreign culture and technology to Japanese society. The broad and receptive cultural posture of Kyushu is reflected in Isozaki's capacity for absorbing and applying Western architectural notions to conditions that exist in a Japanese cultural context.

Isozaki is a prolific writer and essayist. He applies his skill to his own architecture to justify, and thereby become self-conscious of, his work. He exemplifies the mannerist tradition of self-awareness. His reflective nature and the internal mechanics of his architecture are most likely interrelated with his father's position as a leading figure in the Amano-Gawa (Milky Way) group of Haiku poets. It is probable that Isozaki's father was exercising both his poetic and prophetic nature when he named the eldest of his four children Arata, which means newness. Today, Arata Isozaki is considered by many to be the father of the Japanese New Wave.