Order in Historic Urban Environments

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By

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For Nayyereh, Honya, Delnia
and in memory of
Hasan Tavassoli (1955-1976)

CONTENTS

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INTRODUCTION

> I wish to suggest that structure is in essence a hierarchy of orders, on many levels.
>
> —David Bohm, *On Creativity*

On Order

The purpose of this publication is to express the order and *art of relationship* in the elemental structures of historic cities and the problems of today's fragmented urban fabrics. The values of internal and external urban forms and spaces are illustrated and reflected from extensive field studies. The study is documented and presented in the form of case studies and comparative analysis. It attempts to investigate the concept of *the beauty of ordered spatial structure* in historical urban forms and architectural complexes, and it discusses how the gradual decay of old urban fabrics, wars, and earthquakes have annihilated the knowledge and skills of the past. The book takes examples from the thoughts of historic cities and urban spaces. In order to present the discussions as clearly as possible, the text is integrated with in-depth illustrations. Today, the fragmentation of human life has led to disordered urban structures, separation, and deeply divided societies. The concept of order, here, covers some aspects of order in the ordinary lives of people, showing how their activities appear in the forms and spaces of historic cities. According to Bohm and Peat:

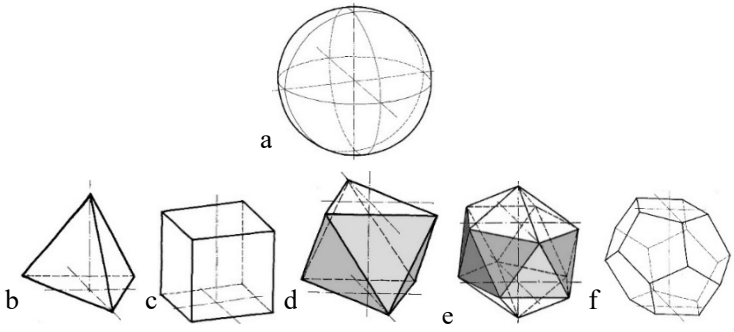
> General notions of order play an incalculably significant role in the totality of human thought and action. When ideas on order change in a really fundamental way, they tend to produce a radical change in the overall order of society. This reaches into every area of life. . . . An example of a radical change in the overall order that pervades society can be found in the transition from the middle ages to the present day.[1]

Ruth Lorand in her book *Aesthetic Order* attempts to comprehensively approach the concept of order:

> Order concerns all aspects of life and has many manifestations. We discern order in Nature, in our thinking, in our goals and in our values. We distinguish between natural orders and artificial orders, actual orders and desired non-materialized orders, hidden and apparent orders, shared and private orders. In some cases, we believe that order is inherent in things, in other cases we strive to impose order where we do not find it.[2]

Order and the Art of Geometry

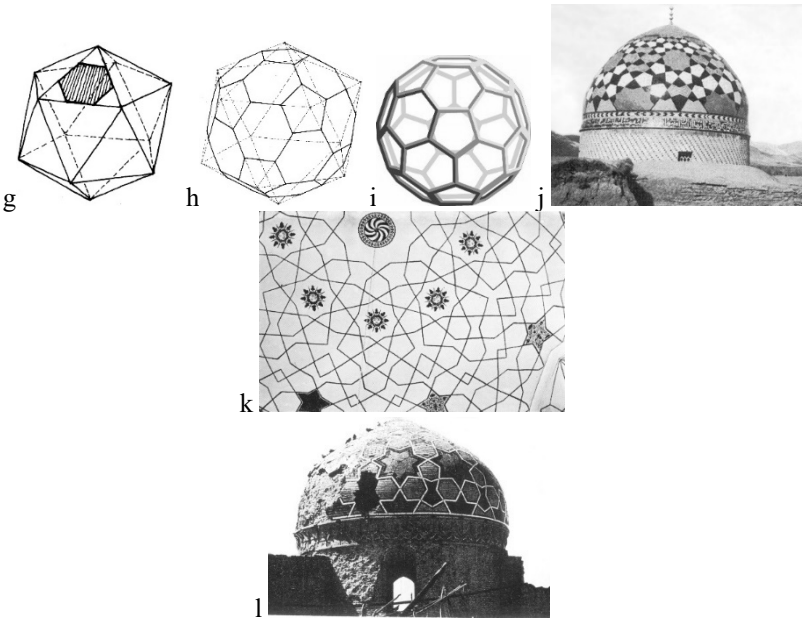
In ancient Greece, according to Pythagorean aesthetics: "Interest in the origin of the world and of the world-order appeared in Homer and Hesiod, and it grew with the reformations in Greek religion,"[3] and "the property which determines the harmony of things is their *regularity* and order."[4]



Figs. 1. Powerful order of architectural forms and spaces: **a** The world is a globe and "is alike everywhere. It rotates, because circular motion is the most perfect" (Bertrand Russell, *History of Western Philosophy*, p. 143). **b** Perfect bodies: Tetrahedron (4 triangles). **c** Hexahedron (cube). **d** Octahedron (8 triangles), which can also be considered as a regular prism: base (two triangles) and six triangles (faces). **e** Icosahedron (20 triangles): the middle part can be considered as a regular prism for the base (two pentagons) and ten triangles (faces). **f** Dodecahedron (12 pentagons).

This aspect of regularity in connection with regular bodies has been discussed over the ages. Russell, discussing Plato's dialogues on cosmogony, describes the power of forms of regular bodies beautifully.[5] Gombrich in his book, *The Sense of Order* refers to the cosmological features of the five Platonic bodies.[6] Separating one of the regular solids (icosahedron, 20 triangles) into three elements—one as the basic in the middle, and two pyramids (Fig. 1e)—is a helpful method for understanding the forms and spaces of this ordered structure.[7] The search for a new regular

solid order was continued by the Persian mathematician and astronomer Abu al-Wafa' al-Buzjani (d. 998).[8]



Figs. 2. g, **h,** and **i** Abu al-Wafa' al-Buzjani's spherical solid order: the new ordered structure can be shaped by as ab icosahedron (20 triangles). The flowing geometrical shapes and lines on the surfaces of domes in Persian Islamic architecture have a long history. **j** The dome of Ali b. Abdollah, Banadook-Yazd. **k** Bafq, roof of a shrine. **l** The dome of Musalla Atiq, Yazd.

Ancient Iran, the Origin of the Zoroastrian Order of Forms and Spaces

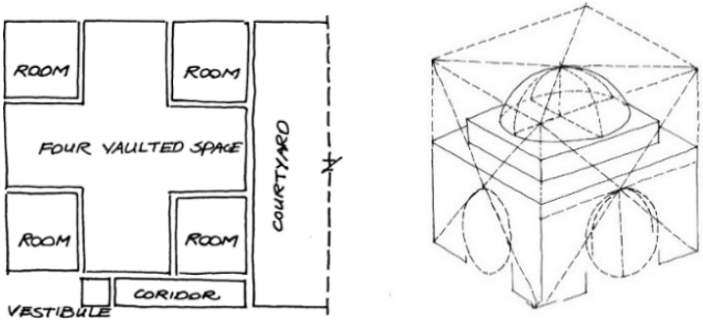
In research publications of scholars of Zoroastrianism, we frequently encounter ancient Iranian religious thought, which is based on the two opposing concepts of *order* and *chaos*. These concepts are manifested in everyday life and experience as *good and bad*, and *truth and falsehood*. Considering the Beautiful and Good, "Good" as moral beauty, has strong roots in Zoroastrianism: *good thoughts*, *good words*, *good deeds*.

> It seems that what is beautiful is the same as what is good, and in fact in various historical periods there was a close link between the Beautiful and the Good.[9]

Ancient Iran achieved the concept of order as an everlasting principle in its worldview and its manifestation in everyday life, art, and architecture. The concept of order is the source of the artist's creative power through history, pre-Islamic and Islamic. Mary Boyce, a scholar of Zoroastrianism, explains original concepts such as *Asha* as "order, truth, justice," a principle that governs the world.

> The Indo-Iranians held that there was a natural law which ensured that the sun would thus maintain its regular movement, the seasons change, and existence continue in an orderly way. This law was known to the Indians as "rta," to the Avestan people by the corresponding word "asha." . . . The concept of "asha" had ethical implications also, in that it was thought that it should likewise govern human conduct. Truth, honesty, loyalty, and courage were felt to be proper for mankind. Virtue, that is, belonged to the natural order, and vice was its betrayal. So asha is a difficult word to translate, and different English terms are needed to render it in different contexts: order where the concept refers to the physical world, truth or righteousness in connection with the moral one.[10]

Prods Oktor Skjærvø, another scholar of Zoroastrianism, also has discussed the ancient Iranian worldview of order and chaos and the heavenly powers of Ahura Mazdâ.[11]



Figs. 3. The origin of the Zoroastrian order of forms and spaces at the level of simple features: a house and fire temple (discussed in chapter 4).

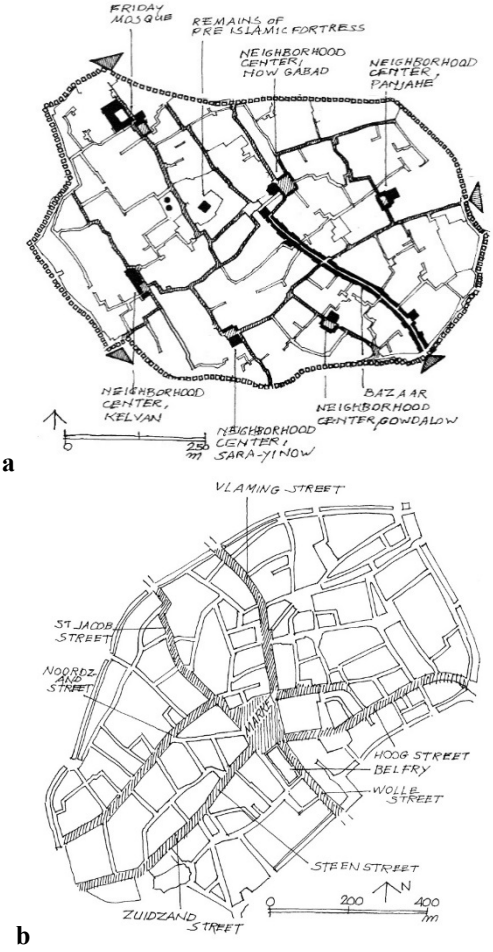


Fig. 4 Over the centuries, despite differences in culture and society, people have reached similar solutions to similar problems, although the appearance of those solutions differs. Here, the common theocentric worldview of two different cultures has led to similarity in the ordered structure and relationship between elements of two historic medieval town fabrics: **a** Nain, **b** Bruges (discussed in chapters 1 and 2).

Furthermore, Ruth Lorand states:

> The book of Genesis begins with the creation of order out of chaos. Chaos, the state of no distinctions, was conquered when God separated heaven from earth, light from darkness and water from dry land. Life on earth had begun with distinctions and order.[12]

Ordered Structure in Historic Cities

In the Middle Ages, St. Augustine (354–430), writing in the early Christian period, considered the beauty of order. As Beardsley puts it, "The key concepts in Augustine's theory of beauty are unity, number, equality, proportion, and order. They turn up frequently in relation to each other."[13]

The expression of *relationship* between these concepts is important in our discussion. The present study focuses on the order of urban fabrics including ordinary buildings and simple and noble forms, in connection with some majestic structures. Considering the importance of order in nature, despite invasions, wars, earthquakes, and socio-political factors, there are still many ordinary urban fabrics hitherto unknown. Further discoveries enable us to follow the continuous thread of the forms and spaces of ordinary buildings.

The Structure of the Book

This book is divided into three parts under the headings "Historic Urban Order," "Two Basic Problems," and "Applying the Guidance."

Part one deals with significant issues: everyday beauty, ordered spatial structure, integration with nature, and Zoroastrian forms and spaces. Chapter 1, Everyday Beauty, concerns the beauty of the environment in everyday life spaces in historic cities, including examples of ordered spatial structures in medieval European cities as external spaces, in contrast to internal Persian courtyards. It discusses urban space and courtyard space as everyday beauty in the life of different cultures, expressing similarities in intimate ordinary public spaces. Chapter 2, Ordered Spatial Structure, investigates the concept of order manifested in the spatial structure and detailed analysis of the order of historic city urban blocks. It investigates the concept of ordering and the art of the relationship of urban elements and beauty of movements as dynamic beauty in everyday life. Chapter 3, Integration with Nature, focuses on nature with reference to certain contemporary philosophers' views on the concept of the aesthetic of nature, examines the beauty of the integration of nature with old urban spatial

structures, and discusses the gradual fragmentation of today's urban fabrics. It also argues how ancient Iranian art has manifested in the art of pottery. The simplification of natural forms and gradual masterly stylisation show a high level of artistic skills. The history of the art of pottery goes back to the fourth millennium BCE. Animals, plants, mountains, and rivers have been creatively expressed in an abstract style in works of everyday art, inviting contemplation. Chapter 4 considers the values and origins of the Zoroastrian order of forms and spaces and discusses the ancient Iranian Zoroastrian view of built environments. It considers how their built environments were shaped by nature and how gradual decline has happened. It argues for the origin of basic ordered spaces in different architectural forms, a matter that should be taken into consideration in education and new design. It also discusses why studies of Iranian architecture have been mainly confined to monuments. The role of the forms and spaces of ordinary buildings in inspiring masterpieces has usually been neglected. In this chapter, the shape of the basic elements, the four-ivan/porticos of Zoroastrian spaces, flowing through centuries is discussed.

Part two explores how historic urban fabrics, expressing valuable internal forms and spaces, are vulnerable to earthquake disasters and gradual decay. Chapter 5 considers the gradual decay of historic areas. Two aspects are worth mentioning: First, compact enclosed urban blocks include a special housing structure that derives from the lifestyle and socioeconomic activities of traditional Iranian families. Second, these blocks face gradual physical decay and the cost of renovating courtyard houses is high. Many ruined areas combine poor quality new developments and restorable buildings. The chapter discusses how renewal efforts should concentrate not only on preservation, but also on renewal to meet the needs of the ever-changing world, including the renewal of creation through considering the flowing experience of the past. Chapter 6 is about earthquakes. It describes how the ordered structure of the fabric of historic cities is responsive to climate and culture but vulnerable to disasters. The chapter discusses the spatial structure of two historic cities, Tabas and Bam, which were destroyed in the earthquakes of 1979 and 2003. They show how historic heritage sites and fabrics are integrated with nature, and include many lessons that we need to learn from, for future design.

Part three, which applies this guidance, consists of a series of case studies, chosen because they express practical methods for tackling the physical problems of historic fabrics. The case studies are based on field studies. Chapter 7 concerns the structure of a medieval city fabric order. Without disrupting the historic order, in response to earthquakes, we can free some access. Chapter 8 considers the division of large urban blocks and

is a first effort to redesign the spatial structure of courtyard housing, still in demand, in response to new needs and earthquakes. Chapter 9 is focused on the pattern of urban blocks on the edge of streets. It discusses the role of slipshod builder developments in changing the features of urban blocks, developments that have ignored earthquakes. The design study argues that an open space network system flowing within the compact urban fabric is necessary, and even vital.

Notes

1 See D. Bohm and F. D. Peat, *Science, Order, and Creativity*, Random House, 1987, p. 98, p. 99.
2 See Ruth Lorand, *Aesthetic Order: A Philosophy of Order, Beauty and Art*, Routledge, 2000, p. 7.
3 See Monroe C. Beardsley, *Aesthetics from Classical Greece to the Present*, University of Alabama Press, 1966, p. 26.
4 See W. Tatarkiewicz, *History of Aesthetics*, vol. 1, 1970, p. 81.
5 See B. Russell, *History of Western Philosophy*, Routledge, 2004, pp. 142–47.
6 See E. H. Gombrich, *The Sense of Order*, Phaidon, 1994, p. 67.
7 Projection of regular solids: the front view, top view, and side view express powerful architectural forms. These aspects have been carefully analysed in M Tavassoli, *Geometry of Volumes*, 1967, Marvi, Tehran.
8 See A. W. Buzjani, *A Book on Those Geometric Constructions Which Are Necessary for a Craftsman*, translated in Persian by S. A. Jazbi, Soroush, 1997, Tehran. See also Renata Hold, "Text, Plan and Building: On the Transmission of Architectural Knowledge," in *The Theories and Principles of Design in Architecture of Islamic Societies*, Aga Khan Program for Islamic Architecture, Cambridge, Massachusetts, 1988.
9 See Umberto Eco, *History of Beauty*, Rizzoli, 2005, p. 8.
10 See M. Boyce, *Zoroastrians: Their Religious Beliefs and Practices,* Routledge & Kegan Paul, 1979, pp. 7–8. Mary Boyce (1920–2006) was a scholar of Zoroastrianism and its relevant languages. In addition to vast research, Mary Boyce's prominent work *A Persian Stronghold of Zoroastrianism* is based on a year-long field study, during 1963–64, in the Zoroastrian village of Sharifabad in Yazd province, Iran. This research was published by Oxford University Press in 1977.
11 See P. O. Skjærvø, *The Spirit of Zoroastrianism*, Yale University Press, 2011, p. 10.
12 See R. Lorand, op. cit., p. 7.
13 Ibid., M. C. Beardsley, p. 93.

PART 1:
HISTORIC URBAN ORDER

Fig. 1.1. a Ghent, St Bavo's Cathedral, thirteenth–sixteenth centuries. **b** Mahan, Mausoleum of Shah Nematollah Wali, the renowned Iranian mystic and poet (died 1431). The images show the manifestation of spiritual internal beauty in two different cultures—both spaces can be considered to be works of art. Silence and the sublime characterise both spaces. The internal atmosphere of these spaces is quite different from outside; they are highly contrasting spaces. (See also G. Bohme, *Atmospheric Architectures*, chapter on church atmosphere). This atmosphere is also a characteristic of historic Persian Mosques. A separation from the outside, and a connection with the inside takes place. The life of the world outside, the sounds, the colours and the movements, gradually fade away in intermediary space—a space between worldliness (the external space without) and spirituality (the internal space within). It is a universe between the body and the spirit. It is an imaginal intermediate space. See also M. Tavassoli, *Form, Space and Design*, p. 67).

CHAPTER 1

EVERYDAY BEAUTY

External and Internal Beauty

Historic urban spaces, external and internal, have harmoniously manifested in different cultures (Fig. 1.1). These spaces as a physical entity have been shaped in response to the needs of everyday life, used for living and working and as places of contemplation. Beautiful external spaces appeared in European medieval cities. And internal spaces have been beautifully revealed in the courtyards and gardens of historic Persian cities. The aesthetic aspects of medieval spaces have a clear expression in the historic texts of European medieval philosophers and Persian mystics. Thomas Aquinas (1225–74), who is among those who have made the greatest contributions to aesthetics, considers terms such as harmony, proportion, clarity, order, and integrity. Strongly influenced by Platonism, Neoplatonism, and Aristotle, Aquinas's aesthetics preserves much of the great tradition of antiquity. Umberto Eco says:

> In the most fully developed phase of medieval thinking, Thomas Aquinas said that, for beauty to exist, there must be not only due proportion but also integrity (in other words, all things must have all the parts that rightly belong to them, . . .).[1]

According to the aesthetician Tatarkiewicz, writing on the aesthetics of Thomas, Thomas did not write any specific treatise on beauty or art, but beauty is included in his philosophical system.

> That besides sensuous beauty there is also intellectual beauty (or, to put it another way, besides physical or external beauty, there is also spiritual or internal beauty. . . . That beauty consists in harmony or proportion and in clarity. . . . St Thomas' conception of proportion is wider than that of classical Greeks. They had conceived it in Pythagorean terms, i.e., quantitatively and mathematically; and therefore, they could find it only in material things. St. Thomas was acquainted with this quantitative conception of proportion "a fixed relation of one quantity to another." But he himself

> (as Augustine had done before him) employed a wider concept; in this wider sense we speak of proportion as a relation of one member to another. . . . For St. Thomas, proportion thus included not only quantitative, but also qualitative relations.[2]

As we can see, the concept of *relation* has an important place in St. Thomas's aesthetics, a concept that express the qualitative aspects of historic urban forms and spaces. It seems that the thoughts of medieval philosophers such as Thomas, have had an indelible role in the shaping of medieval urban spaces. The principle of flowing and of interrelated concepts such as light as form, beauty as proportion, and clarity on medieval urban fabrics in relation to today's everyday urban life is a basic field of research.

Urban Space as Everyday Beauty and External Space

Morris considers the key component parts of medieval towns as the wall, the marketplace, the church, and the great mass of general buildings and related private garden spaces.[3]

The question here is what can be considered to be comprehensive beauty in these magnificent medieval urban spaces. This type of artistically shaped urban courtyards, from the Greek agora and Roman forum to the urban spaces of the Middle Ages and Renaissance, have a long precedence in the urban culture of European countries. They are spaces for community life and gathering places for mutual contact. They have been harmoniously shaped across centuries. Anonymous decision-makers and designers have anticipated the process of shaping urban spaces; and in the words of Zuker, their influence has been "comparable to the impact of any other work of art."[4]

The medieval town wall's primary function was militaristic. But it now has the basic characteristics of everyday aesthetics of forms and spaces. This characteristic has been widely expressed in historic cities such as Chester and York in England. The market area of Bruges, which occupies a square, today expresses the flowing activities of the past, but in a new manifestation and in people's everyday living spaces. We are surrounded by the beauty of everyday objects (Figs. 1.2, 1.3, 1.4).

Concerning shaping principles, historic urban spaces exhibit precious aesthetic knowledge. There is a vast literature dealing with historic European cities' spatial organisation principles. As we have previously discussed, the shaping principles of Persian cities in hot arid environments include enclosure, dynamic and static spaces, scale and proportion, and

contrasting spaces.[5] Here, the focus is on forms and spaces similarities in different cultures. Discussing the classical tradition Roger Scruton states,

> there are universal and intuitively understood principles, which have been exemplified by all successful styles and in all civilizations that have left a record of themselves in their artefacts and buildings. These principles are followed by life itself, and govern the process that unites part to part and part to whole in a complex organism. Because these principles correspond to life processes in ourselves, we intuitively recognize their authority, are at home with buildings that obey them, and uncomfortable with buildings that do not.[6]

Fig. 1.2. Bruges. The medieval city market, showing the beauty of everyday and weekly activities.

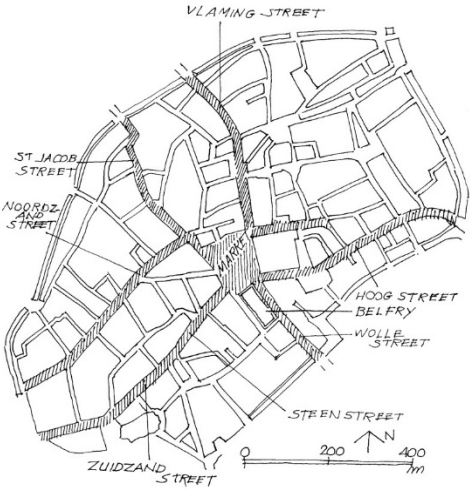


Fig. 1.3. Bruges. The medieval city core main structure, with the main streets enclosed by the harmonious *relationship* of building façades leading to the market.

Fig. 1.4. Bruges. In the market we are deeply immersed in the experience of beauty by "smell, touch, and taste…" as Allen Carlson puts it.[7]

Many factors contribute to the aesthetics of these spaces. Flowing, harmoniously arranged street building forms are to be found entering the enclosed, uniformed, and proportioned coherent spaces. Considering the principle of enclosure and continuity of buildings, Burke points out that "Although several streets and paths from all quarters of the town led into the place, their entry seemed to cause no very noticeable interruption in the building frontage."[8] Concerning the proportion and compactness of the streets, Burke also mentions that "near the centre, where land was most in demand, buildings might rise to four or more stories, each storey overhanging the other." [9] In the words of Zuker, the sky "offers a visual boundary which in spite of its purely imaginary character confines aesthetically the space of the square."[10]

I believe that the aesthetics of these spaces awaits rediscovery and that the medieval designers had a considerable competence in aesthetics, as a process through the ages.[11]

Historical and Ordinary Beauty

Today, the beauty and art of the medieval period, which has been discussed in historical documents, is alive and accessible in urban spatial structures. Although these heritage sites that reflect a conception of beauty and art are from the medieval period, from them flow the ancient theories of beauty and art that have had a considerable role in shaping them. These heritage sites clearly show how the medieval, both in the West and in Persian experience, was conscious of and paid attention to the appearance of forms and spaces—an appearance that is a reflection or sign of the invisible. The atmosphere of historic Persian gardens and Mosques clearly shows these characteristics. Here, the impression of form and space is due not only to the ordered arrangement of elements but also to the atmosphere that they create (Figs. 1.5, 1.6, 1.7, 1.8, 1.9).

a

b

Figs. 1.5. Movement and change of views in every direction: **a** Chester. Sky, cathedral, wall, and walk. **b** York. Here we are immersed in beauty of the highest degree: sky, church, trees, and then the beauty of movement across the heritage of history.

Fig. 1.6. Chester. A space of everyday contact, a pleasure-giving space, a beautiful outdoor living space, which gives maximum satisfaction for walking.

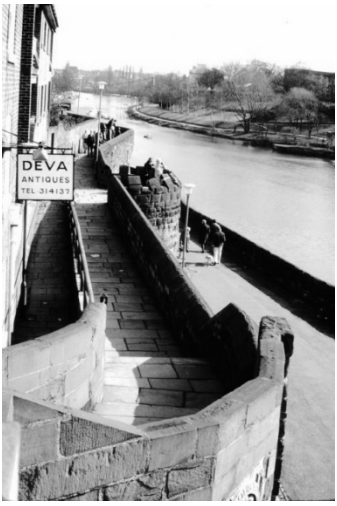
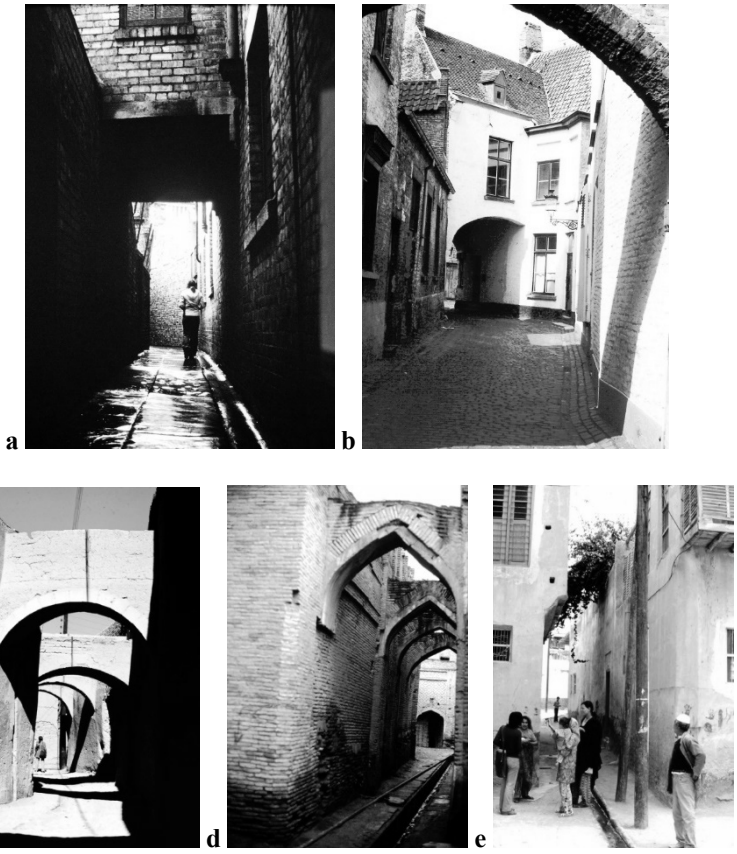
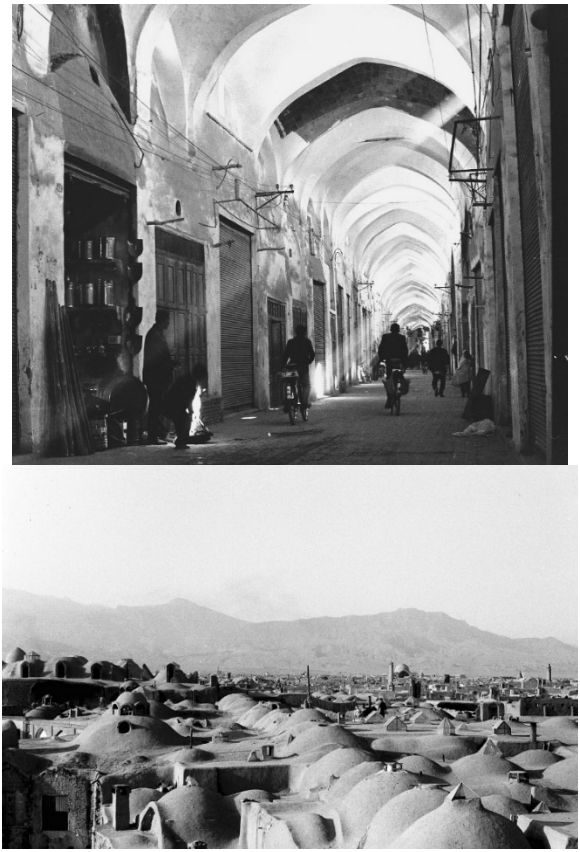


Fig. 1.7. Chester. View toward Queens Park Bridge. See also *Chester: A Study in Conservation*, London Her Majesty's Stationery Office, 1968, p. 109.



Figs. 1.8. Intimate scale in the heritage of medieval alleys. **a** York. **b** Bruges. **c** Yazd. Hot arid. **d** Dezful and **e** Bushehr Hot humid.



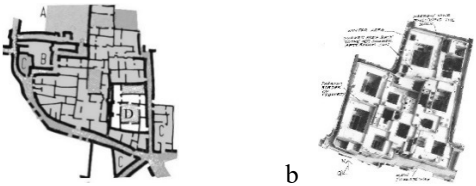
Figs. 1.9. Kashan. The bazaar, with its inside and outside beauty, is the main centre of economy and finance. The bazaar exhibited the concentric hierarchy of crafts and trades with its functional elements. It was not only an economic centre, but also had a powerful socio-political role in urban events and uprisings. Presenting similar commodities in the shops opposite each other in the bazaar passageways gives purchasers the right to choose. Especially, in the environment of the hot arid zone of Iran, the domed roof and cool spaces of the bazaar were pleasant for business and browsing. See also *Urban Structure in Hot Arid Environments*, Springer, pp. 46–48.

The Courtyard as an Internal Space of Everyday Beauty

In the hot arid environments of Iran since ancient times, integration and harmony of man with nature manifested in different forms and spaces: courtyards, wind catchers, wind mills, and *qanāts*. In courtyards, earth and sky meet harmoniously, in a place that brings inner space into accord with outer cosmos. Here, as in the Medieval West in the words of Umberto Eco, "they tended to look upon nature as a reflection of the transcendent world."[12] The old inner area is compact with an intricate network and courtyard structure characterising urban blocks. In considering beauty and integration with nature, our concentration is on this type. The courtyard is a space of our everyday existence that is experienced over the centuries: it provides man with a continuous experience of nature—even with only a small tree, a little flowerbed and a pool, the flight and song of birds, and a space of contemplation. The integration of form and space finds its finest expression in simplicity, repose, and equilibrium, even without or with less wealth of details. The whole composition is open to smooth blue or stormy sky; every season expresses a new experience. We move around in the proprtioned space of symmetry and unity, "a homely atmosphere" [13] in the words of Bohme. And as Saito has argued, "the subject matters and issues relevant to everyday aesthetics are boundless."[14] Nature in the courtyard appears in the form of a tree and water, and is a reflection of invisible beauty: green in spring and summer, yellow in autumn, and dry in winter again, it provides the continuity of lived experience. Courtyard structure has a long history in the ancient past, and in different cultures. The detailed plan of part of the housing quarter in the historic city of Ur 1900–1674 BCE in Mesopotamia shows a considerable similarity to the residential quarters of historic cities in the hot arid zone of Iran. Similarities include local squares, a market space, bazaar alley, local shrines, and courtyard houses (Fig. 1.10).

Considering climatic factors, there remain historic urban areas that present a good composition of courtyard structure. Also, we should pay attention to the differences between urban spaces in different cultures. For example, the effect of sociocultural and climatic factors in Persian architecture has resulted in an inward-looking composition, which is in contrast to more outward-looking Western architecture. While the aesthetic characteristic of outward Western architecture has appeared in urban spaces, in Persian architecture this characteristic has been transferred to courtyards behind narrow streets enclosed by simple walls. In Persian architecture, this inward-looking characteristic is the effect of not only climatic, but also cultural and social factors. In a few temperate zones, we also see inward-

looking spatial characteristics, but not as compact as the urban forms in the hot arid zone. Also, historically, this characteristic is not confined to the Islamic period: its origin goes back to pre-Islamic times. Many of these unique spaces were destroyed or gradually ruined during the Iran–Iraq War or by earthquakes (Figs. 1.12, 1.13).



Figs. 1.10. **a** Ur. Part of the housing area, 1900–1674 BCE: A. Baker's Square, a small market space, B. Bazaar Alley leading to it from the main street, C. small local shrines (extracted and focused on courtyard house, after Morris 1974). The detailed plan of part of this housing quarter shows a considerable similarity to residential quarters of historical cities in the hot arid zone of Iran. Similarities include local squares, a market space, bazaar alley, local shrines, and courtyard houses. **b** Yazd. Courtyard structure of a historic block. See Fig 5.3, chapter 5.