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HISTORICAL CONSIDERATIONS IN
YEMENI VERNACULAR ARCHITECTURE:
HOUSES FROM THE
SULAYHID DYNASTY (439/1047)
TO THE MODERN PERIOD

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of the Ohio State University

by Lealan Anderson Nunn Swanson, M.A.

*****

The Ohio State University
1997

Dissertation Committee:
Professor Howard C. Crane, Adviser
Professor F. Stephen Dale
Professor Julia Andrews

Approved by
Adviser
Department of the History of Art
ABSTRACT

Using a hypothesis, this study explores historical perspectives of vernacular architecture in the central highlands of southern Arabia of the Yemen Arab Republic. Domestic architecture is the focus here of the idea that an area tends to build in the style of the time of its greatest prosperity. The style of houses, in other words, changes with increases in local prosperity. Because of the changing nature of domestic architecture and a perception that it is not important, especially because it is not designed by architects, there are few studies which attempt to place houses in a historical context.

Style as defined in this study is based on analyses of construction details which were an indigenous and assumed part of a builder's training. Such details as wall construction, arch construction, windows and basic house plans are considered as unconscious elements of style. These details are matched against sacred public buildings with known histories and dates such as mosques, to determine the date of appearance of types of building techniques. Also noted are new ideas which are introduced both in public and in private buildings to determine the approximate date of their appearance.

Three examples chosen for the study are towns in the south central part of the Yemen massif. They are the highland towns of Dhu Jiblah and Ibb and the middle elevation town of Ta'izz. Extant written histories are matched against elements of building to ascertain the historic style. In Dhu Jiblah, the Dar al-'Izz, a reputed palace of the Sulayhid dynasty (439-532/ 1047-1138), was selected. Several houses from Ta'izz show elements of a style which was introduced when Ta'izz was the capital of the Rasulid sultans (626-858/ 1228-1454). The final house is from the town of Ibb, Beit al-
Aziz, and represents a more modest example of house building from the eighteenth century which was modified as late as 1950.

These case studies are examined and described first in terms of their physical setting. Then the historic background is discussed. For Dhu Jiblah, the writings of al-‘Umarah (d. c. 1173), are used. For Ta‘izz, al-Khazraj (d. 1405), has left chronicles of the Rasulid court. For Ibb, the historic sources are somewhat sketchier. Discussion of historic information is coupled with descriptions of remaining structures which are then compared to examples of known date and origin. In this way, a picture of what building elements were local, what were imported, and what the vernacular architecture was like at a point in history is presented.

The case studies are then compared with contemporary information to ascertain levels and types of change. The first section gives a brief background on houses in the pre-Islamic era. Then house building styles from surrounding areas are compared to Yemeni developments to gain an idea of sources for some characteristics of the architecture of the south central highlands of Arabia. Medieval Egypt is found to be the apparent strongest source of influence on Yemen. Because vernacular architecture is a reflection of social practices, a brief documentation of social and economic expectations is offered next. Finally, new building since the Revolution of 1962, is compared to the older architecture to gain a perspective on new directions and changes.
ACKNOWLEDGMENTS

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VITA
January 9, 1942......................Born Patterson, New Jersey.

1960-64 ..........B.A. Art and German, University of North Carolina at Greensboro, NC.
1964-66........ M. A., Oriental Art History, University of Iowa, Iowa City, IA.

1990-present...Assistant Professor, Department of Art, Jackson State University, Jackson, Ms.
1988-89.........Instructor, Department of Art, North Carolina Central University, Durham, NC.
               Instructor: Duke University Institute for Learning in Retirement, Durham, NC.
1987-88.........Editor, American Schools of Oriental Research, Durham, NC.
1985-87......... Instructor, North Carolina Central University, Department of Art, Durham, NC.
1982-84......... Resident Director, American Institute for Yemeni Studies, San'a', Yemen Arab Republic.
1979-82.........Assistant Director, Southeast Dearborn Community Council, Dearborn, MI.
1976-79.........Instructor, University Studies/Weekend College, Wayne State University, Detroit, MI.
1974-75........Teacher Elementary Art Grades 1-8, Muhammad ‘Ali Othman School, Ta'izz, Yemen Arab Republic.
1970-74.........Instructor Art History, Department of Art, Wayne State University,, Detroit, MI.
1969-70 ........Instructor Art History, Rockhurst College, Kansas City, MO.
1968-70.........Slide Librarian, University of Missouri, Kansas City, MO.
1966-68.........Acquisitions Librarian, University of Iowa, Main Library, Iowa City, IA.
1964-66.........Graduate Assistant Slide Curator, Department of Art, University of Iowa, Iowa City, IA.
1964............Summer Intern, North Carolina Museum of Art, Raleigh, NC.

Grants:
1994...............American Association of University Women: Career Development Grant
1993...............Mississippi Humanities Council: Development Grant for "Treasures of the Queen of Sheba" Exhibit.
1979-82........Mobil Oil Company: Planning Grant for the Southeast Dearborn Community Council, Dearborn, MI.
National Endowment for the Arts: Palestinian and Romanian Needlework; Folk Art Classes for Southeast Dearborn Community Council, Dearborn, MI.

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CHAPTER 1

HYPOTHESIS, METHODOLOGY, CONVENTIONS

The purpose of this thesis is to examine the idea that the style of a period in which a geographic area enjoyed its greatest prosperity tends to be repeated and that only as economic and social conditions change, will the older style be supplanted. Restated, the reality of the tenacity of tradition is addressed for examples of domestic vernacular architecture by examining their history. It is assumed that the style of the period in which a geographic area enjoyed its fluorescence, tends to be repeated. Concomitantly, a vernacular style will change with the reintroduction of local prosperity and/or technological innovation which is perceived to be socially and economically advantageous.

The examples chosen for this study are drawn from domestic vernacular architecture of three towns in the southern highland area of the Yemen Arab Republic. They are concentrated in the south central section of the southwest corner of the Arabian Peninsula. This was formerly the southern part of North Yemen, the former Yemen Arab Republic. Specifically this area includes the mountain towns of Jibla, Ibb, and Ta’izz. The dates of greatest prosperity in the past for two of these towns, Dhu Jiblah and Ta’izz, are clear because they were chosen as capitals Yemeni dynasties of the Sulayhids and the Rasulids of the Medieval period. The town of Ibb is equally old, but has never been the focus of dynastic building. The examples chosen for the study (Jibla of the Sulayhid,
Ta'izz of the Rasulid, and Ibb of the eighteenth to early twentieth century) bear out this conclusion. Documentation from primary and secondary literary sources, and from field notes exists in sufficient quantity to make some accurate assessment. The accelerated rate of growth and development and the changing architectural styles since the end of the Yemeni civil war from 1962 to 1970, moreover, provide a clear check on the second half of the hypothesis, namely that economic and cultural incentive will be expressed in departures from older styles.

For purposes of the present study, several terms should be defined. "Vernacular architecture" here means ordinary housing; the housing type built as a matter of course in a given geographic area or time period. This definition makes no distinctions between houses of socially prominent or wealthy and those of less fortunate citizens. Extant housing more probably represents that of the social elite of an earlier period, however. In Yemen, houses of socially prominent or powerful people are larger versions of ordinary houses. Domestic architecture built for important individuals or families differs in size, not in type or in construction. Good craftsmen were traditionally in demand and their efforts were engaged by anyone with the money to pay them. The builder was regarded as a craftsman, not the highest level of Yemeni social classes. The idea of the architect as a trained and uniquely talented individual designer is foreign to the vernacular tradition in South Arabia.

The ideas of "style" and "formal analysis," are not used here in the classical sense of Heinrich Wölfflin's *Principles of Art History.* The concern here is with form which can be documented as archaeologically accurately as possible. It would be easy, given the wealth of architectural details presented by South Arabian housing, to simply note the

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occurrence of particular windows or types of stringcourses as stylistic differences. Plaster and paint can be easily changed. Such details might in fact be inconsequential later additions, or simply an owner's personal preferences. What is sought in this study is evidence which is as incontrovertible as possible. Such evidence would ideally be parts of the building which would not easily be changed over long periods of time. For the moment, therefore, decoration is left aside. The details which constitute the "style" of the present study are ones which reflect the unconscious thinking of the builder or master craftsman that are not likely to have been changed.

Underlying assumptions include the presence of a trained group of "master builders" and the probability of verbal transmission of building plans and ideas. Trained workmen were called upon to execute public projects such as mosques. They were also in demand for private commissions by wealthy patrons. The methodology proposed for this study is to isolate clusters of characteristics which are the result of learned traits used by trained master builders who learned their craft through practice. Such a master craftsman could do basic mathematics and could read, but would not be dependent on either of these skills for his knowledge of building. Examples of types of details which are the result of long training and repetition are found in wall construction methods, measurement systems, arch and window construction, and other construction details. These details are an inconspicuous and unconscious part of the building process itself and hence, subject to less rapid change. Specifically the cluster of characteristics studied here include: 1. types of foundations; 2. types of wall construction; 3. arch construction; 4. window construction; 5. staircases and 6. basic plans.

The other type of internal evidence sought lies in the measuring system or systems used. The presence or absence of a system of modules is also considered. It is presumed that modular systems of building change gradually over time. Determination
of the type of measuring system used in area construction at particular periods of time is also important. Several types of measuring systems have been used in South Arabia over a long period of time. Brian Doe has an interesting discussion about the pre-Islamic use of Egyptian and Roman cubits in his 1983 book, *Monuments of South Arabia*.\(^2\)

Discussion of the basic unit of measurement in the Islamic period centers on Creswell's discussion of the Nilometer. Walter Hinz bases his notions about the *dhirah* on Creswell's ideas.\(^3\) It is assumed here that the measurements used reflect the intentions and thinking of the builders, which can be clarified more closely with a clear understanding of their methods.

The state of understanding of the history of Islamic architecture at present focuses primarily on public buildings. Such monuments are anchors for the historian because they may be documented by inscriptions on the buildings themselves. Information about great public buildings also appears in historic records. The first step in determining the date of lesser known buildings, is to seek evidence of clusters of construction details and measurements in public buildings which have a long written history or archaeological verification. This process will determine a fixed date for a clusters of characteristics. For such analysis, photographs provide comparative evidence. The most important building type in most communities is the mosque which is often dated and well documented. Madrasas, tombs and public water works are other types of public monuments considered. The second step is to check the written history against the


physical evidence to determine correspondences. When was this building erected or heavily remodeled? Was this public building built/remodeled during a time of economic, social and political abundance in this area? A public building with a known history provides the anchor against which other works may be compared.

Finally, matching characteristics of existing vernacular architecture against construction details in public buildings of known age, provides evidence to ascertain the style and age of extant housing. The datable characteristics matched against examples of domestic vernacular architecture which have no precise date, provides a possible dating sequence for the house. Questions to be addressed concerning houses include the following. Are the walls, openings, other construction details, and measurements characteristic of the era in which they appeared? Are they comparable to the public monuments in the community? Is this area (town, village, province) currently prosperous, or did its fortunes fade with changes in the political or economic history? Has a cluster of characteristics persisted in this particular location? Positive answers to these questions will help to begin to test the hypothesis that an area tends to continue building in styles which are expressive of their era of greatest ascendance. In this way it becomes possible to build a picture of the development of domestic architecture in South Arabia.

The literature on architecture in South Arabia reflects a rich vein of discovery. Emerging from its isolation after the 1962 to 1970, civil war, South Arabia has been increasingly publicized. South Arabian domestic architecture is an indigenous development which predates Islam by at least five hundred years. One contribution of this study is to gather and examine materials to begin clarification of the historic development of South Arabian vernacular architectural traditions, particularly houses. The importance of Arabian domestic architecture can be appreciated by considering
K.A.C. Creswell's 1958 assertion that there was: "nothing worthy of the name of architecture," in Arabia prior to Islam. Yet Creswell also based the earliest mosque form on that of the house of the Prophet Muhammad at Medina.\textsuperscript{4} Subsequently, Oleg Grabar in \textit{The Formation of Islamic Art}, implies that multi-story domestic architecture such as Ghumdan Castle (in San'a', Yemen) reported by Hamdani in \textit{al-Iklil}, was "a myth," and had a negligible impact on Islamic architecture.\textsuperscript{5} Far from Creswell's dismissal or Grabar's skepticism, South Arabia is now recognized as an important source for the development of Islamic architecture as a whole. The literature on South Arabian architecture, moreover, has expanded remarkably over the last twenty years.

In addition to the general methodological approach, two conventions used in the writing must be addressed. These concern the spelling of Arabic words in English and the dating system used. For the Yemeni Arabic words, the spelling system used in the book: \textit{San'a' An Arabian Islamic City}, has been followed.\textsuperscript{6} This is in part because the authors and editors were very thoughtful and thorough in their glossary of Yemeni Arabic terms. Dynastic names, proper names, places names and architectural terms all follow the spellings used by Drs. Serjeant and Lewcock in the \textit{San'a'} book. For Arabic letters transcribed into English, only the letter, "\textbackslash{}ayn" is distinguished. This is marked by placing a single apostrophe in place of the Arabic letter. The date system is the other problem considered here. Dates are given where possible in the Muslim Hijrah year, followed by the year in the Anno Domini calendar. However, the abbreviations AH and AD, (or A.H. and A.D.), are omitted. The dates are given therefore as two numerals.

\textsuperscript{4} Ibid., 3-4.
\textsuperscript{6} R.B. Serjeant and Ronald Lewcock, Editors, \textit{San'a' an Arabian Islamic City} (London: World of Islam Festival Trust, 1983).
separated by a diagonal slash, for example: 426/1034. In a particular era, moreover, the
dates given are the conventional ones. Only if there are significant differences of opinion
about a particular date is this fact noted. The careful reader will therefore find that there
may be some problems with exact translation of months and of years, but the errors, it is
hoped, are marginal.

Examples of domestic vernacular architecture from south central Yemen are
examined here to discover whether the style has changed with variations in social and
economic conditions. An analysis of style is examined in terms of construction details
which are assumed to change slowly over time in a given location. A focus on public
buildings provides documentable evidence to establish dates to match the internal
evidence of domestic vernacular architecture in south Arabia. Matching the both types of
evidence begins to provide a history for vernacular architecture.
CHAPTER 2

SOURCES FOR THE STUDY

Sources forming the foundations of this study are most basically divisible into the written and the fieldwork sources. Written materials include both primary and secondary works. Several Arab authors were either from Yemen, or wrote about it. Much of the material for this study, however, appears in the secondary sources, particularly of the last twenty years. Before 1962, the Imamate of the present Yemen Arab Republic was particularly isolated. Following the protracted Yemeni civil war from 1962 to 1970, however, the country has become increasingly open to foreign researchers and foreign influence. Discussion of these secondary sources follows classifications based on questions which suggested themselves as the study progressed. Broadly outlined, the areas of inquiry in the secondary material are: theoretical foundations, historical studies, and comparable studies. The search for theoretical underpinnings in the first category of secondary sources led to discussions of vernacular architecture, semiotics, and behavior in particular. Historical materials forming the second group of secondary sources include specifically the history and architecture of the pre-Islamic (Jahiliyya) and Islamic medieval periods. For Yemeni history and architecture, the Sulayhid and Rasulid dynasties are particularly important. Finally, the third class of secondary sources, comparable examples, is discussed. For comparable materials, articles and books on houses and vernacular architecture for geographic areas either
contiguous with or in a trading relationship with south Arabia were sought. Both historical and contemporary examples of comparable material were found. The final source of information for the study consists of fieldwork materials and documentation. This is presented last. The three categories of source material: primary written sources, secondary written sources, and fieldwork form the basis of this study. The ensuing discussion begins with the primary sources.

Some Arab authors elucidate the history of Arabia and Yemen in the early stages, and from them glimpses of architectural uses and practices may be gleaned. For the present study, several of the most important early writers on the country were native Yemenis, such as al-Hamdani, al-Umarah, and al-Khazraji. Of other authors in Arabic who discuss Yemen or Mecca, al-Faqihi and Ibn Battuta are the most important. Naser-e Khosraw, the famous Persian writer and traveler is also contemporary with the earliest phases of development, especially in Fustat. Al-Masudi, was chosen for his information about Baghdad. In addition, the importance of inscriptions concerning houses in the pre-Islamic period is very briefly discussed. The experiences of two relatively modern travelers were also helpful in gleaning information about the later architectural development of the Yemen. These are Carsten Neibuhr who visited Yemen in 1762-63, and Hugh Scott who traveled in the country in the 1940's.

Al-Faqihi's (3rd/9th century) very early work, Ta'rik Makka, appears in the manuscript known as MS Leiden OR 463. The Ta'rik Makka is partially translated by M.J. Kister in an article entitled: "Some Reports Concerning Mecca from Jahiliyya to Islam." The brief references in Kister's translation are tantalizing and it is suggested that al-Faqihi was basing his information on al-Azraqi's work. Al-Faqihi, in any event,

discusses the development of Mecca, particularly under the caliph, Mu'awiyah. His observations on architectural development in the Holy City are interesting and helpful for dating.

Al-Hamdani's (d. 334/945) book, al-Iklil, is one of the most important sources for the early history and geography of the Yemen. His discussion of ancient sites and ruins is more valuable because al-Hamdani actually visited many of the ruins he discusses. Unfortunately, much of his book appears to be missing. Nabih Amin Faris has translated the extant work as: *The Antiquities of South Arabia*.8

The book, *Yaman Its Early Mediaeval History* is Henry Cassels Kay's translation of al-'Umarah's (d. 569/1173), history of Yemen.9 The author is given by Professor Kay as Najm al-Din 'Omarah al-Hakimi, and his translation dates to 1892. Included with 'Umarah's work are pieces by Ibn Khaldun on the history of Yemen and by al-Janadi on the Qaramatians. Neither of these works was used for the present study. Attention was concentrated on the source who had experienced much of the history he discusses, al-'Umarah. Because 'Umarah died on the eve of the Ayyubid invasion of Yemen, his history is invaluable for the Sulayhid period. Al-'Umarah gives his history as a series of chronicles of various families and individuals. There is a section on the Sulayhid dynasty, one on al-Mufaddal (chief advisor to the Sulayhids), one on the Zurayids, another on the Najahs of the Tihamah. Though al-'Umarah does not give specific architectural information, in most cases, there is enough parenthetical information that a

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picture of the setting can be deduced. Most of the historical information on the Dar al-Izz at Dhu Jibla is taken from this work.

If al-'Umarah is the primary source for the Sulayhid period, then al-Khazraji (d. 812/1410), is the most important author of the early Rasulid period of Yemeni history. Author of several books, it is al-Khazraji's *al-'Uqud al-Lu'lu'iyah fi Tarikh at Dawlah al-Rasuliyah*, which forms the basis for the early information about the new Rasulid capital at Ta'izz. Known in English as the "Pearl-Strings," *al-'Uqud*, was translated by Sir James Redhouse in 1902. The colorful world evoked by al-Khazraji appears cruel and glittering today. For instance, four hundred and fifty people were reported dead in ten random pages of the book. The descriptions of life in the Rasulid dynasty, however, are invaluable for the picture they present of life in Yemen five hundred years ago.

Several other authors provided brief information on the early history of Yemen and its vernacular architecture. Specifically, al-Masudi (d. 956), Naser-e Khosraw (393-467/1003-1074), and Ibn Battuta (d. 779/1377), were useful. The "Meadows of Gold," by Masudi is best known in its French translation as *Macoudi: Prairies d'Or*, by C. Barbier de Meynard. In this work, Masudi discusses Baghdad and the palaces of the princes that surrounded it. The work was useful for comparative purposes to get an idea of what large houses or palaces outside of Yemen were like. Naser-e Khosraw, the Persian poet who spent time in Egypt is quite interesting as a comparative source on Egypt at the time of Fustat. He speaks about the height of buildings and is generally informative.

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His paragraph dismissing Yemen as a place inhabited by "thieves and robbers," is so typical of Muslim world prejudice concerning Yemen as to be amusing. Obviously Naser-e Khosraw never went to Yemen, nor did he care to. Ibn Battuta, however, did visit Yemen during the reign of the Rasulid sultan al-Mujahid (721-63/1322-63). His observations on Zabid and Ta'izz are interesting, but all too brief.13

The secondary authors and their writings can be divided into three broad categories. Several subject areas were of particular concern, the first broad area included vernacular architecture and a historic framework from which to approach it. Architectural theory and the applications of semiotic research to architecture were included as a sub-category of this genre. A general theoretical background on design and architectural notation and the transmission of designs in Islamic art and architecture was of particular interest and help. Each of these is a wide research area in itself, so they are discussed here as preparation of a support for the reasoning. Sufficient to say, certain theories and theorists proved particularly pertinent. Others were not important or overlapped other areas of the field of study. The second broad area considered was the history of the pre-Islamic (Jahiliyya) and Islamic history of the Yemen. The third and final area under consideration here is architecture which is comparable to developments in Yemen. This category divides chronologically into historic and contemporary examples.

Vernacular architecture tends to be recognized as a contemporary study area without historic dimensions. Most students report on extant housing without considering the history of the buildings. Part of what this study attempts to do is to create a historical architectural anthropology. Roderick Lawrence, writing in *Vernacular Architecture* in

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1983, summed up the state of studies on vernacular architecture and noted that most studies tend to be ahistorical. Other works of theoretical interest include Henry Glassie's *Folk Housing in Middle Virginia* which explores structural analysis of vernacular architecture. More recently, Susan Kent edited a book of essays which attempts to bring the problems of domestic or vernacular architecture up to date in *Domestic Architecture and the Use of Space*.

The problems of housing, vernacular architecture and domestic architecture have sometimes been either neglected or misunderstood in studies of Muslim architecture. Several authors were helpful in clarifying some of the problems in this area. Jonathan Bloom has published an interesting article entitled "Transmission of Designs in Early Islamic Architecture," which is concerned with the problem of verbal, versus visual, transmission of architectural information. Jamel Akbar's 1989 article on the early Islamic concepts of land use and building rights is also important. The figure who has emerged as an important interpreter of the role and methods of the Muslim architect, however, is Gülru Necipoğlu. In her 1986 article, "Plans and Models in 15th- and 16th-Century Ottoman Architecture," she discusses how designs and ideas were created and transmitted from one artisan to another. In her 1991, book: *Architecture, Ceremonial and Power The Topkapi Palace in the 15th- and 16th-centuries*, she relates written texts

about parts of the Topkapi Palace to the functions and symbolic meanings they had when in use by the Ottoman court. In her most recent book, *The Topkapi Scroll - Geometry and Ornament in Islamic Architecture*, Dr. Necipoglu again discusses the problem of the transmission of architectural knowledge. Each of these authors brings new thinking and understanding to the theoretical problems of Islamic architecture which help inform this study.

authors in the *Proceedings of the Seminar for Arabian Studies*\(^2\) and Brian Doe's two books prove helpful.\(^2\) German and French archaeological teams have published reports, but they are difficult to access. Of particular interest in the archaeological writings are building types and construction techniques. Inscriptions from ancient South Arabia are equally important. Several inscriptions are known to mention houses. For one in particular (YM371; No. 1047), Fr. Albert Jamme was kind enough to provide a translation and discussion, the conclusions of which are very interesting.\(^2\) Additionally, developments in the Sasanian empire and in Ethiopia were considered for possible influences on pre-Islamic sites in south Arabia. For Sasanian Iran, Arthur Upham Pope's *Survey of Persian Art* is the most important source.\(^2\) Yuri Kobishchanov's book: *Axum*, was particularly helpful for Ethiopia.\(^2\)

For Islamic history, a background was sought for the evolution of the medieval period in Yemen. In particular, clues were traced for the growth of historic developments in architecture. For the political background of Yemen's position in the


early Islamic period, 'Abd al-Mohsin Mad'aj's book: *Yemen in Early Islam 9-233/630-847 A Political History*, is helpful. Several other authors include: R.B. Servjeant, S.D. Goitein, and M.A. Kister on the development of Mecca, the Indian Ocean/Red Sea trade, and the spread of Islam in the early years. Specialized studies on various subjects related to the development of Islam include studies on agriculture, social and political developments, and religious and intellectual history.

The Yemen forms a sub-branch of the study of early Islamic history. Two books both published in the last ten years, proved particularly helpful. R.B. Servjeant and Ronald Lewcock's, *San'a' An Arabian Islamic City* is an extremely thorough examination of the most important city of the Arabian highlands. *Yemen 3000 Years of Art and Civilisation in Arabia Felix*, edited by Werner Daum is a miscellany of articles on Yemeni subjects from ancient through contemporary times. Both books contain general as well as specific historical information on Yemen. G. Rex Smith's essays in

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28. R. Servjeant and Lewcock, *San'a*.
both books are especially helpful. In addition, Smith has produced an important source for the medieval history of Yemen: *The Ayyubids and Early Rasulids in the Yemen (567-694/1173-1295)*.  

For Yemeni architecture, Ronald Lewcock has produced numerous books and articles on religious and domestic buildings. Lewcock's expertise in architecture is presented particularly in the *San'a* book. Paolo Costa, who has moved on to Oman in recent years, wrote several important articles and a book on Yemeni architecture, *Yemen Land of Builders*. The earlier study by Carl Rathjens of "Jewish Domestic Architecture," is also very important. More recent works by other authors include Brinkley Messick's *The Calligraphic State: Textual Domination and History in a Muslim Society*, which is important for the study of Islamic law in Yemen and for the history of Ibb. Daniel Varisco's *Medieval Agriculture and Islamic Science* The

32. Serjeant and Lewcock, *San'a*.  
35. Brinkley Messick, *The Calligraphic State Textual Domination and History in a
Almanac of a Yemeni Sultan, studies the work of a Rasulid sultan. These are a combination of anthropological interests with historical methodology to produce important insights into earlier Yemeni society.

Finally, there is a broad category of sources which contain important background information bearing on the subject of the study of this subject, but not described at length in the thesis. For the purpose of the present study, these are considered to be "comparable areas". The "comparable areas," are subdivided between comparative materials of a historic and a contemporary nature. This large group of studies covers the geographic areas from which influences on vernacular architecture might have reached the Yemen. They include: Arabia, Ethiopia and East Africa, Egypt and North Africa, Iraq, Iran, and India. Justification for the inclusion of such a wide-ranging overview of housing and palaces can be found in several articles which make assumptions which, though they may be true of the rest of the Islamic world, do not apply to south Arabia. Comparison of examples from outside Yemen helps to define those characteristics which are indigenous. For example, the assumption is implicit in most discussions that the "Muslim" house is arranged around a central open space. Vernacular domestic architecture in flat terrain and at lower elevations in south Arabia may follow the "courtyard" pattern. Houses in the highlands of south Arabia, however, are generally multistoried and without large interior spaces open to the elements. An overview of neighboring areas helps bring Yemen into focus. Such a review provides a context for

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Yemeni examples given the wide trading and emigration patterns which South Arabians have had, particularly since the inception of Islam.

Areas chosen as comparable for the present study include the north, which is presently Saudi Arabia, for which the historic material includes studies on the Jahiliyya and early Islam. Excavation reports from Qaryat al-Fau form an interesting background. M.J. Kister's essays in *Studies in Jahiliyya and Early Islam* were of particular interest here. Geoffrey King is the author who has written most on the contemporary architecture of southwest Arabia.

To the west, Ethiopia had long standing connections with southern Arabia. Kobischnakov's studies on Axum have already been mentioned. Additionally, Buxton's chapter on Ethiopian architecture in the book *The Abyssinians* is of interest. For contemporary Ethiopian house types, the article by Naigzy Gebremedhin titled: "Traditional Ethiopian Housing," appears in the book *Shelter in Africa*, edited by Paul Oliver.

To the north, on the western side of the Red Sea, in Egypt and North Africa, developments, particularly of the Fatimid and Mamluk periods were important. For the foundations of Egyptian building practices, Alexander Badawy's writings on the New

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Kingdom form a background for Lezine's speculations. Somers Clarke and R. Engelbach's important work on ancient building practices is of particular interest for comparison with later works. For Islamic developments in Fustat and Cairo, Guest and Akbar have written about the establishment of towns and the patterns of land use. A.R. Guest discusses the founding of Fustat as the first Arab community in Egypt and the division of the city into areas called khittahs. Jamel Akbar's 1984 thesis on ownership and responsibility in the Muslim built environment and his 1989 article on "Khatta and the Territorial Structure of Early Muslim Towns," help explain the legal and social expectations that produce the built environment. Wladyslaw Kubiak's dissertation on Fustat is a thorough reconstruction of the old city. George Scanlon's archaeological reports are of interest in comparing developments in Yemen, but difficult to find. In seeking an origin for the height of buildings in Fustat, Alexandre Lezine considers possible influence from Yemen, but concludes that tall buildings were already

present in ancient Egypt. For the Mamluk period, John Williams and Laila 'Ali Ibrahim have written reflective articles. John Williams describes the political and architectural innovations of the new state and city in a *Muqarnas* article in 1982. In the same issue of *Muqarnas*, Laila 'Ali Ibrahim published an article on houses in Mamluk Cairo which draws heavily on Lezine's 1972, article mentioned earlier.


Eastern developments in Iraq, Iran and the Persian Gulf were considered together, especially for the Abbasid period. For Iraq, the historic source al-Masudi has already been considered.

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been mentioned. Additionally, for historic information, G. Le Strange has written about Baghdad. Contemporaneous housing in Iraq, the Baghdad style house, is discussed by Subhi al-Azzawi as: "Oriental Houses in Baghdad." Ancient Iran is discussed by David Whitehouse in his articles about his excavations at Siraf. This was of particular interest in the Yemen connection because Siraf was an important port on the trade routes in the Persian Gulf. The other important source of information about Iran is, of course, Arthur Upham Pope's Survey of Persian Art. Paolo Costa's research on the western side of the Persian Gulf in Oman is discussed in both Studies in Arabian Architecture and in his new book, Musandam.

Finally, the destination and source of much of the trade in the Islamic Medieval period lies in India. Of particular interest for this study is the northwest area in what is now both India and Pakistan. Many Yemeni merchants visited these areas and some emigrated or married women from this area. Mehrdad Shokoohy has discussed the archaeological remains of the earliest trading communities in northwest India.

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57 Masudi: Prairies d'or.
58 G. Le Strange, Baghdad During the Abbasid Caliphate (London and New York: Curzon Press and Barnes & Noble, 1900).
61 Pope, Survey Persian Art.
Surprisingly slim, however, is the number of studies on contemporary vernacular architecture. The city of Ahmadabad is the subject of one such study by Viveh Nanda.\textsuperscript{64}

The fieldwork for this study was begun in the years 1974 and 1975 in Ta'izz. From 1982 to 1984, it was continued during a residence San'a'. Traveling and observing in Yemen, one is continuously struck both by the ingenuity of Yemeni builders and by the unfailing hospitality and friendliness of the people of Yemen. Measurements, notes and photographs were taken whenever possible in Yemen. Drawings were made both then and later. The measurements are in some cases approximate, as for instance for the Dar al-'Izz complex in Dhu Jibla. Other cases, such as Beit al-A'iz in Ibb, are more precisely measured. All drawings, plans and photographs are the author's work, except for two photos used for comparison. The examples chosen here represent types of houses in the southern highlands area of Yemen. As such, they are compared against the historic record to begin to establish a pattern of historic development for vernacular architecture in Yemen. This study presents initial findings and observations. What becomes apparent, however, is that the architecture deserves more study and comparison. These buildings should be added to the historical record because of their great beauty and their importance in the history and cultural life of the Yemen.

Sources for this study include basic categories such as written and fieldwork evidence. Written sources consist of primary including Arab authors with an emphasis on those who wrote about Yemen such as: al-Hamdani, al-'Umarah and al-Khazraji. The secondary written sources are divided into three broad categories. The first includes information about vernacular architecture and architectural theory, both general, and specifically related to Islamic architecture. Second are those works which cover the

historic background of pre-Islamic and Islamic developments in Yemen, providing a historic background. Third, the architecture of areas comparable with Yemen are surveyed to ascertain the type of domestic vernacular in common use at various times. Finally, the field work consists of measured drawings, photographs and observations from notes made on site in two sojourns in the Yemen Arab Republic.
CHAPTER 3

THREE CASE STUDIES: DHU JIBLAH, TA'IZZ AND IBB

These case studies present historic evidence for three examples of multiple-story vernacular architecture in the southern highlands of the Yemen. The examples were chosen for their chronological order and for the types they present. First, the Dar al-'Izz of Dhu Jiblah is a palace dating to the Sulayhid period (c. 438-532/1047-1137). In the second case, the old city of Ta'izz, several buildings such as the "Imam's Guest House," are examined collectively. Characteristics of a Rasulid style can be isolated in Ta'izz, though is not certain that existing houses date from the Rasulid period (c. 628-858/1229-1454). The third case is Beit al-Aziz, built in the old city of Ibb in the mid-18th century and renovated as late as the 1950's. Together, these case studies present evidence for the historic development of vernacular architecture in Yemen.

Each case is considered in terms of the background and physical setting of the area. Next, the historic milieu of the location is developed from the sources. For Dhu Jiblah, al-'Umarah's writings are used. Descriptions of Ta'izz and the Rasulid sultans are from al-Khazraji. For Ibb, a sketch of the historic setting for vernacular architecture is presented. Following this, analyses of dated existing examples of sacred architecture are used to isolate a cluster of building details which are then compared to the vernacular examples for each case. Emerging from these descriptive studies is a picture of the historic development of the architecture of the south central highlands of Yemen.
Dhu Jiblah lies at an elevation in the southeastern mountains of Yemen, about 2,000 meters above sea level. Watered by the monsoon rains, the surrounding mountain valleys are very green for parts of the year, quite unlike any stereotype of "Arabia" as a land of palm trees and deserts. Rainfall agriculture on the terraced hills yields crops of sorghum, wheat and other grains which have sustained the people for centuries. Dhu Jiblah is sixty kilometers north of the larger city of Ta'izz, lying just west of what is today the main north-south road from Ta'izz, to the northern capital of San'a'. The village of Dhu Jiblah is nestled on a hillside between two mountain folds. Sheltered by the surrounding hills, the town was afforded additional protection by the fort above it, al-Ta'kar. In addition to rainfall, Dhu Jiblah has two small perennial brooks running down either side of it, Sa'ilat al-Halid and Sa'ilat al-Tabar, which meet at the bottom of the hill and the town. (See Figure 1.)

Jiblah, as it is more commonly known, is currently the capital of a provincial district of south central Yemen, with about 350 villages under its administration. The current population is about 20,000 people. Though the town is a regional center, the town of Ibb, three kilometers further north of the Jiblah turn-off, is far larger at present. Jiblah has had some growth in the past twenty years, but it remains small when compared to the southern capital of Ta'izz or to its mountain neighbor on the main road, Ibb.

Fig. 1. View of Dhu Jiblah with the Great Mosque to the right.

Fig. 2. Great Mosque at Dhu Jiblah. Interior of the courtyard.
Traditionally the town of Dhu Jiblah, or Jiblah, was named for a Jew who sold pottery there. This story has some interesting implications when the pre-Islamic history of the area is accounted. About fifty kilometers to the north of Jiblah is the town of Yarim, a current town near the old Himyarite stronghold of Zafar. The last ruler of Zafar was Dhu Nuwas, the famous Jewish king of Yemen, whose hideous exploits persecuting Christians at Najran not only prompted a retaliatory invasion by Christian Ethiopians, but are also recounted in the *Qur'an*. These events occurred just before the time of the Prophet Muhammad. The area, at least to the immediate north of the present site of Dhu Jiblah, was certainly a Himyaritic stronghold in the *Jahaliyya* (the time before the coming of Islam). 'Umarah relates that even as late as 252/865, the fortresses around Jebal Sabir near Ta'izz and at Jebal Ta'kar: "... were taken by a family descended from Himyar." The memory, therefore, of "Himyar" certainly still flourished. The story that the principal inhabitant of Jiblah was Jewish comes as no surprise in light of the area's ancient and traditional history. Whatever the circumstances, about eight hundred years after the fall of Dhu Nuwas, the historian 'Umarah relates that the town of Dhu Jiblah was founded in about 458/1065, by 'Abdallah b. Muhammad al-Sulayhi, brother of the Ima'ili Da'i 'Ali, when 'Abdallah was sent to guard the fort of al-Ta'ker. One assumes that the site was purchased from the local inhabitants, including "Dhu Jibla", hence the name of the village.

The al-Sulayhid family themselves are interesting both for their religious views and their building activities. The founder of the dynasty was 'Ali b. Muhammad al-Sulayhi who came from Haraz, to the northwest of San'a'. He grew up under the influence of Ima'ili emissaries to the Yemen, becoming a convert and an ally to the

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66 *Qur'an*, Sura: LXXXV and CV.
67 Kay, *Yaman*, 16-17.
Fatimid Isma'ili dynasty in Egypt. When 'Ali finally set about establishing himself as a political and military presence in Yemen, he did so by raising his standard on Jebal Masar in Haraz, a barren mountain peak. At this point, 'Ali, interestingly secured this ayerie by "erecting buildings" and "strongly fortifying" it in a manner which suggests the marking out a claim which was both symbolic and physical.  

'Ali al-Sulayhi established his house. After consolidating his power base in the highlands, 'Ali al-Sulayhi took the major northern city of San'a', where he built palaces. These edifices, however, did not last much over a hundred years because the historian 'Umrah says he spoke with an eyewitness who had seen their ruins. In fact, 'Umrah informs us that:

"...all who have built houses at San'a', from that time down to the present, have made use of materials taken from as-Sulayhi's palaces.

Neither the brick nor the stone nor the timber have perished."  

The Da'i, 'Ali al-Sylayhi was married to Queen Asma with whom he had a son, al-Mukarram. A child of a kinsman, al-Sayyidah bint Ahmad al-Sulayhi, was born between 440-444/1048-52. Her father died and Sayyidah was reared partially by Queen Asma who taught her to read and write. In 461/1068, al-Sayyidah was married to al-Mukarram al-Sulayhi. Possibly because she was fatherless, 'Ali and Asma gave her the revenues of Aden as her dowry on marrying their son. Mukarram and Sayyidah had four children, two boys and two girls. The boys did not survive infancy and one girl was outlived by her mother.

On their way to Mecca for the pilgrimage in 473/1080, the Da'i 'Ali and his brother, 'Abdullah b. Muhammad al-Sulayhi, were murdered by the Najah brothers.\(^7\) The Najahs were descendants of Ethiopian slaves in the town of Zabid in the Tihamah. 'Umarah's history of the Sulayhid dynasty tells of the abduction and imprisonment of Asma, mother of al-Mukarram at Zabid. To rescue his mother, al-Mukarram invaded the Tihamah, driving the Najah family to the island of Dahlak in the Red Sea in 475/1082.\(^7\)

At some point between 455/1063 when 'Ali secured his hold on Yemen, and the Sulayhid clan's move to Dhu Jiblah in 481/1088, there were extensive renovations made to the Great Mosque at San'a'. These are discussed at length in Serjeant and Lewcock's *Sana'a' An Arabian Islamic City.*\(^7\)

Dhu Jiblah really came to prominence, however, when about 481/1088, Queen Sayyidah, wife of the Da'i al-Mukarram al-Sulayhi, moved the capital from San'a'. The Queen "Sayyidah," repays careful scrutiny. The most important source for the history of this sovereign is 'Umarah's history: *Tarikh al-Yaman.* Presumably the move to Dhu Jiblah was conceived because the people of the southern mountain area were peaceful and productive, unlike the "war-like" people of the northern plains. Queen Sayyidah, however, had received as her wedding dowry the revenues of Aden, amounting to 100,000 dinars per year. Since Dhu Jiblah lay on the mountain route north out of Aden, one wonders if her motive was not at least partially commercial. The coastal route north from Aden was blocked at that time by the Banu Najah who had returned to the town of

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\(^7\) Ibid., 30. Al 'Umarah gives two dates here for the murders, 459 and 473. Because 459, is more problematic in his chronology, I have assumed the later date to be true for the moment. Other facts such as the marriage of al Sayyidah and al Mukarram in 461, for instance, make more sense this way.

\(^7\) Ibid., 31.

\(^7\) Serjeant and Lewcock, *San'a',* 323-350.
Zabid in the previous year. The Queen's husband, the Da'i al-Mukarram al-Sulayhi, was at the time incapacitated over the loss of his beloved mother, Asma. A second possible reason for the move to Dhu Jiblah therefore, was military strategy. In moving to the southern mountain stronghold, the Sulayhid family commenced the building of a second palace called the Dar al-'Izz (Abode of Majesty).  

The Sulayhid family, of which al-Sayyidah became leader after her husband al-Mukarram's death in 484/1091, were followers of the Fatimid Da'wah of the Isma'ili branch of Islam. The Isma'ili version of Sh'ia Islam was not acceptable either to the Sunnis who preferred the Abbasid Caliph in Baghdad, or to the North Yemeni Zaydis who were more practical and puritanical minded Sh'ia. This antipathy is related in stories such as that of the Sunni "Jurists" take-over of the fortress of al-Ta'kar. The Isma'ili branch of Sh'ism, evidently because of persecution by Abbasid officialdom, became extremely secretive at an early date and formed an underground revolutionary force until the Fatimid branch managed to take over North Africa, spreading to Egypt in 359/969. More complete explanations of Fatimi Isma'ili political history can be found in other sources. The relationship between the Fatimid dynasty of Egypt and the Yemeni branch of the sect led by the Sulayhid family, was very close. It was so close, in fact, that after the disappearance of the infant Imam al-Tayyib in Egypt, Yemen became the center of the Tayyibi Isma'ili sect until persecution by the Zaydis forced its adherents to move their base of operations to India, where they remain strong even today. In Dhu Jibla

73. Kay, Yaman, 41
75. Kay, Yaman, 53-54.
today, people remember their Isma'ili heritage, because they are quick to assure visitors that they too are "real Muslims."\(^{77}\)

The Isma'ili Queen of Dhu Jiblah was, according to Tayyibi sources in India, very highly placed in the Isma'ili religious hierarchy.\(^{78}\) Though she could not be "Da'i," herself, she could appoint and administer within the kingdom on her own. After the death of her husband, because she had no living sons, she was forced to marry the Da'i Saba, appointed by the Fatimid Caliph in Egypt, a move she resisted vigorously.\(^{79}\) Sayyidah continued, however, to rule from the Dar al-Izz at Dhu Jiblah and from the fortress on Jebal Ta'kar which was held by her trusted retainer, al-Mufaddal.

In both her political and religious capacities, the queen left a lasting architectural heritage. When she moved to Dhu Jiblah in 481/1088, she converted the previous palace to a mosque and ordered the building of a new palace on the hill above, which was called the "Dar al-'Izz," or, as it is also known today, the "Dar al-Sultana." The mosque known as the "al-Sayyidah" mosque, the fortress on Jebal Ta'kar and the palace, figure prominently in the history of the Sulayhid dynasty. After the death of Queen Sayyidah, in 532/1137, the Dar al-Izz was inherited by Mansur, son of Queen Sayyidah's famous retainer, al-Mufaddal. Within fifteen years, Mansur sold it to the Zuray' family, rulers at that time of Aden.\(^{80}\) Just before Ayyubid forces invaded Yemen from Egypt, the army of the usurper 'Abd al-Naby was routed near Ibb and the victors, Zuray'ites and the


\(^{79}\) Kay, Yaman, 45-49.

\(^{80}\) Ibid., 76, 151 and 174.
Hamdanite Sultan al-Hatim: "... dismantled the great palace [at Jiblah], then occupied by a Sulayhite princess named Arwa, daughter of 'Aly son of 'Abdullah son of Muhammad." The Friday Mosque built by 'Ali and Sayyidah, is still the centerpiece of the town of Dhu Jiblah. In addition, the Sulayhid queen is credited with repairs on the mosques at San'a' and Ibn Janad. Roads, bridges, aqueducts and other buildings around Jiblah are also said to be legacies of her rule.

Leaving aside the complex problems of the Great Mosque at San'a', the most obvious place to search for clear signs of Sulayhid era building techniques is in the area of Jiblah. The walls of the Friday Mosque, however, are presently covered with whitewash and paint. (See Figure 2.) It is hard, therefore, to examine the structure of the building except for the wooden ceiling beams which are carved with designs and laid in interesting patterns. Intricate wooden ceilings are a distinguishing feature of early Yemeni mosques. The stonework is currently uncovered at the base of the minaret of another Jiblah mosque. (See Figure 3.) Here, a type of masonry is revealed which seems to be typical of the Sulayhid period and one of its distinguishing characteristics. Unlike earlier Sabaean stonework from the northeast area of Yemen, which is marginally drafted in ashlar blocks, the stones at Jiblah are only partially finished. Stonework in the base of the minaret of this mosque at Jiblah is almost, but not quite, carefully squared. The mason's intention does not seem to have been to produce sharply squared edges. The resulting stones are about a hand's breadth square or irregular and laid with a heavy filling of mortar which has convex pointing. The mortar shows between the stones forming a characteristic pattern of dark stone and light mortar.

81. Ibid., 294-97, Note101.
82. Lewcock and Smith, "Two Early Mosques."
Fig. 3. Minaret of a mosque at Dhu Jiblah, up the hill from the market.

Fig. 4. Tomb of the Sulayhid Queen al-Sayyidah bint Ahmad al-Sulayhi.
The plan of the Friday Mosque and the tomb of Queen Sayyidah at Dhu Jiblah, document further characteristics of Sulayhid period building techniques and ideas. The basic layout of this mosque is similar in plan to other Fatimid mosques. Aisles parallel to the qibla wall, which are cut by a wider aisle perpendicular to the mihrab, are featured in the plans of the Mahadiya Mosque, the Great Mosque at Kairawan, and al-Azhar and the Mosque of al-Hakim in Cairo. The tomb of al-Sayyidah bint Ahmad is found in the northwest corner of the Jiblah mosque. (See Figure 4.) Her interment in the main mosque of the town must have seemed correct under Isma'ili rule, but later dissenters cried "sacrilege," and wanted the tomb removed. When the tomb was opened, however, "papers were found" inside stating that the land for the mosque had been granted as waqf, but that the land of her tomb was retained by al-Sayyidah in perpetuity. The tomb was closed and remains in the mosque intact. This incident, whether true or imagined, emphasizes the religious friction which has surrounded the Isma'ili Sulayhid dynasty. Dr. Ronald Lewcock points out that this tomb is Fatimid in its style. Certainly there is some foreign influence, whether Persian or Egyptian, in the decoration of the Friday Mosque at Jiblah. It appears, however, that the craftsmen who engineered the building, were Yemeni.

South of Dhu Jiblah, the road leads down the mountain to al-Janad and Ta'izz in the hills below, finally reaching the Arabian Sea at Aden. The village of Ibn Janad is centered on a mosque which was established in the time of the Prophet Muhammad.

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84. Lewcock and Smith, "Two Early Mosques," 120-21.
Though there is little left of the town today, this mosque shares with the Great Mosque in San'a', the distinction of being the earliest mosques in the Yemen. When he had first taken over Yemen, 'Ali al-Sulayhi preached at the mosque of Ibn Janad. The structure of this mosque is interesting and important. The city of Ta'izz was not of great significance in the Sulayhid period. The records tell of at least one fort on Jebal Sabir to the south of Ta'izz, but little is discussed of the town. In the following period of the Rasulid leaders of Yemen, Ta'izz became the southern capital and gained prominence and continued in use up to the present. Aden was the primary port of the Medieval period in south Arabia. Ships coming from India, or from Egypt, stopped in the natural volcanic basin at Aden. The town was prosperous from revenues gained by taxing shipping. Of the building at Aden, little that is discernibly Sulayhid appears to remain. Aden and Ta'izz therefore, are not considered in the search for Sulayhid material.

Inspection of the mosque of Ibn Janad today reveals little about the internal structure of its walls. This mosque was completely renovated with modern building materials in 1973. Before the reconstruction, fortunately, photographs were made by Paolo Costa which allow us to see the actual structure of the walls which had been rebuilt many times. (See Figure 5.) In the photographs one can see that the west wall is constructed in several different ways. Costa attributes the stone construction of the lower part of the western wall, (which he labels 1, in the photograph), to a reconstruction by al-Mufaddal, the administrator of Queen Sayyidah's affairs. The historian al-Janadi is the source for this information because he distinguished al-Mufaddal's rebuilding as being stone construction.

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85. Kay, Yaman, 25
87. Kay, Yaman, 260, note 44.
Fig. 5. Paolo Costa: Wall construction at the Mosque of Ibn Janad between Dhu Jiblah and Ta'izz before the 1973, reconstruction.

The numbered labels are from P. Costa.
the same type as that found in the base of the minaret at Dhu Jiblah. The stones are squared, though not precisely, and set with heavy mortar with convex pointing. It appears therefore, with two arguably Sulayhid examples of this distinctive type of masonry, that this must have been the prevailing type of masonry for the Sulayhid period at least. This type of construction continued to be used in this region.

Costa mentions other construction details such as the doorway in his illustration 4 (not depicted). In this example, the masonry on the right side of the arch is the same type of squared stones with heavy mortar. The arch of the opening is interesting for its lack of a true keystone. Evidently the notion of the keystone arch was not in use at the time. Dr. Costa points out that the lowest remaining voussouri projects from the surface of the wall, a fact he finds characteristic of this building approach. The restorations done under the Sulayhids in the Great Mosque at San'a' have the same detail according to Costa.  

Other types of construction in the area of Jiblah, include roads, bridges and cisterns. These were all built for the convenience of travelers and to aid in the transportation of goods passing from Aden north. The road was built of dark grey stone with stairsteps going over the mountains. The risers of these stairs were very low and very broad to accommodate beasts of burden such as camels. (See Figures 6 and 7.) Horses were also used for transportation even from ancient times. There are many records which attest to the use of horses in large numbers as early as the Himyar period. Presumably under the capital city at Zafar, the Himyarite people had carved stables out of the rock.  The Arab historians, for instance, speak repeatedly of thousands of armed horsemen in battles. Donkeys, mules and cattle were also in common use as draft animals. Passage through the mountain defiles was facilitated by good roads made of

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89. The stables under Zafar are a local folk story.
Fig. 6. Old cobbled road at Dhu Jiblah. In the center is a low riser of basalt cobblestones about 15 cm high. The tree marks a water source.

Fig. 7. Cistern for travelers by the old road at Dhu Jiblah. This has been repaired fairly recently.
Fig. 8. Sketch plan of Dar al-'Izz at Dhu Jiblah. The *hawsh* (courtyard) is at the top of the plan. The mosque is on the lower right.
Fig. 9. Dar al-'Izz, remaining structure on the northeast end. Photograph shows the outside of one end of the building. Note details such as the triple round windows and stringcourses of stones set on edge.
Fig. 10. Dar al-'Izz from outside. This photograph is the right-hand end of Figure 9, showing the state of deterioration. Note the triple round window at the top, and the plaster seen from the inside.
stone cobbles with stairways to facilitate the changes in elevation. While the roads did not use mortar, the cisterns, and bridges commonly exhibit the type of masonry seen at Dhu Jibla and in the Mosque at Ibn Janad. This fact gives credence to local explanations that these public works are a legacy of al-Sayyidah bint Ahmad al-Sulayhi.

On a high point above the Friday Mosque at Jiblah, stands a partially ruined building called the "Dar al-Sultana," or "Dar al-Izz," (See Figures 8,9,10.) This edifice is currently inhabited by people who have built on top of the ruins of what is obviously a much older structure. Parts of this complex have fallen in completely and are covered with dirt and debris. Parts of it are obliterated by later building. About fifteen buildings currently cover the site, in varying degrees of repair. Enough remains, however to gain some idea of the original structure and its uses, between 481/1088 and 569-70/1173-74.

The whole complex is 150 meters long by 75 meters wide and roughly oval in shape. It is located on the edge of a cliff which faces approximately the direction of the town of Ibb to the northeast. The ground slopes away to the south gently. The foundations which are visible on the north side of the building are cyclopean masonry, as large as one meter by one meter. These are comparable with Himyar masonry seen at Zafar. The stones are boulders with minimal dressing which rise a three to four meters above the narrow path running along the north side of the building. In the photograph, it can be seen that the foundation stones of the Dar al-Izz are larger than the child. (See Figures 11 and 12.) Above four meters, the walls are made of smaller stones articulated with convex pointing. The whole complex may have been surrounded by a wall at one time.

90. Kay, Yaman, 294-297, note 101

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The most publicly accessible part of the building is reached through a large arched double gate on the northwest end. The outer and inner arched openings are joined by a passageway about twenty meters long. (See Figure 13.) The inside of this passage, which could have served as a guard station, is about twenty-five meters high, by twenty meters wide. The outside was probably secured by heavy wooden gates. Such gates would have had large openings to allow passage of laden camels, with smaller "people-size" doors set into them. The same type of gateway arrangement occurs frequently in Yemen today. Often this type of door is banded with metal strips to increase security. The current closure is probably a flimsier version of what were very heavy gates.

This passageway leads to a courtyard (hawsh) which is surrounded by parts of the original building. (See Figure 14.) Only the upper parts of the walls are visible. Debris from the upper sections surrounding the courtyard has filled in the court and raised the ground level inside. Archaeological excavation would reveal the original floor level. The idea of a courtyard attached to a building is not unusual in Yemen. However, this hawsh, like most Yemeni courtyards, is not the center of the building. It was a utility area at one end, probably used for animals, agricultural storage, firewood storage, and possibly for commerce. The space is in fact more like a khan or samsara in design. Professor Serjeant has an interesting discussion of trading practices in southern Arabia in the Hadramaut where he talks about the function of the "dallal". In many parts of Yemen, there were no khans or samsaras, so local leaders hosted passing caravans. Such a host function was called "dallal". One suspects that this hawsh may have had a similar role.

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91. One extant example is in the city of Shibam, north of San'a.
Fig. 11. Ray Tindel: Himyaritic wall at Zafar, "Cyclopean fortification."


Fig. 12. Dar al-'Izz, foundation stones on the north side larger than the child.

Parts of the stone are broken naturally.
Fig. 13. Dar al-'Izz: Inside of the gate to the *hawsh*, looking towards the outside gate. Part of the arch into the gate is visible on the right.
Fig. 14. Dar al-'Izz, looking from the outside of the gate into the hawsh.

Fig. 15. Wall on the southeast side of the hawsh (courtyard), showing window construction.
When this building was in use as a center for the Sulayhid rulers of Yemen, it served a number of functions. It was a domestic, administrative, commercial and military center all at once. As the largest open space, the courtyard was probably built for animals. Cavalry constituted an important part of the armies of the time. Though much of the military force remained in the fort at Jebal Ta'ker just above Jiblah, there were probably horses in this courtyard. The doorways are large enough for loaded camels to pass through. Today the stone arches are closed off by a flimsy wooden partition with a small entrance in it. Presumably in earlier times, there would have been larger, heavier doors in addition to the small one. The courtyard of the Dar al-'lzz was not like the qa'a found in contemporary Egyptian houses of Fustat or the courtyards of Baghdad houses. It was not a light well, or an atrium for a large city house. The hawsh was evidently a semi-private, secure setting for agricultural, military or commercial purposes. The fact that later builders faced away from this space, rather than use it, emphasizes its unusual character.

On the lower parts of the walls opposite the entrance gates of the hawsh, the type of masonry with heavy mortar between the stones appears in several places. Around the walls of the courtyard, large arched openings and windows have been filled in with loose blocks, evidently at a later date. (See Figure 15.) In addition to the masonry with heavily pointed blocks, there are also pointed arches which in many cases lack a true keystone, which also appears to be characteristic of Sulayhid building. The windows visible inside the courtyard are about a meter wide by a meter-and-a-half high, surmounted by wooden lintel, over which is a one-meter relieving arch. The archs above the windows lack true keystones and they are set with a circular window made from bricks. In doors on a lower

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93 Ibrahim, "Residential Architecture Cairo;" and Subhi al-Azzawi, "Oriental Houses."
level, round openings were made by cutting the circular holes from two pieces of stone and piecing them together. (See Figure 16.) The upper parts of windows may originally have been covered with sheets of alabaster or with window grilles such as those from the mosque at Zafar. 94

To reach the other parts of the building today, one must exit the courtyard and go along the south slope. Here, to the south of the courtyard, is a rubble strewn space surrounded by seven or eight separate houses. Since several of them are built directly into and on the ruins, it is hard to tell which are separate dwellings. Several on the south side, however, have names such Beit al-Abbas and Dar al-Dahab, indicating that they are separate. In addition to these houses, there is also a small shrine, like a private mosque, tucked into the northeastern side of the complex. This small room has its own tiny ablution pool just outside and resembles other cubical mosques reported by the German archaeological team from the Jiblah area. 95 (See Figure 17.)

This building was at least four or five stories in height. Ruined stairs, rooms and ceilings still tower over the visitor today. It is clear that the walls were plastered with mud on the inside and then covered with a thin coat of plaster. (See Figures 18 and 19.) This would have made the interior lighter. The windows are about a meter wide and a meter-and-a-half tall. There is a wood lintel over the upper part of the window which is

95. Finster, "Cubical Mosques."
Fig. 16. Dar al-'Izz, door showing construction of arch, round hole cut from two stones over the door, and carved wooden lintel.

Fig. 17. Water source for the small mosque at Dar al-'Izz, Dhu Jiblah.
then surmounted by a second meter-high opening. The upper part of the windows usually have from one to three small circular openings in them. These openings, like the arches are not made in dressed stone. Sometimes the circular openings are surrounded by bricks. In the case of the tympanums of the doors, the pierced center circles were made with stones which were carved to fit on the site. Instead of a solid piece of stone drilled with a hole, the circular windows were made sometimes with one, and sometimes with two or more, rectangular pieces fitted together to form a hole in the tympanum covering. (See Figures 15, 16 and 21.) Like the windows, the pointed arches in the building are often irregular. These arches do not rely heavily on the keystone principle. Voussoirs are cut, but often there is no keystone, or a very slim one. Another interesting construction detail is found in the staircases. It is difficult today to distinguish original from later staircase construction. The stairways, however, do not seem to have been an integral part of the structure of the building. Though they are internal stairs, they appear not to have been the central focus of the builders.

Arch construction at Dar al-'Izz appears to be uncertain at best. In some examples, like the large arches leading into the hawsh, the builders were comfortable with a kind of true pointed arch. (See Figure 20.) In other details, however, there is no use of real arches at all. The doorway in Figure 21, is simply stacked stones. Most of the structure rests on the carved wooden lintel. (See Figure 21.) Above the lintel, as in the example in Figure 16, there is another piece of wood which appears to have inscriptions, or at least designs carved on it. The tympanum of both doors is filled with stones fitted together with a hole cut out, creating a light source for the interior. In Figure 16, two pieces of stone were used. In Figure 20, four pieces were fitted together to form the
Fig. 18. Dar al-'Izz, ruined upper floors showing plastered interior walls, wood lintels and arched opening.

Fig. 19. Dar al-'Izz, ruined upper levels. Note the triple round openings in the top window, the zigzag plastered pattern below and the niche forms.
Fig. 20. Arch construction of opening into the hawsh (courtyard) at Dar al-'Izz.

Fig. 21. Arched doorway at Dar al-'Izz showing arch construction, window made of carved stones, decorated lintel and wood panel above the lintel. The ground level has risen about a meter here.
opening. The other stones were cut to fit around these. These doorways, moreover, are sunk so deep in debris today that they appear to be windows on a low level.

According to local tradition, the Dar al-'Izz had 360 rooms. This may be fanciful, but certainly there were slaves, servants, at least one large extended family, and possibly military personnel housed in the buildings. From the historic record, we learn that the Dar al-'Izz housed viziers of Persian descent who were probably hired for their writing skills. The Queen Sayyidah had her own apartments within the palace. The mansion was the site of "crowded assemblies," so there must have been some space for people to gather, though this was probably not on a grand scale. There were great banquets held at the time. The historic record relates the particulars of one such large feast which required preparations for several different classes of people. At this banquet, thirty sheep were roasted, 450 kilograms of sweetmeats prepared, and wine was drunk to excess. Life at the time was usually more sober, however, as witnessed by references to spinning at home. The Dar al-'Izz, in addition to its whitewashed rooms, was hung with curtains and had carpets. Queen Sayyidah liked to spend summers in the fort at Jebal Ta'kar. Winters were passed at the lower elevation in the Dar al-'Izz. At one point, al-Mufaddal chided the Queen for keeping all of her treasure in the fort on Ta'kar. He wanted her to

96. Kay, *Yaman*: Persians are discussed on page 47; the Queen's apartments are mentioned on page 48; the crowded assembly is on page 61; Ta'kar and Jiblah as summer/winter residences are discussed on pages 50-51; carpets and curtains are mentioned on page 91; spinning as a home activity is on page 112; the banquet and classes of people are on pages 108-109, though the event actually took place in the Tihamah; finally, the treasure appears on page 51.
take it back to Dhu Jiblah with her. The picture of life in the castle that can be gleaned is one of solid comfort, not inconsistent with rural life in Yemen even at the middle of the twentieth century.
The city of Ta'izz lies about sixty kilometers south of Dhu Jiblah. (See Figure 22.) It was not a particularly notable place until the Rasulid sultans decided to take it for a capital. Their reason for this decision was based probably on economic, political and climatic factors. The Sulayhid dynasty had originated in the northern part of Yemen and had settled in Dhu Jiblah to maintain control over the northern part of the country as well as shepherd their revenues from Aden, as was discussed. The Ayyubids who conquered Yemen in 567/1173, and ruled until 694/1228, were oriented towards the coastal regions and their overseas bases in Egypt. As their successors, the Rasulids too, were more oriented towards Egypt and relied heavily on revenues from the Karim merchant trade passing through Aden. Zabid in the Tihamah was the first capital, but its high summer temperatures were less attractive to the Ayyubid and Rasulid courts than the higher elevations and cooler temperatures of Ta'izz. The old city of Ta'izz is situated at an altitude of about 1500 meters above sea level. The climate is mild year round, with temperatures seldom falling below ten degrees Celsius or rising above thirty degrees Celsius. Only in winter, principally in January, do cold dry winds blow from the north. The rest of the year is very pleasant.

Many visitors to Ta'izz have remarked on the vegetation in the area.97 This consists of tropical and semi-tropical plants, many of which were imported from other

97. Hugh Scott, *In the High Yemen* (London: John Murray, 1942), 83. Plants imported probably since the nineteenth century include the pepper tree, eucalyptus, prickly pear (called "Turkish pear" in Yemen), papaya, banana, poinciana and bougainvillea.
22. Ta'izz. Photograph taken from Jabal Sabir looking down on the Muzaffariyah Mosque (with domes), and the Ashrafiyah Mosque (minaret on the lower right).
parts of the world. Date palms, rice, mangosteen and other botanical specialties not native to the Ta'izz region were imported. The indigenous vegetation is composed of arid region plants like euphorbias (some tree-form), acacias and many smaller types of plants such as sansevieria. There were probably no forests in the area, though there are perennial springs and streams. In the spring and autumn rain cycles, rain water can swell the eastern sa'ilah which cuts through Ta'izz. This wadi is benign except after a heavy afternoon downpour when the force of the water brings huge boulders crashing down Jabal Sabir. Such huge rocks can cause considerable damage, so that people tend to avoid the sa'ilah area.

The great mountain, Jabal Sabir, rising to a height of 3000 meters above sea level, looms over the southern side of Ta'izz. To the west of the sa'ilah, on a spur of the mountain about 150 meters above the town, is the castle called al-Qahirah. This building was probably the original center of Ta'izz, before it was chosen by the Ayyubids and the Rasulids as their capital. Prior to the late twelfth century, Ibn Janad, lying on the plain between Jabal Sabir and the high central mountain ranges of Yemen, commanded attention because of its historic mosque and veneration as a pre-Islamic pilgrimage site. After 567/1174, Ibn Janad lost prestige to Ta'izz and was gradually completely eclipsed.

The fortress of al-Qahirah is believed to be the first area of Ta'izz developed. From its high position on the northern flank of Jabal Sabir, it commands the surrounding countryside, protected from the rear by the mountain itself. Another fortress at Sabir is also mentioned.98 (See Figure 23.) Probably until the arrival of firearms and cannon in South Arabia, Qahirah, like other Yemeni fortresses such as al-Ta'kar, were impregnable. From the mountain above, an aqueduct was built into the city of Ta'izz.

98 Kay, Yaman, 263, note 48.
Fig. 23. Fortress of Qahirah at Ta'izz on the left of the photograph.

Fig. 24. Ta'izz, Bab al-Musa. The western gate to the old city.

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Walls surrounded the new city, gathering the buildings against the north flank of the mountain. The new city walls had two main gates. Bab al-Kabir opened to the northeast and the roads to Jiblah, Ibb and San'a'. As late as 1974, a public execution was held in the open space before the Bab al-Kabir and the criminal's head was displayed on the city walls. Bab al-Musa opened to the southwest, towards the Tihamah, Mocha and Aden in the south. (See Figure 24.) The road itself skirted the town wall outside. Inside, the principle market (*suq*), lay between the two main gates at the base of the slope. Many of the buildings in this area had shops on their lower floors. Farther up the slope are the major mosques: al-Muzaffariyah, al-Ashrafiyah and al-Mu'tabiyah. Ta'izz of the late thirteenth and fourteenth centuries was almost completely contained within its walls. By the twentieth century, the town of Ta'izz had grown outside the old city walls past the eastern *sa'ilah*, and sprawled down the hillside onto the plain below. Ta'izz had also grown up Jabal Sabir, with fancy suburbs perched now, overlooking the old fort at Qahirah.

Part of the early development of Ta'izz under the Sulayhids and their leading retainer, al-Mufaddal, is known from the writings of 'al-'Umarah. Al-Mukarram al-Sulayhid had appointed Abu al-Futuh as ruler of the fortress at Ta'izz, when al-Mufaddal was a youth. After al-Mufaddal's death, Queen al-Sayyidah appointed Abu al-Futuh's son, As'ad, to run her affairs, including the fortress at Ta'izz. When As'ad was murdered by some of his retainers two years later, the Queen turned to al-Mufaddal's son, Mansur, to run Ta'izz. Mansur lived at Ta'izz and was presumably to the first to use the spot east of Ta'izz known as Tha'bat. This area came to prominence later under the Rasulid sultans.99 Such notes, however, tell us very little about the physical development of any

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buildings on the site. One suspects, moreover, that the site was a naturally fortified spot which lay beside an ancient trail leading from the sea at Aden up the Tihamah of Yemen. This would make the site at Ta’izz very ancient.

Ta’izz itself, however, developed as a town only after it was chosen by the Ayyubids who conquered from Egypt. As foreigners, the Ayyubids had no reason to prefer one part of Yemen to another. They had no family or tribal allegiances which would make them choose one particular place. As the historians inform us, Turanshah, brother of Saladin, after conquering Aden and the Tihamah, stayed first in Zabid. Here, however, in spite of the fact that Zabid was an ancient and venerated seat of Sunni learning and a rich agricultural resource, Turanshah found the summer climate of the Tihamah unbearable. The temperature in Zabid can reach between 43 and 48 degrees Celsius in the summer. No palm grove shade can cool temperatures of Red Sea Coast summer ferocity. It was natural therefore, that the Ayyubids chose Ta’izz, on the slopes of Jabal Sabir, as their second capital. On the recommendation of his physicians, Turanshah decided to make his capital at the higher elevation of Ta’izz in the cooler mountain air. From this strategic point he could control the road from Aden north through the Tihamah in comfort. This choice was the beginning of the development of Ta’izz as a major city in the Yemen.

The most important contribution of the Ayyubid rulers of Yemen was that they consolidated the administration of the country. From a situation of ongoing petty wars, the Ayyubids imposed a foreign administration which unified the country for the first time as a large geographic unit.100 As builders they began some constructions, especially madrasas, a type of Islamic establishment which they are believed to have

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introduced into Yemen. It is possible that they also introduced dome construction into Yemen. This makes sense when it is realized that one of the Ayyubid objectives was to reestablish orthodox Sunni Islam after most a hundred and twenty years of Isma'ili rule and a brief insurrection by a religious zealot known as al-Mahdi. Extant buildings from the Ayyubid reign, however, are scarce and it is their retainers and successors, the Rasulids, who are credited with the most important developments of the succeeding two hundred years, especially in the area of Ta'izz.

The Rasulid dynasty began in controversy, but arguments about their origins and genealogy affect understanding of their contribution to Yemen's architecture only marginally. In 628/1229, when it became apparent that no more Ayyubid representatives would appear in Yemen, the fort at Ta'izz was owned by a lady known as Bint Jawzah (or Hawzah), who was the widow of the last Ayyubid ruler at Ta'izz. Al-Mansur ibn Rasul decided to take the lady as a second wife in 628/1229, in order to secure the fortress at Ta'izz. When Mansur was murdered in the Mosque at Ibn Janad, Bint Jawzah tried to have her son installed as sultan, but this was not to be. This early controversy illuminates several points. First is that there was a rivalry between the towns of Zabid and Ta'izz. Al-Mansur's primary wife and family lived in Zabid, which was considered to be the other capital of Yemen at that time and throughout the Rasulid period. Second, the town of Ta'izz was considered important enough to be developed by the Rasulid leaders as a secure point between Aden and the rest of Yemen. Third, the Rasulids were not Yemenis and therefore not influenced by traditional Yemeni ideas about what was important territory. Finally, as becomes apparent from the Rasulid emphasis on their

103 Ibid., 129.
Yemeni forebearers, they were vaguely insecure about their origins and right to rule in the Yemen. Building was a way for the Rasulid sultans to legitimize their reign in Yemen. It was also a good way for them to establish their importance among contemporary Islamic leaders. The resulting brilliance was to Yemen's credit.

The high points of Rasulid hegemony in Yemen come in the reigns of al-Muzaffar Yusuf (647-694/1249-1295), al-Ashraf 'Umar I (694-96/1295-96), and al-Mu'ayyad Da'ud (696-721/1296-1322). It's waning glory is reflected in the reign of the sultan al-Ashraf Isma'il (778-803/1376-1400). In the almost fifty years of al-Muzaaffar Yusuf's reign, he controlled Yemen from the far north to the southern coasts, including the Hadramaut and Aden. The resources available to him, especially through the revenues from transit trade through Aden, were considerable. Al-Muzaaffar Yusuf graced Ta'izz with the mosque which still bears his name, al-Muzaaffariyah. After ruling for half a lifetime, al-Muzaaffar abdicated in favor of his son, al-Ashraf 'Umar, and retired to Tha'bat, a resort area he developed just east of Ta'izz. During his lifetime, al-Muzaaffar Yusuf developed Zabid and Ta'izz, turning both into flourishing cities.

Al-Ashraf 'Umar was unfortunate in several ways. First, his father ruled for a very long time. Second, al-Ashraf ruled only two years before his death. There is some controversy about his death. Most writers pass it off as natural, but at least one suggests that he was poisoned by a slave girl, which makes a much more exciting story. He is thought to have begun the mosque which bears his name in Ta'izz, al-Ashrafiyah. (See G. Rex Smith, "The political history of the Islamic Yemen down to the first Turkish invasion (1-945/622-1538), in Yemen 3000 Years, ed. Daum, 139.

105 Croken, Zabid, 132-33.

106 This story is reported by Varisco, Medieval Agriculture, 14; as being from a manuscript in the Great Mosque at San'a' by Watyut, al-Husayn ibn Isma'il al-Bajali (14th cent.) Kitab Ta'rikh al-ma'lum Watyut, fol 43.
Fig. 25. Ta'izz, Ashrafiyah Mosque seen from the west through a ruined wall.
Figure 25.) The question here, however, is whether the mosque was begun by this Sultan Ashraf and finished by the second sultan with that name, or whether his namesake should garner all credit for the building. More interesting, however, is the fact that Sultan al-Ashraf 'Umar was a well respected scholar. He is credited with authoring over twelve books and had a keen interest in time keeping, agriculture, animal husbandry, and medicine. In his almanac from the astronomic treatise: *al-Tabsira fi 'ilm al-nujum*, Sultan al-Ashraf displays a surprising interest and knowledge of other countries. Intimate understanding of such phenomena as the rising of the Nile River, the times of sailing from India and Aden, and the dates for Christian and Persian holidays, are displayed alongside foods to be cultivated or eaten in Yemen itself. This remarkable work points out clearly Yemen's involvement in the Medieval Islamic world of its time. Far from the isolation of the early twentieth century, Yemen of the late thirteenth century was highly sophisticated and involved in the outside world. The scientific, creative and thoughtful person of al-Ashraf 'Umar was an all too brief beacon.

Throughout the Rasulid period, there were ongoing tensions with Egypt. This stemmed in part from dispute over control of the holy city of Mecca and in part from trade. The Rasulid sultan al-Mu'yyad Da'ud (696-721/1296-1322), forbade passage of Egyptian ships in Aden in the year 707/1307, for instance, on account of a rumored Mamluk invasion of Yemen. There were foreigners in the court of al-Mu'yyad Da'ud in Ta'izz, though the most remembered of these today, Ibn Batutta, did not arrive until about six years after al-Mu'yyad Da'ud's death. Sultan al-Mu'yyad Da'ud was interested in architecture. He imported craftsmen in 708/1309, to build a magnificent

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107. Lewcock and Smith, "Three Medieval Mosques."
palace at Tha'bat named al-Ma'qali.\footnote{110} Seven years later, they had completed the edifice which is described as having a rectangular throne room ten by twelve and a half meters. Its gilded and ornamented ceiling was unsupported by columns and one author suggests it may have been a barrel vault.\footnote{111} Four lookout towers had windows decorated with golden lattices. There were extensive gardens, presumably like great Islamic places elsewhere.\footnote{112} Pools, fountains and a shadrawan (waterfall) were featured in an altogether fantastic setting. This type of setting lent legitimacy and grandeur to the Rasulid dynasty, of course. Another probable conclusion to be drawn from such lavish displays of architecture is that the upper classes probably followed suit and imitated al-Mu'yyad's palace. A town evidently grew up around the palace which contained gardens and pavilions. Subsequent sultans added to Tha'bat. Finally, by the time of his death in Aden in 1363, Sultan al-Mujahid had built walls to enclose what had become the city of Tha'bat.\footnote{113}

Rasulid sultans had to contend with inter-family strife, rebellions and natural disasters. One of the outstanding late sultans is al-Ashraf Isma'il, the second Ashraf. It has been suggested that the original Ashrafiyah mosque was begun under the first Ashraf in 1296, and renovated under the second sultan Ashraf, Isma'il (778-803/1376-1400).\footnote{114} Al-Ashraf Isma'il also instituted badly needed tax reforms, especially in the Tihamah. This brought relief to farmers and landholders who had been suffering heavy losses in the

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\begin{itemize}
\item\footnote{110}{Ibid., 147}
\item\footnote{111}{Barbara Finster, "The Architecture of the Rasulids," in Yemen 3000 Years, ed. Daum, 254-264.}
\item\footnote{112}{Ibid. Finster suggests affinities with waterworks and gardens at Cordoba (Madinat al Zahara ?), or the Alhambra at Granada. Probably closer to the real inspiration would be Egyptian, Iranian or contemporary Iraqi palace gardens.}
\item\footnote{113}{al-Khazraji, Pearl-Strings, ii, 108.}
\item\footnote{114}{Lewcock and Smith, "Three Medieval Mosques," part II, 192.}
\end{itemize}
date crops. In addition, he adjusted the weights and measures system used so that it brought added relief to the taxpayers. Sultan al-Ashraf Isma'il was a patron of learning who invited many world-renowned scholars to reside in Yemen. He introduced rice growing to the Tihamah. In addition to rebuilding and repairing existing buildings, Ashraf Isma'il ordered new construction.

A colorful picture of life in Rasulid dynasty times in Yemen emerges in al-Khazraji's chronicle. The nature of the court was very fluid. By the time of al-Ashraf Isma'il, courtly residence was divided into half the year in Ta'izz and half in Zabid. While in Zabid, the court would travel from the palm groves to the beach at the Red Sea. On the occasion of the sultan's arrival, kettle drums and musicians played. The people built wheeled platforms and merry-go-rounds to celebrate the arrival of the royal entourage.

One description of a royal encampment in the palm groves is instructive in depicting the nature of the sultan's household establishment. This mini-city had: "houses, trellises and stables," built for the occasion. An enclosure with gates at each of the cardinal points surrounded the whole. The sultan lived here temporarily with his horses, mules, asses, and elephants. Several areas evidently had designated functions. Included were a treasury, a furniture store, a tray store, a drinking vessel store, a saddlery store and a kettle drum store. The description does not mention the sultan's family or slaves who presumably lived in the "houses". This was not a real city, but a temporary abode for the ruler and his followers in the palm groves surrounding Zabid. What type of furniture and

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115 Croken, Zabid, 165-66.
116 Ibid., 169-71.
117 al-Khazraji, Pearl-Strings, ii, 287-88.
118 Ibid., ii, 62, 208, 212.
119 Ibid., ii, 244.
houses are intended is unclear here. The emphasis on animals and the fact that the sultans traveled with so many types of animals is interesting. The tray and drinking vessel stores mean that food was served then, as now, from large trays set on the ground on cloths or carpets. It is probable that the designations of use for spaces in this temporary setting reflect the concerns of the royal household. These apportionments were also expressed in more permanent constructions such as the gardens, pavilions and palaces mentioned throughout al-Khazrajī’s text. Functions for some types of rooms are mentioned in connection with more permanent dwellings. There are banquet houses, still rooms and storage areas mentioned. Normal houses were simpler, but storage of items is mentioned.120

Furnishings for houses mentioned in the *Pearl-Strings* include corded benches, probably of the type still used in the Tihamah area.121 Benches with sandalwood legs are mentioned and silken carpets. In one case five hundred previously unused dishes of Chinese porcelain were brought out. Persian ceramics and local earthenware are mentioned. Brass and copper utensils as well as water containers of leather and pottery were used.122 The sultan's household was probably the extreme example of this type of consumption, but it is interesting to note that many of the prized possessions were imported from very great distances: Iran, China, India. Also striking is the fact that household furnishings mentioned do not include many items of solid heavy furniture made of wood such as chests of drawers, dining room tables and chairs, or beds. Simple benches consisting of a wooden frame with a woven, corded bottom were important items, just as they are today. A household's goods, moreover, are now as then, counted

120. Ibid., ii, 24 and 52.
121. Ibid., ii, 200-201.
122. Ibid., ii, 217 and 272.
more in containers and cloth items such as rugs, mattress covers, curtains (for windows and doors). These can be folded or stored in moveable trunks or in wall niches in houses.  

For the celebration of Sultan al-Ashraf Isma'il's sons' circumcision in August of 1392, an elaborate party is described. In addition to lavish amounts of staple food, fruits such as melons, pomegranates, tamarind, lemons, citron, raisins and various nuts are described. This food was flavored with sugar, nutmeg, cinnamon, pepper, saffron and other types of spices. Candies were imported from Cairo or made into interesting shapes by a crew of confectioners. Smells were important and flowers mentioned include tuberoses, roses, narcissus (?), jasmine and stocks. Perfumes included musk, sandalwood, violet, ambergris, and rose water. This elaborate feast which took place at Tha'bat, near Ta'izz, helps depict the wealth and luxury of the Rasulid court in the fourteenth century.

The physical layout of Ta'izz is harder to reconstruct from the chronicles. Two sites in the vicinity of Ta'izz are important. Tha'bat, the palace to the east of town became a city in itself.  

Al-Qahirah, the fortress, lay above and south of Ta'izz on the slopes of Jabal Sabir. For the quarters of Ta'izz, some information remains. Several landmarks have survived. These include the city gates, Bab al-Musa on the west, and Bab al-Kabir on the east. The citadel, al-Qahirah, is still extant. Within the city walls of Ta'izz itself, the three mosques: al-Muzaffariyah, al-Ashrafiyah and al-Mu'tabiyah, are still recognizable. (See Figure 26.)

There were several districts within Ta'izz. These include: Jubeyl (the area where Sultan Mujahid built a madrasa), 'Udeyna (presumably near the Ashrafiyah Mosque in

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123 Ibid., ii, 27.
124 Ibid., iii, 137, note 889.
Fig. 26. Ta'izz, sketch map showing districts of the old city.
the "western quarter"), and the Wasit quarter (near the Mu'tabiyah Mosque). Mentioned also is the Sunbula quarter. The only two of these which can be placed are the 'Udeyna in which the Ashrafiyah Mosque appears and the Wasit area around the Mu'tabiyah Mosque. The main market, *suq*, was located on the lower slopes of the hill, presumably even then. More desirable real estate lay farther up the hillside.

The suburbs of Ta'izz present an equally puzzling image. Other than Tha'bat, there were two main ones. One is the Mujelliyya where Princess Salah, mother of Sultan al-Ashraf Isma'il, built a mosque before her death in February of 1361. The other was the Jehmeliyya gardens and pavilion where the sultan rested before entering Ta'izz from Zabid. Here, the people built platforms on wheels and merry-go-rounds to welcome the royal entourage. This site was possibly also a market. Dar al-Nasr is listed as a palace outside Ta'izz. Mu'azziyya, Meshrefa are listed by Redhouse as two other suburbs of Ta'izz.

Included here is a hypothetical reconstruction sketch map of Ta'izz and its districts, (Figure 26). If the central axis of the city was between Bab al-Musa and Bab-al Kabir, then the translations of al-Khazrajii by Redhouse make little sense. (See Line A in Figure 26.) Assuming that there was possibly a third gate, or at least that the eastern

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125 Ibid. For Jubeyl see ii: 48, 62, 140 and iii: notes: 462, 1276 and 1277. These explain the confusion about this name which was apparently both a village near Ta'izz, and a section of the city. For the "western quarter," see ii: 27 and 52. For 'Udeyna see ii: 26-27, 49, 108, 197, 286, and iii: notes 639, 1188 and 1189. The references and notes here state that there was a "cathedral" [sic] mosque of the 'Udeyna built by Sultan Mujahid, but 'Udeyna is also listed as a suburb of Ta'izz or a village near Ta'izz [?]. For Subula see ii: 205. For Wasit see: ii: 151. For Mejelluyya ii, 101-02. Mu'assiyya and Meshrefa appear in iii, 110 and 172-73.

126 Ibid., ii: 48, 62, 73, 101-02, 224-26, and iii: notes 1276 and 1277.

127 Sir James Redhouse expresses doubts about the translation of some of this information. This is discussed in the iii: notes 1188 and 1189.

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city wall was closer to the eastern sa'ilah, shifts the city center to the east. Bab al-Kabir would have been a central gate. This then puts the Ashrafiyah Mosque in the "western quarter," as Redhouse translates. (See Line B in Figure 26.) Imposed on the map here also are the approximate positions of several houses mentioned in the present study. (See Figure 26: Houses A, B, C, D, E.)

In the midst of all the pomp and glitter of the royal household, it is hard to glimpse Ta'izz as the town must have appeared. One person who stands out clearly is the eccentric Muhammad ibn Shafi'. An old man, he was sympathetic to the order of dancing dervishes, and his house was a refuge for them. He had no wife or children. Instead, he kept thirty cats. For his felines, Muhammad: "... used to buy what they would eat, and he used to feed them and take every care of them." His death came to him in a state of religious ecstasy brought on by watching the dervishes dance. The quiet piety of this old bachelor catches the imagination and helps clarify day-to-day life in the fourteenth century.

Al-Nasir Ahmad's death in 847/1424, was the beginning of the end for the Rasulid dynasty and their building programs in Ta'izz and Zabid. Political strife in Yemen was exacerbated by Sultan Barsbay, the Mamluk sultan of Egypt who, in 832/1428, imposed a crushing tax on any ships docking at Aden. This boycott of Aden was coupled with the institution of a Mamluk monopoly on the spice trade. These moves had disastrous results for Aden, while the northern port of Jiddah, grew rapidly. The transit trade from India, which had long provided stable revenues for the rulers of Yemen, withered and died. Not until coffee became important on the world markets in

128 al-Khazraji, Pearl-Strings, ii, 221.
129 Smith, "Political History," 137.
130 Nelly Hanna, An Urban History of Bulaq in the Mamluk and Ottoman Periods (Cairo: Institut Francais d'Archeologie Orientale, 1983), 15.
the sixteenth and seventeenth centuries, was Yemen's trading status and wealth reestablished. The Ottoman intrusion into the Red Sea to counterbalance the Portuguese threat in the sixteenth century shifted trade in the area from luxury goods to staples. By that time, however, the political and architectural situations in Yemen were very different.

Possibly as early as the fourteenth century, during the Rasulid dynasty, qat, conceivably imported from Ethiopia along with coffee, became established in Yemen. Much of the literature connected with qat associates it with the southern capital of Ta'izz. Certainly qat and chewing as a pastime was established by 1553, when al-Haytami issued his famous farwa allowing its consumption. It is possible, as Shelagh Wier suggests, that qat became an item of local consumption because coffee was being exported at great profit to the Yemenis. This is certainly true of the coffee by-product, qishr, which is made from the coffee bean husks and is still consumed readily in Yemen. Establishing the date of qat consumption in Yemen is of some interest to vernacular architecture because the spaces used to consume qat do not assume importance until after about the mid-fourteenth century. The point here is that large sitting rooms with big windows facing out over open views do not become a significant part of Yemeni vernacular architecture until after 1553, at least, and probably even later.

The al-Muzaffariyah mosque in Ta'izz was built between 647/1249 and 694/1295. The structure underlying its white outer shell can be seen in Ronald Lewcock's photograph taken in 1972. Where the outer plaster coating has fallen away, the brick upper structure can be clearly seen. The doorway is arched by four rows

131 Shelagh Wier, Qat in Yemen (London: British Museum, 1985), 70-77.
132 Ibid.
133 Lewcock and Smith, "Three Medieval Mosques," Part II, Illustrations 2, 4.
of carefully dressed stone laid in concentric true arches. Two small relieving arches appear above it. Clearly the stonemason here has carved keystones and laid voussoirs in a craftsman-like manner. This type of structure does not appear at Dhu Jiblah where the arches are closer to corbeled arches. The bricks underlying the plaster in Lewcock's photograph are laid in a basket weave pattern which occurs both in Zabid and in San'a'.

In the Mosque of al-Muzaffar, moreover, domes are introduced possibly for the first time in Yemen. The insides of the domes were decorated with delicate designs. Though domes did not become a part of Yemeni domestic architecture, the other techniques: true arch construction, brick for upper building levels and exterior plaster, did.

The later Ashrafiyah mosque in Ta'izz, built sometime between 1295 and 1400, is also plastered outside with qadhad, the tough exterior grade plaster used in Yemen. The interior of the Ashrafiyah is decorated with delicately cut plaster designs, though these are not unique to this building. The main portal of the Ashrafiyah faces the mountain and there is little space between the cliff and the doorway, so that it is difficult to photograph. The pink and green limestone used here, however, are quite distinctive and characteristic of the Ta'izz region. (See Figure 27.) This use of colorful striped stone is one of the earliest examples of this technique in Yemen. Alternation of colored stones, called ablaq in Arabic, is a technique widely used in Syria and in Egypt, even in houses. Like the earlier Muzaffariyah mosque, the Ashrafiyah has several large

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134. For illustrations of carved plaster decoration see: Lewcock and Smith, "Three Medieval Mosques," Illustrations 5 and 8; and Barbara Finster, "Architecture of the Rasulids," 257. In Finster's photograph, the background designs on the left-hand side appear to be unfinished.
domes and several smaller ones such as those over the tombs of the Rasulid family interred there. The domes were painted inside with designs and inscriptions. Earlier Yemeni mosques such as those in the Jiblah area had flat ceilings roofed with crossed beams creating coffers that were painted with designs. (See Figure 28.) The richly decorated domes of the Ashrafiyyah can be seen in Ronald Lewcock's article, "The Painted Domes of the Ashrafiyyah in Ta'izz, Yemen." The Rasulid tombs in the Ashrafiyah Mosque are enclosed by cut plaster and by carved wooden grilles. (See Figure 29.) The typical decoration of important buildings of the Rasulid period is seen in the carved plaster scallops surrounding the opening. Carved wooden grilles at the bottom of the photograph form a screen hiding the recess behind it. Such elaborate decoration is typical for the Rasulid period under royal patronage. Imitations of such elegant decoration appears in smaller mosques and, to a certain extent, in houses.

The plans of the two major mosques of Ta'izz are very regular. The similarities of measurements in the domed areas of both mosques imply that a mathematical system was employed. In the plan of al-Muzaffar for instance, three large domes with two and then three, sets of smaller domes between them appear along the qibla wall. Parts of the plan of the Ashrafiyah mosque are regular, such as the prayer hall with a central dome flanked on either side by four smaller domes. These lie on an axis with the burial chamber and the main portal to the south. Between the outer portal and the burial chamber, however, is a set of spaces which break the direct line from the qibla to the main door. To the east there are ablution chambers which further break the regularity of the plan. Such surprises are common in Yemeni architecture.

Fig. 27. Ta'izz, Ashrafiyah Mosque. Arch of the main port showing true arch construction. The upper and lower course of the scalloped design is green.

The rest of the construction is local pink limestone.

Fig. 28. Great Mosque at Dhu Jiblah; detail of the painted wooden ceiling.
Fig. 29. Ta'izz, Ashrafiyah Mosque. Tomb of a Rasulid Sultan showing the carved wooden panels and carved plaster decoration on the inside of the mosque.
The complex of characteristics presented in these mosques include: a stone base with brick upper structure, exterior plaster protection and interior carved plaster, *ablaq* work of local colored limestone, delicately carved wooden grilles and large (probably brick) domes with painted interior decoration. All of these ideas were new to Yemen in the late thirteenth and fourteenth centuries. Some of these were combined with traditional Yemeni craftsmanship, especially in stone masonry. A number of these innovations found their way into the housing market of the new capital city of Ta'izz. Houses with stone bases and brick upper stories became standard. Though *ablaq* was apparently not used for houses in Rasulid times, it has become more important for houses in the twentieth century. Certainly carved plaster became a staple of the builder's art in Yemen, though it may have been introduced earlier.

At the end of 1937, Hugh Scott traveled through Ta'izz on his way from Aden to San'a'. He describes his sojourn in the book, *In the High Yemen*. There were no tourist hotels at that time and the building in which he was housed, Beit al-Dhuyuf in Ta'izz, was still being used to house foreigners as late as 1975. Known as the "Imam's Guest House," this property is a fine Yemeni house of the southern highlands style. The house is set high on the slope of the spur of Jabal Sabir bearing the fort, al-Qahirah. This was probably a fashionable quarter in the past. Unlike the houses of Dhu Jiblah, this building is only three stories high, surrounded by a garden which is walled off from the street. (See Figure 30.) This pattern of enclosing houses in private gardens is typical of larger homes in the Ta'izz area.

The lowest floor of the Guest House is closed off and was used for storage as is the case in most Yemeni houses. The upper two floors were enlarged, probably early in

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Fig. 30. Ta'izz, the Imam's Guest House from the outside.

Fig. 31. Ta'izz, Imam's Guest House showing the double doors of the downstairs door. A reinforcing arch is seen upper left.
this century because some of the wooden ceiling beams of the rooms on the outer perimeter are straight and square cut, unlike earlier rough-cut tree trunks used for traditional ceilings. The lower two floors of the building are coursed rough stones with heavy pointing between the stones. In the past, the entire lower floor was coated with plaster, which is probably of the variety known as *khudr.*

Many of the houses in the Ta'izz area have this type of plaster covering on the lower floors which may provide protection against the higher rainfall of the area. The upper floors of the building were repaired with a variety of materials. Parts of it were stone construction. Other parts used brick and a more modern repair included some cinder blocks.

The opening for the front door lies to the left hand side of the house when facing it and not in the center, because of the addition. Entering on the lower floor, one is inside a dark but rather wide hall which is closed on the outside by a heavy door of two sizes. (See Figure 31.) The full opening was secured with a great door which was closed most of the time. A smaller door inset in this, is just over one-and-a-half meters high and is the usual passageway for everyday needs. Immediately inside the front doors is a vestibule which Scott describes as housing soldiers. A large arch spans the vestibule area strengthening the structure for the upper stories. This type of entranceway is typical of Yemeni houses of many regions and types. The lower floor was used in the past to house animals and store staples for household consumption.

\[138\] Types of plaster (the general term is *quss*), used in Yemen include: *jir/nurah* which is used outside, *khudr* used for joining stones and general waterproofing, *higra* used in bathrooms and *qadhad* used for outside waterproofing. See: Serjeant and Lewcock, *San'a',* 475-481 for Lewcock's extensive discussion of Yemeni plaster. Guillemette and Paul Bonnenfant, *Les Vitreaux de Sanaa* (Paris: Centre de Recherches Archeologiques, 1981), 63.

\[139\] Scott, *In the High Yemen,* 85.

\[140\] For important discussions of the structure and functions of typical Yemeni houses see: Ronald Lewcock's article "Houses of San'a," in Serjeant and Lewcock, *San'a' 436-
level, the stairway ascends to the upper levels in stages. Along with its addition, this house has electricity and running water, both of which are completely modern innovations.

The Guest House, is across the lane from a small double mosque known as the mosque of "Said Muhammad al-Mutawakkil". One half of this structure was for men, the other half, for women. The two tiny mosques are separated by a wall, but share a common water source. Originally water was brought to these mosques by the aqueduct coming down from Jabal Sabir. Water was fed into tanks and wash basins at the sides of both mosques. The proximity of such a water source to the house makes one wonder if there was running water supplied to households or gardens in the Ta'izz area. This would be an interesting point. Most of the water supply for Yemeni houses, even today, is hauled in by women carrying water on their heads in various containers. In the sophisticated highland town of San'a' in the past, water was sold to households from donkey drawn tanks on wheels. Water was also pulled up from deep draw wells by camels and donkeys. Many private houses had their own wells. The possibility of gravity fed water supplied to houses makes an interesting point for speculation in Ta'izz.

Inside the Guest House, the windows and the interior plaster work glorify this building. Scott remarked on the plaster designs in his room in 1937. (See Figure 32.) This room is part of the newer addition, judging from the stained glass and the saw-cut ceiling beams. The two outer walls of the room have large windows which became common probably in the late nineteenth and early twentieth centuries. The casement of this type of window is low and contains two or three panes of clear glass set in wooden

Fig. 32. Ta‘izz, Imam’s Guest House. Interior of a second floor mufraj (sitting room), showing plaster decoration of two birds perched on an inverted arch. The birds face a plant growing from a coffee pot. To the right is a niche surmounted with an arched border containing a zigzag design.
Fig. 33. Ta'izz, Imam's Guest House. Inside of a window showing the double shutter construction with hand-forged catches. The lower half of the window is at floor level, making it easier for people sitting on mattresses on the floor, to see out.
frames. (See Figure 33.) The outside can be closed with elaborate shutters which, like
the front door, have a larger and a smaller opening. The large opening can be closed to
shut out light and air flow. The smaller shutter can then be used as a peep hole. The
lower part of the large windows averages about one hundred and fifty centimeters wide
by a hundred centimeters high. This was surmounted by a plaster shelf, above which was
a lunette, arcing over the whole window like a rainbow. (See Figure 34.) The arc space
is filled with a tracery of carved plaster set with stained glass. There are sometimes two
designs in the cut plaster. One is the inner plaster frame set with stained glass. The other
is a different design carved from plaster and set on the outside of the wall opening. This
protects the inner window. (See Figure 35.) Seen together, the two windows
superimpose the shadow of one window grill on the other. One example (not pictured
here), in the Guest House is a window which has "Allah" written in the outer plaster grill
which appears as a shadow framed in the inner stained glass window. Other examples
present varied designs.

Houses within the old city walls of Ta'izz are interesting for their building
materials and structures. Carsten Niebuhr avers that many parts of Ta'izz were in ruins
during his visit in the late 1700's. Parts of the old city of Ta'izz were still ruinous in
the late 1900's. Such a state of decay side-by-side with functioning houses makes the age
of any of them suspect. Nevertheless, there were several houses of interest documented
in the years between 1975 and 1985, which form a pattern. The oldest or simplest type of
construction is coursed rubble, usually two or three stories high at most. (See Figure 36,
House A.) Small, roughly squared windows in the upper floors of this type are
surmounted by a single arched window. These windows are of small size, like those of

141 Carsten Niebuhr, Travels Through Arabia and Other Countries in the East, Reprint
(Beirut: Librairie du Liban, 1792), 337.
Fig. 34. Ta'izz, Imam’s Guest House. Inside of a window in the second floor

mufraj.

Fig. 35. Ta'izz, Imam’s Guest House. Tracery of the second floor windows in the
front of the building from the outside.
Fig. 36. Ta'izz, House A. This is an older building near the mosque of "Said Muhammad al-Mutawakkil," in the old city.

Fig. 37. Ta'izz, House B. This is the back of a house near the Ashrafiyah Mosque which can be seen in the extreme upper right of the photograph.
Jiblah. On the lower floor of this house, at least one window frame has been replaced with a saw-cut modern model. Such replacement windows are available from joiners' shops.

Another older type of house has at least one stone lower floor and a brick upper level. (See Figure 37, House B.) Seen from the rear of the building here, the windows are small openings created by stacking bricks on end to leave spaces for air and light. In the illustration, the utility view of the house shows a kitchen window, discernible because of its soot-streaked appearance. The old plastered bathroom drain sluice for waste water now has a metal pipe built into it to drain wastes from the building. In this 1974 photograph, it is interesting that there are no water tanks to gravity feed water into the household, no electric lines and no television antennas. These services were available in Ta'izz by 1974, if somewhat erratically.

Three other examples of houses in Ta'izz give a hint of its former glory. In the first example, a broad ramp leads from the street into a paved courtyard through a double arched gate. The lower half of this gate and the house in front of it are both built in coursed rubble with heavy mortar. (See Figure 38, House C.) These two buildings are not linked. The rear building was a different establishment. The windows and stone decoration of the house in front (on the left of the photograph, Figure 38), are an older type. The lower half of this window is shuttered. The arched upper section of the window is one and a half times the height of the lower part. In the lower part, it is inset with small pieces of colored glass. This type of window probably dates to the nineteenth century. 142 In a panel next to the windows and forming a stringcourse across the upper part of the building, are narrow stones or bricks set on end to form a diaper pattern. The

142. For a discussion of the age of stained glass windows in Yemen, see: Lewcock in Serjeant and Lewcock, San'a', 489-494; and Bonnenfant, Vitreaux, 62-67.
Fig. 38. Ta'izz, House C. The house in front on the left is not connected to the building in the rear with the ramp leading into a courtyard.

Fig. 39. Ta'izz, House D. Four story house in the old city covered in plaster.
top of the walls of the house, its roof area, and the lower part of the walls are plastered. To the rear of the house, a larger courtyard building with a ramp, has similar heavy masonry on the lower floor. The upper floor has wide windows, now filled with rubble of later construction. As in the house in front, the walls were plastered. The ramp and the courtyard beyond were designed for horsemen. The wide gate with its pointed arch is a little too low for camels, though they could pass through it without a load.

The second example is similar to the house in the foreground of the previous illustration. (See Figure 39, House D.) The house is set in a garden and surrounded by a wall, though nothing was planted at the time. Here, the whole house, rising four floors, is covered with plaster. The window structure is more nearly equally divided between an upper and a lower half. The larger lower half is closed with shutters of nested wings. On the lower floors, the upper half of the windows appears to be closed with alabaster. The top story windows display large fan windows with stained glass. Between the windows on all floors are narrow ventilation slits high on the walls. The facade of this building has been carefully considered and constructed of balanced elements. Above a windowless ground floor, there are three sets of double windows on the first floor. Three slightly larger sets of double windows on the second floor are separated by arched panels of brick or stone decoration in a diaper pattern which has been plastered over. On the third floor, two large windows are separated by a pair of narrow center windows between them. There are string courses formed by setting stones or bricks with one end projecting from the wall surface. The effect is altogether pleasant. Though hard to discern, on the upper right of the illustration, are the remains of the Ta'izz city walls on the hill behind the house. A house protected from the outside did not have to be fortified and could have large windows on the lower floors.
Fig. 40. Ta'izz, House E. This is a more modern house which may be constructed on the foundations of an older building.
The third example, photographed in 1975, is a four-story house surrounded by a garden with a very tall palm tree. (See Figure 40: House E.) Guessing from the height of the palm tree, it is probable that the house is at least seventy-five years old. The lower two plastered floors appear to be old masonry of coursed rubble with heavy pointing. This is similar to the Sulayhid style masonry. Above these two floors, a third story is executed in fine gray stone. The final, upper, floor is an elaborate brick structure. The windows of this house are larger and more elaborate than the examples cited earlier. Large stained glass windows and saw-cut window sashes argue for a fairly recent date for the upper part of this building. The windows of this house are larger and more elaborate than the earlier examples. These are similar to the windows of the upper floors of the Imam's Guest House. The bricks here are more precise than older brick.

Surveying housing examples in Ta'izz helps to clarify several points. From the examples, a number of characteristics emerge. These include the following details. First, houses are in many cases surrounded by gardens, forming a private yard for the residents. This may have originally been in imitation of the numerous gardens mentioned in connection with the Rasulid sultans. Such gardens certainly connote easy access to water. Landscaping, moreover, views the garden as an object of purely aesthetic, rather than utilitarian concerns. This understanding of gardens stands in contrast to the market gardens of San'a' and to the farming ethic of most of Yemen's rural population. Second, in some cases, wide paved ramps led into paved courtyards for animals. The horse is mentioned numerous times in al-Khazraji's narrative as an object of trade, booty, and great affection. The Rasulid sultans spent much time riding, trading, and raiding horses. Sultan al-Ashraf Isma'il, for instance, was so fond of a stallion named Sa'ud, that he had
him shrouded and buried in the camel pen in Zabid, like a person. A third point about houses in Ta'izz is the use of stone lower floors and brick upper stories with decorative patterns. There appears to have been an intermediate phase in this development which can be seen in the foreground house of Figure 38. In this building, the brick or stone patterns are small, compared to elaborate upper brick story of the house in Figure 40. Fourth, windows which begin as small structures, are gradually enlarged in size, becoming more elaborate. Stained glass was added to the upper part of the windows making them more decorative. Finally, plaster is used frequently in Ta'izzi houses. There is the use of a plaster outer coating, especially on the lower floors. The outside of roof areas are also plastered. Elaborate plaster decoration was the normal type of interior decoration. Though the floor plans of houses in Rasulid Ta'izz are not like those of Cairo, as will be discussed, a similar sense of prosperity and of imperial grandeur can be reconstructed.

143. al-Khazraji, *Pearl-Strings*, ii, 265.
The third case example examined here is a house in the town of Ibb. Lying in the high mountains about sixty kilometers north of Ta'izz, Ibb is about ten kilometers east of Dhu Jiblah. Before the roads were paved with asphalt in 1973-74, the roads into Ibb were of the type described for Jiblah. They were cobbled roads leading from the lower plain at the mosque and village of Ibn Janad up into the high mountains. Before cars were introduced to Yemen, the trip from Ta'izz to Ibb would have taken two or three days. The town of Jiblah lies half a day's walk from Ibb. Many of the villages and forts in Yemen are within easy walking distance of one another, so that one could travel the length of the country in inhabited territory. Transportation has been an important factor affecting building in the mountains of Yemen. Ibb lies an altitude of about 2000 meters above sea level. The southern highlands surrounding the town were traditionally covered with terrace agriculture. Throughout these southern mountains, agriculture was and still is, the principle livelihood. In the photographs taken in the 1970's, it can be seen that Ibb still has remnants of a city wall and an aqueduct. (See Figures 41 and 45.) The city itself was not particularly large and has high houses of a type very similar to those of neighboring Jiblah. Presumably, builders moved between the two towns. The appearance of the houses in these two mountain towns are too similar for there not to have been some interaction. It is quite possible that Ibb imitated Jiblah at first.
Fig. 41. View of Ibb. The haze drifting over the left of the photograph is smoke from cooking fires.

42. Ibb. Interior of the upper floor of a *samsara* (or *khan*) in the old city of Ibb.
Brinkley Messick's colorful description of lines of donkeys loaded with grain to be stored as tithes, revenues and payment for landlords, emphasizes Ibb's role as a local revenue distribution center. As Messick sees it: "Stored grain was the foundation of the old agrarian polity."144 As a storage and distribution center, Ibb has long had an important place in the southern highlands. Trade was also important. There were Indian merchants operating in Ibb in the past. They had a samsara or khan named for them, "Khan Banyani." (See Figure 42.) There were a number of samsaras in Ibb, some of which were several stories high. The one shown here was being used as a vocational school in 1975. The importance of trade in Ibb is emphasized by realizing that the Ottoman governor in the late nineteenth century was also a shaykh and a leading merchant. Exports from Ibb in the nineteenth century included coffee, ghee (called saman in Arabic), and hides. Manufactured goods and luxuries from the Indian Ocean trade were imported.145 In the past, Ibb was a provincial center and is today, capital of a district. It was never, however, the capital of a ruling house. This makes the history of Ibb more elusive than that of Dhu Jiblah or Ta'izz which were both centers of regnal activity. Several mosques in Ibb were built with the patronage, particularly of members of the Rasulid family, but for the most part, Ibb's history is more mundane than that of San'a', Ta'izz, Zabid or Dhu Jiblah.

Most of the written history of Ibb occurs peripherally, mentioned in passing. As early as 270/883, Ibb fell under the rule of the Fatimid convert, Ibn al-Fadl, who had set himself up in an otherwise little known town to the west of Ibb, Mudhaykhirah. Ibn al-Fadl had been converted to the Isma'ili cause in Iraq about 266/879, when he went to visit the tomb of a Shi'a saint there. By 292/905, Ibn al-Fadl was proclaimed a da`i and had

144 Messick, *Calligraphic State*, 12.
145 Ibid., 112.
conquered San'a' by defeating the Yufirids. By the time of his death in 303/916, he had renounced the *da'wah* and even Islam itself. Ibb obviously had existed therefore, before the time of the Sulayhid move to Dhu Jiblah (481/1088). It is even possible to suggest that Ibn al-Fadl's previous activities in the southern highlands may have played some part in the Sulayhid decision to move to the Ibb/ Jiblah area. By the time of the Ayyubid invasion and rule of Yemen, Ibb achieved some notoriety as the site of the murder of the new self-proclaimed sultan, Ghazi ibn Jibril, by his own Mamluks in 611/1214.

More recent accounts of Ibb picture it as the object of sieges and sacks by various "hillbilly" factions. One such group is the tribe called "Yafi'i", a fierce southern tribe which has "provided mercenaries for centuries". The 'Adbi people of the Yafi'i were also reported to be sacrificing animals in the streets. Such reports, of course, barbarize the tribesmen. In the eighteenth century, the Yafi'i attacked Ibb, breached the city walls and killed people indiscriminately; men, women, Muslims, Jews and East Indian merchants. They took everything they could carry on "1,000 camels," donkeys and their

146 Seijeant and Lewcock, *San'a*, 56-57.
147 Ibid, 63.
148 The term "hillbilly," is used here because it carries the same prejudicial note in dealings with mountain dwelling peoples of the southern parts of the United States. Such people are admired for their resourcefulness, fierce independence and ability to withstand adverse conditions. They are deplored, however, for their ignorance, lack of sophistication, disdain for established authority and violent natures.
149 Seijeant and Lewcock, *San'a*, 77, 84-88. The problem of "tribes" in Yemen is not discussed here. The contemporary view is that the northern half of Yemen is home to the most important tribes and tribal confederations (Hashid and Bakii), and the site of many battles among them. Generally southern Yemen, including the Hadramaut, is traditionally seen as having fewer tribes. People are identified instead as villagers and farmers. Accounts of the Yafi'i depict them as bloodthirsty, ignorant and barbarous. See also: Paul Dresch, *Tribes, Government and History in Yemen* (Oxford: Clarendon Press, 1989).
own backs. This was in 1120/1708. By 1911, Ibb had become a qada, sub-province, under the second Ottoman Turkish occupation of Yemen. At this time, Ibb was again attacked by tribesmen who were reported to be so ignorant that they ate bars of soap, leaving sugar lumps because they thought the sugar was gun powder. Again the report draws a dichotomy between an important center of settlement and commerce and the "wild hillbillies." From accounts such as these, one would suppose that the tribesmen were nomadic marauders. They were, in fact, villagers who were simply probably not dependent on the established commercial networks centered on towns such as Ibb.

The historic background of Ibb also contains some interesting religious notes. From the history of Ibn al-Fadl and the Sulayhids, it is clear the Ibb was close to the center of Isma'ili activity in southern Yemen. In addition, Brinkley Messick mentions that the Sunnis of Ibb were not adverse to seeing Zaidi rule replaced by the Ottoman Sunnis in the late nineteenth century. There are also tombs of twelve awliyya (saints) in Ibb. The resting places of two holy men were reported to be in houses. The tomb of Beni Mufaddal was reported to be in a house. The tomb of Daghdagh ibn Mansub is also reported to be in Mansub house. Presumably these tombs were not originally in private homes, but the town has grown around them. These and other saintly sites in Ibb were visited by women on Thursday nights.

Two religious buildings in Ibb are datable to the period of al-Asad al-Din Muhammad, nephew of the first Rasulid Caliph Mansur, about 656/1258. Most of the

151 Messick, *Calligraphic State*, 49.
152 Ibid. 274, note 37, and personal conversations, January, 1997. Dr. Messick says that the tombs in houses presumably predate the houses and that they were incorporated because of lack of land in the town. Whatever the circumstance, this is a really interesting idea which should be pursued. It appears on the surface to be reminiscent of practices in Morocco.
Great Mosque at Ibb dates from the early Rasulid period. Parts of the building, now obscured, are said to date to the time of the second Caliph, al-`Umar ibn Khattab.\textsuperscript{153}

The plan does in fact, appear to have been altered several times. It is possible that originally the plan more closely resembled the Great Mosque at Dhu Jiblah, ten kilometers to the southwest. For purposes of the present study, the smaller Madrasa al-Asadiya is more interesting. This religious school has a clear logical plan which appears to be the original, without additions or extensive renovations. (See Figure 43.) The geometry of this plan is satisfying. The plan is created from a simple square module, with the courtyard twice as large as the domed sanctuary. The sanctuary can then be divided into two squares side-by-side to form a rectangle, or it can be seen as the domed square in the center flanked by two halves of the other square. In Finster's photograph of the qibla wall of the Madrasa al-Asadiya, the type of masonry with irregular coursed stonework picked out by heavily articulated mortar is clearly seen.\textsuperscript{154} (See Figure 44.) This is the type labeled "Sulayhid," in the present study, but in this example, it is dated to the early Rasulid period. Interestingly, however, some very irregular design elements occur in the qibla wall of the al-Asadiya Madrasa. The small mihrab is flanked by two high windows. The windows are surmounted by a border of irregular diamond shapes between arches, made of heavy plaster. Above the mihrab arch itself, there are two other arch shapes which are not the same size. Above and below these are what appear to be panels with inscriptions. The irregularity of this important part of the building seems incongruous with the clarity of the plan. It is possible that the inconsistencies are the result of Yemeni craftsmen working with foreign planning. Such a situation would

\textsuperscript{153} Barbara Finster in \textit{Archaeologische Berichte aus dem Yemen}, vol. 1 (Mainz am Rhein: Verlag Philipp von Zabern, 1982), 241-242.

\textsuperscript{154} Ibid. vol. 3, 1986, 132-139, and III 41d.
Fig. 43. Ibb, plan of the Madrasa al-Asadiyah. See *Archaeologische Berichte aus dem Yemen*, Band III (Mainz: 1985) Abb. 45.

Fig. 44. Ibb, Madrasa al-Asadiyah. *Qibla* wall and *mihrab* with asymmetric decoration. See *Archaeologische Berichte aus dem Yemen*, Tafel 41d.
account for the recurrence of the "Sulayhid" style masonry. Local craftsmen were working in a style they understood, trying to execute a plan for a fine new Sunni school, but the plan was supplied from an outside source.

In Hugh Scott's account of his 1937 journey through Yemen, there are several photographs of Ibb. The Ibb town walls are shown in Photograph 52 (not shown here), particularly clearly. Here, the base of the watch tower is built in cyclopean masonry, and the lower part of the walls are done in the rough coursing with heavy mortar. The upper two-thirds of the walls are done in masonry which is roughly dressed, laid in mortar which is not quite as prominent. There is no clear date for these city walls which by 1975, had almost vanished. (See Figure 45.) In another photograph, two walls are seen with two types of local stonework clearly distinguishable. (See Figure 46.) On the left is the "Sulayhid" style and on the right is more recent rough coursed stone without exterior mortar showing between the joints. The type of masonry built of stones squared on the face but tapering slightly on the inside, is a more recent type of stone cutting. (See Figure 47.) The stonecutter in the photograph is shown squaring the outer surface of a stone that will be placed face-out in a wall. The inner part of the stone is tapered in a roughly pyramid shape which will be wedged into place with rubble and plastered with mud into position. The squared face of the stone will show on the exterior of the wall. This appears to be a relatively recent technique.

Beit al-Aziz is a modest house of the style typical of the southern highlands of Yemen. (See Figures 48, and 49.) It was built, according to the present owner, Mr. Muhammad al-Aziz, about two hundred years ago. The fine sitting room at the top of the

155. Scott, In the High Yemen, 102-104, Photographs 50-54.
Fig. 45. Ibb. Camels browsing on imported cacti on the remains of the old walls.

Fig. 46. Ibb. Typical narrow alley in the old city. Note the heavily pointed masonry with detailed joints on the right.
Fig. 47. San’a’. A stonecutter dressing a square facing stone for a house. The back will be tapered to a rough pyramid shape.
house, the *mufraj*, was added about thirty years ago.\textsuperscript{156} In its plan, this house is typical of Yemeni houses of the southern highlands. (See Figures 50-53.) The house is on one side, at the end of a narrow alley near the top of the old city of Ibb. The south end faces out over an open space. The house is four stories high, with a heavy stairway built against a neighboring house owned by another family. The lowest, (ground/first) floor was used for animal stalls and for storage. Parts of this storage space can be entered only from the south end of the house, and not from inside. One small chamber of the lowest floor was for storage and drying before collection, of fecal matter. Under the floor, a meter inside the front door, is a pit sunk into the floor which was used for additional storage. Such pit storage seems sensible when remembering the many times Ibb has been attacked. Immediately to the left, inside the front door is the stairway.

The stairway leads in several landings to the first, second and third living levels. From the landings, it is possible to look out into the street. A small stone box, called a *shubbak*, projects from the wall of the landing outside the kitchen level, out over the street. Here water jugs could be stored to keep them cool through evaporation. The women of the household could also look into the street from the *shubbak* to observe people knocking at the front door. A caller could then be let into the house by pulling a cord which slid back the bolt holding the front door closed.

On each level, the stairway landing leads to a hallway running east and west. To the east on each of the upper floors, is a lavatory facility. Traditionally in Yemeni housing, solid waste disposal was gravity fed into a room at the base of the house. There it dried out until removed. In San'a' dry excrement was traditionally removed to be

\textsuperscript{156} Information on this house is from Muhammad Aziz, the present owner in personal conversations, January and March, 1997.
burned as fuel in the public baths of the city. Liquid waste was channeled to a trough on the outside wall where it ran into a sump at the base of the house. Such an arrangement worked with little odor or inconvenience in the high, dry climate of the Yemen mountains. The ground floor was also used to stable animals at night. Usually someone came around to take them out to pasture in the early mornings. On the lowest level was the household storage of supplies such as grain or firewood for the ovens.

The kitchen of Beit al-Aziz is between the third and fourth floors of the house. It is built, however, over the neighboring house to the north, and is therefore not in alignment with the rest of the house. Such an arrangement, having one room over an adjacent and unrelated structure, is unusual today. Mr. al-Aziz, the owner, believes that this type of arrangement was more usual in the past. To the left on entering the kitchen is a small basin and a place for water jugs. Like most Yemeni kitchens, the Beit al-Aziz kitchen has a bank of ovens built into one wall. These are clay cylinders about a meter high, open at the top and bottom (tannur). They are built into a bank made of ashes and plaster which holds them in place and keeps the heat in. Firewood is fed into the bottom and the heat rises up the tube. Flat round loaves of dough are slapped by hand onto the hot inner surface of the oven and allowed to bake. The loaves are removed just before they fall into the fire below. Above the oven bank are holes in the wall at ceiling level which let smoke out. Some houses have chimney-like openings in the ceiling, but all such kitchens are smokey. Attached to the kitchen at Beit al-Aziz is a small storeroom on the north side which was used to keep cooking supplies.

On the second and third floors of the house are large rooms with windows looking south. Details of the walls of the second floor show several aspects of typical Yemeni

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157 Serjeant and Lewcock, San'a', 515.
158 Aziz, personal conversations.
rooms. Over the entrance door is a storage shelf. The east wall has several built-in
niches. The center wall niche is secured with a door. This type of niche is used to store
personal belongings, rolled up bed clothing, or books. On the south wall are windows.
The second floor has only two windows, but the third and fourth floors have more.

Each level of the house is designated for a different part of the family. The lower
rooms are usually for women and children. (See Figures 50 and 51.) Spaces do not have
particular functions except for kitchens, bathrooms and storage areas. People therefore
eat, sleep, watch television, hold parties and various other private and public functions in
any of the rooms of the house. The upper room is usually reserved for the men of the
house to hold qat chews. Both the space to perform this function, the mufraj, and the
practice of chewing qat itself (khazzan) are peculiar to the Yemen. More will be
discussed about this idea later. For the present, in Beit al-Aziz, the mufraj at the top of
the house has large windows and a commanding view out over the mountains south of
Ibb. The final space of this house, like most Yemeni houses, is the flat roof. This is
surrounded by a parapet and is used by the women of the household for various functions.
Since urban women do not work outdoors, this open area lows them to get out into the
sunshine without being observed by passersby. On the roofs, pots and old cooking oil
tins contain flourishing plants of rue, basil and marigold. Cuttings of these plants are
used to tuck into head wraps or freshen rooms of the house because people like the fresh
smell of them.
Fig. 48. Ibb, houses in the old city.

Fig. 49. Ibb. Houses in the old city. Note the round windows in the house on the left and the mosque in the center of the photograph.
Fig. 50. Ibb. Plan of Beit al-Aziz.
Fig. 51. Ibb. Section of Beit al-Aziz.
Fig. 52. Ibb, Beit al-Aziz. Details of walls on second floor.
SUMMARY OF THE CASE STUDIES

The case studies presented here afford an analysis of the historic development of the styles of vernacular domestic architecture from the south central highlands of Yemen. The nature of the process of transmission of knowledge in the building trades is assumed here to be oral rather than written. The nature of construction engineering in the central mountains of south Arabia assumes a knowledge of local materials and techniques which were taught from one generation to the next. It appears that gradually outside ideas were introduced into the building repertory of the local skilled tradesmen. The inclusion of new ideas into the process of building is charted here. The results of such changes are subtle, but lead to several conclusions. One is that south central Yemen was not isolated in the medieval period. On the contrary, Yemen was the hub of a large export trade network through which flowed wealth and ideas. Secondly, though the domestic vernacular architecture of the region retains certain indigenous characteristics such as multiple stories without a central courtyard, stone masonry and closed lower stories, it is possible to document changes which were introduced. It is furthermore, possible to roughly date these changes and to point out their probable point of origin. The following part is a review of the materials, methods and building plans of the south central highlands of Yemen.
CHAPTER 4

CONSTRUCTION MATERIALS AND METHODS

This section deals with the problems of construction. The first portion on materials and techniques, reviews building in stone, brick and plaster first. Construction details such as windows, ceiling beams and arch construction are treated next. This is followed by a section on the problem of support for multiple stories in masonry construction and staircase (qutb) construction. Finally, the knotty problem of measurements is tackled. Initially, it was hoped that shifts in measuring systems might reveal datable details, but this did not prove possible. Finally, the nature of house plans in Yemen is considered. The history and distribution of multi-story housing is important for understanding the history of south Arabia and its place in the history of Islamic architecture.

The houses discussed in the case studies are typical of vernacular architecture of the upper socio-economic levels of the south central highlands of Yemen. The basic building material is stone which is either rough cut or left uncut. Larger stones are used for foundations and for the outer facings of walls. Inner walls are built of similar stones filled with mud and rubble and plastered on the inside. This type of stone and plaster construction appears to extend at least to the Himyar period in the southern highlands. Fired brick as a building material is not used in the area of Jiblah and Ibb even today. The absence of this material is probably attributable to two important sources. First, the
lack of readily available fuel inhibits the firing process. Second, the presence of abundant and workable stone makes other materials superfluous.

In the lowland areas of the Tihamah which lack good stone and have higher rainfall, fired brick became a preferred building material, especially in Zabid. From the writings of al-Fakihi reported by M. J. Kister, it is apparent that fired brick and gypsum mortar were introduced into the area of Mecca in the caliphate of al-Mu'awiyyah. It is unclear at what point the use of burnt brick made its way to the Tihamah of Yemen. Ta'izz shared its title of capital city with the older brick city of Zabid as a Rasulid capital. The brick construction of the Tihamah area appears to have been combined with higher elevation stone construction techniques in the area of Ta'izz. Referring to Paolo Costa's photograph of the mosque at Ibn Janad, one can see that earlier building was done with stone. The upper levels at Ibn Janad are repaired in brick. (See Figure 5.) This is very similar to the process which developed at Ta'izz.

The other important building material, plaster, was apparently used from at least the early Umayyad period. It had been an important building material in Sasanian Iran also. Plaster provides warmth, bug-proofing and a clean surface. At Dhu Jiblah, plaster was used on the insides of rooms. Ta'izz builders, on the other hand, apparently covered both the inside and the outside of houses with plaster. This practice is similar that used in the big mosques which were built in the Rasulid period. In the al-Muzafariyyah and in the al-Ashrafiyah mosques, plaster was used to coat the exterior and to decorate the interior of the buildings. Paint was added to the interior plaster in the

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160. al-Hamdani, al Iklil, 11.
mosques, but there is no way of knowing whether the walls of vernacular architecture contained painted scenes or designs.

In addition to building materials, occurrences of certain building methods and details appear to be datable. Windows and the development of window types in Yemeni southern highlands vernacular architecture are varied and interesting. Most of the older windows appear to be of fairly small size. Older windows are not much over a meter high by about a half meter wide. These were closed with wooden shutters. Usually, above the rectangular lower window, there is a small opening which may have originally been a relieving arch for the lintels. The small openings are usually about a half meter high in the oldest type, and placed directly above the rectangle of the lower windows. These smaller upper openings were possibly not glazed. (See Figure 15.) Judging from the example of tympanums filled with circular openings cut in stones, it is possible that the same technique was used for windows. (See Figures 16 and 21.) One type of window which developed in Dhu Jiblah and Ibb is interesting. These are the circular openings clustered in groups of three or five. (See Figures 9, 10, 19, and 49.) In this type of window, the upper opening of the windows is as large as the lower rectangle. It is usually a pointed arch or corbeled arch which is filled in with the cluster of circles. This type of window, interestingly, is frequently found in old Cairo. In the following section on comparable construction, it will be seen that these multi-circle upper window closures were apparently common in the Mamluk period and appear as early as the Fatimid period in Cairo. It is unclear whether alabaster was used as window glazing in the medieval period in the southern highlands of south Arabia though the material was known from the area of Zafar. Possibly as early as the late medieval period, windows in Ta'izz begin

162 Paolo Costa, "Antiquities from Zafar," *istituto Orientale di Naploi (Annali del)"
to have the upper half of the window decorated with colored glass. It is believed that small, crude colored lights were used first, followed gradually by windows of increasing size and complexity. Certainly the large arched windows filled with intricately carved plaster designs set with colored glass date to the late nineteenth and twentieth centuries. The idea of the mufraj as a separate space for entertaining is also a late development, as will be seen.

In pre-Islamic construction, at least in public buildings, roofs were made by laying flat stones on stone lintels without using wood. Certainly in an environment like Yemen, wood has probably always been scarce. Burning wood is mentioned several times by al-Hamdani in his accounts of the palaces of Yemen. Conflagrations of large amounts of wood were apparently notable. Adding the scarcity of building lumber to the vicissitudes of transport by camel, oxen or donkey over high steep terrain presents an interesting puzzle. How was building timber imported into the southern highlands of Yemen? Wood was used as a leveling course in buildings in Yemen as seen in the Dar al-'Izz. (See Figure 21.) The lapped timbers just above the door here are probably earthquake protection. Wood was a frequent item of commerce in early trade. It is known, for instance that mangrove poles for the roofs of houses in cities like Siraf on the Persian Gulf were brought as ballast from East Africa. Teak, beech and rose woods were imported into Yemen for the roofs of important buildings like the Great Mosque at

11 (1973), 198.
163 Serjeant and Lewcock, San'a', 189-192.
164 Alessandro de Maigret, "Excavations ... at Baraqish," 159-172.
165 al-Hamdani, al-Iklil, 39, 42.
166 Ronald Lewcock, Personal; conversation, June, 1996.
San'a'. From the 1970's, timber has been imported from neighboring countries such as Ethiopia.

Important public buildings, like the Great Mosque at Dhu Jiblah, use dressed timbers as ceiling material. These were carefully carved with designs and inscriptions and laid in coffered patterns. (See Figure 28.) This type of ceiling appears in mosques frequently in Yemen. Sometimes the timbers were inscribed, but often such wooden ceilings were painted with interesting designs. Presently in houses of the Tihamah it is customary to paint ceiling beams with geometric and abstract designs. It is possible that such a practice was followed earlier in the highland areas.

Ceiling beams in houses in the south Arabian highlands, however, are primarily made with crudely dressed timbers laid from one wall of a rectangle across its narrowest dimension to the opposite wall. (See Figures 19 and 32.) The width of rooms is limited by the length of timbers available to between three and four meters. Large timbers with only the bark removed are frequently used as the main roof beams. Big branches are left on the trunks to help support the ceiling. Small poles and sticks are laid perpendicular, on top of the beams and covered with mud and rubble to create the floor above. These are then given an outer coat of plaster on both sides, creating a wonderfully organic sculpted ceiling and a smooth floor above it. The prevailing preference at present, is for plain white plaster covering the wooden beams.

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Arch construction was discussed in connection with the Dar al-'Izz in Dhu Jiblah and with the buildings in Ta'izz. It appears that true arch construction was not clearly understood nor widely used in Yemen before the Rasulid period. Arches in the Sulayhid period were not precisely cut. The stones were not carefully dressed and the principle of the keystone appears not to have been clearly understood. Arches built under the Rasulid sultans show a marked improvement in technique and understanding of the engineering principles involved. By the Rasulid period, arches were used on the lowest floors of houses to reinforce the structure. (See Figure. 31.)

In houses of the southern highlands of Yemen, as in the houses of San'a' and Thula, the main staircase is an integral and important part of the structure. This huge stone pier is interesting in its construction and use. It is called the qutb, which means pole or staff. Mr. Muhammad al-Aziz stated that this was: "like the Sufi term." From his description and from Lewcock's discussions of this supporting member of the structure, it is clear the staircase occupies a very important place. Staircases are usually fairly wide, running from three to four meters wide. The risers can be steep, but there are frequent landings to rest the weary on their climb. Interestingly also, in the Aziz house in Ibb, the stairwell acts as an anchor to cantilever the ceiling beams and the floor above them. The ends of the beams are anchored into the stairwell and project out, to rest on the outer walls. These walls begin at the base with a thickness of sixty centimeters. The walls are battered as they rise, until they are only a little over forty centimeters thick on the topmost level. When the plans of the floors are stacked on top of the other, it becomes apparent that the building has a slight torque. The floors do not stack exactly

172. Aziz, personal communication.
on top of one another, but are skewed slightly. The qutb, therefore, appears to anchor and support the ceilings and floors while the outside walls do not carry as much weight.

The problem of the slight rotation of the floors in the Ibb house reflects manual construction practices which may have slight inaccuracies or deviations. Al-Hamdani mentions the use of a "builder's cord," for measuring and laying out buildings in a charming tale about a bird flying off with the builder's cord to magically choose the site of the castle Ghumdan. In measuring Beit al-Aziz in Ibb for the reconstruction plans, metric measurements were applied as accurately as possible. Problems arise, however, when trying to fit Yemeni houses into the metric system, or the English foot/yard system. The Yemeni measuring system is obviously different from prevailing European systems and two characteristics become apparent. First, the Yemeni system is based on measurements of the human body. The second characteristic is that the Yemeni measuring system was not uniform over time and place. Included in Brian Doe's book Monuments of South Arabia, is a discussion concerning the use of the ancient Egyptian "Royal Cubit" measuring 0.523 meters and the Roman foot of 0.296 meters. It is Doe's contention that the Egyptian measure was used in the north (Saba' and Ma'in) and that the Roman foot was used in the south (Hadramawt and Qataban) in pre-Islamic times. Al-Hamdani suggests that the famous palace of Ghumdan at San'a' was "twenty stories high, one on top of the other." Each of these stories was "ten cubits high." The measure of a dhira' (cubit) is given by Yemeni informants is the length of the forearm from the middle fingertip to the elbow. One might assume, therefore, that a cubit measured about 38 to 40 cm (15 to 16 inches) which would be the average length of the

174. Brian Doe, Monuments of South Arabia, 278.
175. al-Hamdani, al-Iklil, 14-16.
forearm of a person a meter and a half (five feet) tall. In discussion the corpse of a woman found at Tadmur, however, al-Hamdani states: "Her foot measured one cubit." It is possible that this female had very large feet, but the length of a cubit is obviously unclear.

Walther Hinz published an explanation of Islamic measures in 1955, entitled: *Islamische Masse und Gewichte Umgerechnet ins Metrische System.* Ten years later, Hinz based his definition of "dhira'," in the *Encyclopedia of Islam* on his earlier book. In his 1955 book, Hinz states that the measure of length called the *dhira',* is based on the Nilometer in Cairo. Hinz believes that this is the "black" measure of the Abbasids (54.04 cm) which was described by Creswell in 1927. This measure first appeared in Creswell's discussion of the Nilometer on Roda Island in *A Short Account of Early Muslim Architecture.* Creswell believed the Nilometer he describes was ordered by the Caliph al-Mutawakkil in 247 /861-2. In the *Encyclopedia of Islam* article, Hinz states that there were: "...a considerable number of different cubits in common use in Islam."

In Yemen, the measuring system used by Sulayhid era builders is unclear. Judging from the small size of most windows and doors, however, it is doubtful that the *dhira' measured fifty-four centimeters. Yemeni males at that period probably averaged about one and a half meters (five feet) tall. If the *dhira' is based on the measure of the

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176 Ibid., 74.
177 Hinz, *Islamische Masse und Gewichte,* 55.
180 The present information is taken from James Allen's revised edition of Creswell's *A Short Account of Early Muslim Architecture,* 383-385.
181 Ibid., 384.
arm from the elbow to the tip of the index finger, then the *dhira'* in Yemen during the Sulayhid period was possibly about thirty-eight to forty centimeters, or fifteen inches in length.

Checking this assumption for the Rasulid period, the *dhira'* used in the Madrasa al-Asadiyah at Ibb and the Mosque of Muzaffar in Ta'izz, appears to have been a larger unit of measure, possibly forty-five centimeters. That Rasulid sultans were concerned with uniformity of measures is evident in al-Khazraji's account. At one point the discovery of the body of a man is described in very accurate detail. His leg bones are said to be: a "cubit and a half." In the eulogy for Sultan Melik 'Adfal, al-Khazraji lists as one of his good works, the institution of uniform land measures. The passage states that the sultan instituted: ". . . the legal cubit in measurements of land; there being between it and the cubit of [worm eaten] *sic*." One's frustration is considerable on reaching the chasm left by that worm.

What begins to be clear in this discussion of measurements is that there probably were no standardized uniform measurement systems such as those used today. Local builders probably used a system based loosely on the *dhira'* which varied over time and place. That the builders were conscious of the problem, is clear. The builder's craft, however, belonged to an oral tradition and was not based on paper. In Zabid, for example, in 539/1144, a group of jurists met to try to sort out a very complicated inheritance. They sat to write their initial calculations in sand poured on the floor. Only the final sums were transferred to paper. There are very few extant plans or written instructions for builders in the early periods from any Islamic area. There are no such

183 al-Khazraji, *Pearl-Strings*, 263.
184 Ibid., 139-40.
185 Kay, *Yemen*, 101-103.
written or drafted plans from Yemen. It was hoped at the outset that measuring system differences could verify chronological changes. Because of the uncertainties of the measuring systems, however, this has not proved possible at present. The issue of measuring systems in early Islam could evidently form a study area on its own merits.

One final note of interest in the discussion of materials and techniques of early buildings lies in their stability. The father of the Queen al-Sayidah, the Isma'ili ruler at Dhu Jiblah, was killed when a house at Aden fell in on him (c. 455/1062). The sudden collapse of buildings is not unheard of in the early records and still occurs from time to time. Al-Khazraji reports several times in the Rasulid period, that violent rains destroyed houses. In Zabid, for instance, he reports an incident of houses falling in after heavy rains.

Houses have collapsed in the present time. In the 1970's, Ronald Lewcock warned that an important example of housing, the Dar al-Afif at Dhu Bayyat in Hadramawt, built between about 1510 and 1540 AD, was in danger of disintegration. He wrote that the inner and outer skins of stone were separating, causing "...the worst bulging at a level where there is no continuous binding course of timber around the house. Once the clay core has begun to settle, the process is a cumulative one ...". This house had a huge crack in it as a result of the settling. The house was almost five hundred years old when it finally did collapse in the 1990's. Though such constructions can last a very long time, neglect and adverse weather conditions can wreak havoc.

186 Ibid., 250, note 29.
187 al-Khazraji, Pearl-Strings, ii, 92.
CHAPTER 5

BACKGROUND HOUSES FROM YEMEN AND
COMPARABLE EXAMPLES FROM NEIGHBORING AREAS

Beginning with examples from the ancient history of south Arabia, the problem of what ideas were indigenous to the area and what ideas were introduced from outside and how, is debated. Initial assumptions that houses in south Arabia had interior courtyards appear to be untrue for the south central highlands of Yemen, where vernacular architecture had an important defensive function from pre-Islamic times. Then, beginning east and south of Yemen, and moving to the north and west, nearby geographic areas are surveyed for early and later examples of vernacular domestic architecture. A survey of building materials, methods, details and overall house plan types found in each location is compared to the examples from Yemen described in the case studies presented here. Through this process, it is possible to suggest origins for the practices and materials which are found in the south central Arabian highlands. The contiguous areas surveyed include: India, Iran, Iraq, Saudi Arabia, Ethiopia and Egypt. The evidence suggests Egypt as the most important source of ideas and outside influence for Yemen of the medieval period.

Earlier, the problem of the central open or courtyard, space was mentioned as a reason for developing a body of comparative material for vernacular architecture in geographic areas contiguous with Yemen. Many sources discuss the "Arab" house or
the "Muslim" house as if these were unchanging, immutable and even, easily definable, categories. The term "dar," (large house, palace), as it is defined in the Encyclopedia of Islam, brings up a number of very interesting points. For instance, a major assumption is that:

From the earliest times there has been in Muslim dwellings a tendency to arrange around a central space: the park, where the shepherd's flock will be sheltered from the blows of enemies; the courtyard, where the non-nomadic family will live cut off from inquisitive strangers.¹⁸⁹

Leaving aside the sociological and historical assumptions of this statement, the notion that the basic housing unit among Muslim peoples has an open space in the middle is not true in all times and places.

Beit al-Aziz at Ibb which was described earlier, has a plan which is typical for the area of the southern highlands of Yemen. The great staircase takes up a substantial space in the plan on all levels of the house from the bottom to the top. The ground floor is composed of utility areas. The middle floors contain living spaces, lavatories and halls. The upper floor in the more modern periods dating from probably two to three hundred years ago, has a fine reception room called the mufraj. The building is completely enclosed with no open courtyard spaces at all. There may be light or air shafts included in very tall houses, but ventilation is achieved in most multi-story houses through windows.¹⁹⁰ The house presents, and was intended to have, a defensive function. The


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closed lower floors were intended to secure the building against attack. Though Beit al-Aziz was protected by the city walls of Ibb, from the historic record, it is clear that these were sometimes inadequate protection.

With building traditions originating in the highlands of Yemen defined thus, it is profitable to compare these patterns with examples of vernacular architecture from neighboring areas. Comparable examples from contiguous areas are examined here, geographically and chronologically. The evidence is not continuous. There are breaks in the archaeological and historical records, both geographically and chronologically. The intention of this survey is to develop a picture of the type of housing that was contemporary with developments in Yemen. Initially, it appears that some ideas from other styles may have been adaptable. For the most part, however, houses reflect the people who build them. In traditional cultures, houses represent responses to the climatic, geographic and social conditions which produced them. What works in Baghdad, therefore, may not work in Yemen.

The search for examples comparable to the medieval period in Yemen begins with examples of previous housing in south Arabia. The archaeological record of Yemen itself presents written evidence for houses existing in the pre-Islamic period. There is, for instance, an inscription in ancient Sabaeen in the National Museum in San'a' which dedicates a house.191 The provenance and date of this four-line inscription are problematic. Even more interesting, however, is its translation. According to W.W. Müller, the lines refer to a house built with "sechs Decken und sechs Boden," (six ceilings and six floors). The house was therefore, according to Müller, six stories high. Father Albert Jamme, on the other hand, says he has never seen any evidence of houses

191. The inscription is YM371 (No. 1047). For publication information, see note 23.
of the Sabaean period which were built of multiple stories. His translation, reads that the house in question was built with: "six pavilions and six ponds." In other words, the house had a horizontal layout with courtyards and was not vertical.\textsuperscript{192} This is a very interesting problem and a definitive translation is not yet possible. For the present purposes, however, what is even more remarkable is that a person of the late Sabaean period would have such a dedication carved on a private house at all.

There are several other known house references or dedications from ancient Yemen. The famous palace at San'a', Ghumdan is reported to have had a dedicatory plaque. In the Hadramawt, at Timna, a house called "Yafash" was uncovered in the late 1950's along with several dedicatory inscriptions which refer to persons connected with the house and to the "upper rooms" of the building.\textsuperscript{193} Another example of a dedication with a large monogram is known from a Sabaean inscription with an addition in Hebrew from the area of Zafar, capital of the Himyar kingdom. This document names the owner and the house which is called "Yakrub."\textsuperscript{194} Inscriptions on palm leaf stalks which were discovered in southern Yemen in the 1970's, have only recently been published in some detail. One of these is actually a letter from a house owner to a buyer, stating that he is sending two copies of the sale contract for him to copy, shellac and return one to the seller.\textsuperscript{195} There is written evidence for vernacular architecture well before the Islamic

\textsuperscript{192} Father Albert Jamme was kind enough to share much of this information in a letter of February, 1996.
\textsuperscript{195} Jaques Ryckmans, Walter W. Müller and Yusuf M. Abdallah. \textit{Textes du Yemen Antique inscrits sur bois (with an English Summary)}. (Louvain: Institut Orientaliste Louvain-La-Neuve, 1994).
period. Yemeni people have, interestingly, deemed their houses important enough to dedicate since well before the time of Islam.

Several buildings of the pre-Islamic period in San'a' captured public imagination. They occupy a prominent place in the folklore of Yemen. One of these was the famous palace of Ghumdan. As described by al-Hamdani in *al-Iklil*, the palace Ghumdan had twenty stories of ten cubits each, oriented to the cardinal points. Different colors and types of stones were used and the masonry joints were remarkable for their skilled execution. The roof had a dome (skylight?), roofed with a sheet of marble (alabaster?). There was a garden with a palm tree named "al-dalifah," and ponds of water nearby. Presumably, the Prophet Muhammad ordered the destruction of this building, though this is unclear.196 Hamdani's narrative goes on to discuss numerous castles scattered throughout south Arabia. Another building known in Yemen was the church at San'a'. With the Ethiopian invasions of 523 AD, Christian churches were built in Zafar and in San'a'.197 The church called al-Qalis, in San'a', is described as having stone walls, great wooden beams, and an alabaster dome.198 After the expulsion of the Ethiopian forces and the acceptance of Islam in Yemen, the church in San'a' was torn down and sold for scrap.199 These early buildings were constructed in a post and lintel technique with stone walls and wooden ceiling beams. A remarkable fact about these buildings is that knowledge of their existence and details of their construction were kept alive for generations.

196 All of the information on Ghumdan is from: al Hamdani, *al-Iklil*, 12-20.
199 Ibid.
Archaeological evidence on vernacular architecture is slowly being revealed in south Arabia. In the late 1970's, in the Hadramawt, French archaeological teams uncovered houses with upper stories and a central corridor. These were built, interestingly, on a framework of wooden beams filled in with bricks. The placement of the uprights and cross beams is constructed in squares, suggesting a modular method of building. This type of "half-timbered" work on a stone base, evidently dates to about the fourth century before Christ. Houses, however, have not been the focus of archaeological excavations in south Arabia. Most of the work has been done on religious buildings, tombs or irrigation works so far. No houses have been described for Marib, Baraqish, Ma'in, Zafar, or any site in the southern highlands of Yemen. Added to the paucity of excavated examples is confusion over the dating of the periods of pre-Islamic south Arabian history. There are presently two dating systems, a long and a short one, in use. The picture of pre-Islamic housing in Yemen remains sketchy at present. What is clear, however, is that house plans of several stories, skilled masonry, ceilings with wooden beams, and a respect for domestic vernacular architecture are part of the earliest history of south Arabia.

Comparable examples from other geographic areas include: India, Iran, Iraq, Saudi Arabia, Ethiopia, and Egypt. The representative examples chosen are presented in chronological order beginning with the earliest dates. This information is then matched

202. Ibid., 9-12.
against the Yemeni examples under discussion. Evidence for areas outside Yemen range as far away as India. A lovely bronze dancer from India from the third century AD, found on the south coast of Arabia at Dhofar, makes clear the early connections between south Arabia and India. The earliest known Indian domestic architecture, is houses at Mohenjo-daro and Harappa, which date from the third millennium BC. Contact with Arabia, however, probably does not date from such an early period. Dwellings in the Indus Valley cities were built of burnt brick, arranged in rooms around a central courtyard. Some houses had a second story and most houses had bathrooms with drains leading to a central disposal system. The character of the Indus valley houses and town planning was extremely conservative. Such houses do not fit south Arabian solutions to housing problems at all.

For later Indian houses, information is sketchy up to the modern period. One example of intermediate architecture is found painted and carved in the caves at Ajanta dating from the late fifth century AD. Ajanta art shows palaces which are basically trabeated architecture, though some barrel vaults do appear. The architecture shown in Ajanta and in some other examples, appears to be several stories high with balconies. The buildings appear to be built of wood. Coffered ceilings with painted beams are also shown in the Ajanta caves. There is a superficial similarity between the decorated

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204 Gus W. van Beek, "The Rise and Fall of Arabia Felix," *Scientific American* (December, 1969) 45.
206 Ibid., 201-202.
ceilings at Ajanta and the much later Yemeni mosque examples. Many Yemeni buildings past and present, including the church of al-Qalis and numerous mosques, have decorated ceiling beams. That the idea of the painted ceiling was imported to south Arabia from India, is doubtful, however. As discussed earlier, present Yemeni houses usually have white plastered ceiling beams, though some in the Tihamah at Zabid, are painted with decorations.

Looking further north, but still to the east of Yemen, Sasanian Persia is contemporary with the late pagan centers of Yemen and the earliest Islamic phase. According to tradition in fact, the first convert to Islam in Yemen was the Persian governor of San'ā'. The most important development in Sasanian architecture, even in private houses, was the *iwan* and the *iwan*-plan. Examples from Ctesiphon, show *iwan*s opening off of a central courtyard with closed rooms arranged around the court and *iwan*s. This type of plan, with the large arched alcove (*iwan*) opening off of a central courtyard does not occur in Yemen, even in mosque architecture. The other Sasanian type of construction which became important is rubble set in mortar which was evidently used to construct parabolic vaults (*iwan*s) without using extensive wooden centering.

Though rubble vaulting held together with plaster does not appear in Yemen, certain types of Sasanian building techniques, do have parallels in Yemen. Decorated plaster coverings for interior walls are found in the Sasanian period in Iran and by the Islamic period, in Yemen. At Siraf, on the Persian Gulf coast, David Whitehouse excavated multi-story houses decorated with interior plaster decoration dating to about

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208 Serjeant and Lewcock, *San'ā*, 45.
210 Ibid., II: 547-550.
211 Ibid., II: 498-99.
950 AD. Interior plaster decoration is generally widespread by the tenth century in the Islamic world and was probably influenced by the Abbasid palaces at Baghdad and Samarra. The survival of Sasanian motifs as late as early Islamic mosques, such as the mosque at Nayin, Iran dating to the tenth century, however, is intriguing. Interior plaster appears, in fact, to be an international type of decoration by the tenth century. Though inside plaster decoration is found in Yemen, house plans with interior courtyards such as those at Siraf or Ctesiphon, are unlike Yemeni houses.

Seeking examples of housing further north, in Iraq courtyard plans for houses and brick construction have a history dating back millennia. House construction in early Mesopotamia used heavy mud brick walls and open courtyards to escape the summer heat. Some Sumerian houses about 2000 BC, were two-story, built of brick with rooms off of a central courtyard. These were whitewashed inside. Such houses persisted until the late Assyrian period (911-891 BC).

By the time of the early Abbasid caliphate, between about 750 and 950 AD, several ideas were well established for residences in Mesopotamia. These include mud brick walls and supports, interior decoration in carved or painted plaster, and an open courtyard plan. Much of what is known about the Islamic residences of the Abbasid period comes from the writings about Baghdad which mention residences in the rings between the outer walls and the mosque-palace complex in the center. These must have

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been severely restricted in size and layout because of the circular plan of the city itself.\textsuperscript{216}

Houses excavated at the new capital of Samarra display similar characteristics. Dating from the time of the move of the Abbasid caliphs to Samarra, these houses are described as having one story with an open courtyard. They are built of mud brick with flat timber roofs and covered inside with gypsum plaster. A note that windows at Samarra were made with "bulging disks of glass of 20-50 cm.," may reveal the origin of round windows in Egypt and later, Yemen, but this is unclear.\textsuperscript{217}

Traditional houses in contemporary Baghdad keep the building materials, (mud brick and plaster), and the basic plan, (the open courtyard surrounded by rooms), which was used for millennia. Extant houses built before the 1930's exhibit characteristics such as the following. The houses are usually two stories high. Basic plans consist of a paved hawsh (courtyard) in the center surrounded by rooms on each level. Some houses have cellars which could be used to escape the hottest weather. The ground floor is used for business and to receive guests. The upper level is reserved for the family. Outside, the lower walls are blank except for the doorways. Windows on the second story floors have elaborate mashrabiyyah, called shanasheel in Iraq, or bay windows, which project out over the street creating shade.\textsuperscript{218} Houses in the area of Iraq, neither past nor present, resemble those of the south Arabian highlands.

In Arabia north of Yemen, pre-Islamic development was influenced to some extent by Hellenistic and Roman styles of the Levant. Houses there appear to be of a single story with a central courtyard. They were ornamented with classical motifs such as grape vines, Greek column types and statues of nude figures. The influence of the Hellenistic world extended as far south as Timna in the Hadramawt where decorative cherubs, grape vines and lions appear. Carved stone decorations with Hellenistic patterns and motifs have been found in many places in Arabia, including ancient Zafar in the south Central highlands of Yemen. Many of the buildings which were ornamented with these carvings, however, had closed plans. They did not share the plan of the atrium-house, the basic domestic structure of the Hellenistic world. South Arabia apparently has had an extended family and a clan structure for much of its history. There were few towns of large size, and Roman and Byzantine multi-story houses for many unrelated families do not appear in south Arabia. Because of the social structure also, there were no apartment houses and not even very many _khans or samsaras_. Almost all housing in south Arabia was intended for single extended families. It appears that domestic vernacular architecture in the Yemen area shared some decorative ideas, but no basic structural similarities with the Hellenistic world.

The large towns of the Arabian Peninsula include Mecca and Jiddah, north of Yemen. The housing of Jiddah belongs to a type known as "Red Sea style," which is not discussed here. Houses in Mecca appear to be more like those described for Yemen. The basic structure of the house is closed, with a large staircase providing part of the structure. Though there may be air shafts, there are no open courtyards in the old houses.

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219 Bowen and Albright, _Archaeological Discoveries_,
houses of Mecca. The two biggest differences between houses in the southern Yemen highlands and those of Mecca is first that the ground floor is given over to public business in Mecca. Second, Mecca's houses have huge *mashrabiyyah* or bay windows which project over the streets. Such windows are closer to the type used in Iraq than to any window treatment used in Yemen.

On the village level in Arabia north of Yemen, houses appear to have much in common with housing examples from farther south. In the Najd region, houses of several stories are made of mud brick laid on stone foundations. In northern Najd, houses apparently are built around an inner courtyard. In southern Najd, however, houses are more like the Yemeni type with an enclosed courtyard attached at ground level. This type of courtyard is used to store agricultural and household goods. Houses in the Hijaz include those of Mecca, but in addition, there are two types found further south. These are the *husn* (*hosn, hisn*) or fortress and the *qasabah*, also a defensive tower. The *husn*, which are owned collectively and were used for grain storage, appear to be very similar to the defensive towers described for the Hadramawt. These are multi-story buildings with a front courtyard, to which the whole family or village could retreat if attacked. These buildings are usually square or rectangular and sometimes have their opening above ground level so that it has to be entered with a ladder. The *husn* appears to be a very old type of architecture.

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223. Ibid., 163. Serjeant and Lewcock, *San'a*, 40, and 123.
Turning west, across the Red Sea from Yemen lies Ethiopia which has a long history of interaction with its eastern neighbor. Ethiopia was apparently settled by colonists from south Arabia around the fifth century BC. The so-called "Pre-Axumite," period lasted from about the fifth century BC to around the first century AD. The architecture of the pre-Axumite period appears similar to Sabean architecture from south Arabia. Buildings on high bases built of stepped masonry of squared rectangular blocks were apparently used for temples. This type of architecture in addition to artifacts and inscriptions in ancient south Arabian, make contact between the two areas certain for the early period.

The second period of fluorescence in Ethiopia is called the "Axumite" period, dating from possibly the first to about the tenth centuries AD. During this period, the Abyssinians accepted Christianity and became trading partners with the Byzantine Empire. The earlier discussion of the Ethiopian occupation of Yemen just before the time of the Prophet Muhammad, gives some idea of the proximity and importance of the Axumite kingdom of Ethiopia at the time of Abraha (about 523 AD). At Axum between 250 and 600 AD, the palace of Ta'akha Maryam and the famous stelae were erected. The unique characteristics of Axumite architecture found in these examples include timber reinforced construction with the cross timbers used to stabilize the wall which protrude on the inside and outside of the wall. These are the well-known "monkey head" bosses that appear even in carved examples. The palace of Ta'akha Maryam

229. Ibid., 90-108.
reconstructed by the German team early in this century, appears in Buxton and in Connah's work. A notable characteristic of the Maryam palace is its multiple stories. The German archaeologist proposed three to four stories in their reconstruction. The only puzzling note here is the ladder shown leading to an upper roof. The stelae carved and installed at Axum show buildings of up to ten stories tall. It is possible that the stelae are symbolic and not literal representations, but their proportions and the details, suggest that they copy reality. The existence of multi-story housing without interior courtyards appears likely in the Axumite kingdom of the sixth and seventh century AD. Several of such buildings were apparently grouped in a complex, as for instance, the "Dongur Mansion," at Axum or the "villas" found at Mantara. It is possible to suggest that because they were built by Ethiopians, the churches of Yemen at Zafar and San'a', had a resemblance to those of Axum. Both of these types of buildings apparently had decorated wooden ceilings. Any similarities between Yemeni vernacular architecture and Ethiopian architecture of Axum, however, lies principally in the multiplicity of stories and possibly in decorated wooden ceilings.

Contemporary architecture in Ethiopia bears little resemblance to Yemeni highland architecture. Some building types in the northern part of Ethiopia and Eretria apparently bear some resemblance to south Arabian houses. Belonging to the Tigre group, these traditional houses are made with stone set with mud mortar. In some cases

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230 Buxton, Abyssinians, 93; Connah, African civilizations, 79.
231 The ladder is remarkable because most upper floors and rooftops used in Yemen today have permanent staircases built in. Women and children of the household who use the upper areas, would not be expected to climb ladders.
232 Connah, African civilizations, 80-83.
there is a courtyard attached to the house. Such farm houses are two stories in height. They have "built-in furniture," consisting of platforms for beds and benches along the walls which do not appear in south Arabian housing. Even the type of chief's house which is a two-story circular mud wall house appears unlike any arrangement from Yemen. Other types of traditional Ethiopian housing are either woven like large baskets, or are circular huts roofed with poles and thatch. A type of round hut built with mud walls and roofed with thatch does occur in the coastal area (the Tihamah) of south Arabia, but is not discussed here.

Across the Red Sea to the northwest of Yemen lies Egypt. Pre-Islamic contacts possibly occurred between the people of south Arabia and Egypt, though when and how, is unclear. Brian Doe points out that an Egyptian system of measurement was possibly in use in south Arabia in the Sabaean era. The masonry of the Sabaean kingdoms was limestone ashlars cut and fitted with great care. Stones are marginally dressed and pecked before fitting into the walls. Excavations at the temples of Marib and of Baraqish show this type of distinctive stonework. Ancient Egyptian masonry, on the other hand, was dressed only after the stones were placed in the wall. Whole walls in Egypt were decorated with sculpture after they were built. In ancient south Arabia, engraved inscriptions are executed with great skill and care, but Sabaean wall sculpture is restricted to line engravings. Sabaean-style columns have square pegs onto which the lintels were socketed to create hypostyle halls. This type of masonry did not lend itself to multi-story construction. Most excavations so far have been of public buildings or

234. Gebremedhin, "Traditional ... Housing in Ethiopia."
235. Doe, Southern Arabia, 80-86.
temples so it is possible that houses were structured somewhat differently. Typical Yemeni construction types include temples, hydraulic engineering projects and city walls. In addition to a lack of emphasis on tombs, south Arabian types of construction are unlike anything found in ancient Egypt.

By the Islamic period, some Greco-Roman types of architecture, such as apartment buildings which housed large numbers of unrelated people, had come to be used in Egypt. Under Islam, at least one characteristic becomes more closely related between Yemen and Egypt. Lezine, in discussing the origins of Islamic multi-story houses in Egypt, weighs the possibility of Yemeni influence from the troops who came with the Islamic armies from Arabia. He discards the idea, however, in favor of an ancient Egyptian prototype which appears in Alexander Badawy's drawings of multi-story houses. Lezine concludes that the multi-story house in Islamic Egypt is the descendant of Egyptian "high-rise" houses of the New Kingdom. Whatever the case, houses of more than one story occur on both sides of the Red Sea, before the Islamic period.

In Islamic Fustat, houses of multiple stories were evidently common. The same or similar types of houses were built in the new Fatimid city of al-Qahira (Cairo) and by the Mamluk successors to the Fatimids. Fustat began as a new town under 'Amr ibn al-'As after the fall of the Byzantine fortress around 22/643. The first mosque was followed by mud brick houses. Buildings of up to seven stories lined narrow lanes in

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238 de Maigret, "Excavations ... at Baraqish," 160-62.
240 Badawy, History of Egyptian Architecture: 17 and 18 (figures 1 and 2), show a similar house though this is not the example Lezine used.
241 Naser-e Khosraw, Book of Travels, 45.
242 George Scanlon, "Fustat and Islamic Arts," 180-95. Kubiak, Al-Fustat ... Development.
Fustat, though the more usual house was two stories. Interior courtyards with basins and fountains were not unusual and wastes from houses drained into pits served by gutters. Industries, usually on the ground floor, were scattered in with residential housing which was often on an upper floor. According to some travelers, though Fustat was constructed of burnt and mud brick, its appearance was dark because of the Nile mud used to plaster the exteriors of buildings. In the thinking of the residents, there were other strong differences between Fustat, the comfortable residential city and Cairo, the more formal administrative center.

Houses in Cairo (al-Qahira) were built with a courtyard called the qa'a in the center, just as those of Fustat had been. This was a reception area with iwans which let light and air into the apartments of the building. The function of this space was evidently social and it had no commercial or economic dimension. The type of Cairo buildings known as rab's, were apartment houses. This type of housing was never used in Yemen where everyone is related to a large kin group, most of whom are known to each other. Foreigners were either billeted by the ruler, lodged in a khan or funduk (hotel), or they stayed with families.

Interestingly, two ideas from Cairo appear to have made an impact on Yemeni architecture. These are first, exterior plaster coverings, and second, window structures with clustered circular openings. (For windows, see Figures 9, 10, 15 and 19 in Dhu Jibla and 48 and 49 in Ibb.) Exterior plaster coating was used in Cairo evidently by late

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243 Kubiak, Al-Fustat ... Development, 211.
244 Goitein, "Cairo: ... in Light of Geniza," 80-96.
245 Ibrahim, "Residential Architecture Cairo," 50.
246 Goitein, "Cairo: ... in Light of Geniza," 84-87.
247 Ibrahim, "Residential Architecture Cairo," 50.
248 Blair and Bloom, Islamic Art 1250-1800, 94.
249 Khazraji, Pearl-Strings, ii: 272 and Goitein, "Cairo: ... in Light of Geniza," 90.
Ayyubid times and certainly in the Mamluk period. The grandees of Ta'izz may have been building in the very latest fashion of their Egyptian mentors, at least on the outside. (See Figures 25 and 29.)

Window structures with one to three circular openings appear as early as the Fatimid period in Cairo. The Mosque of al-Juyushi (1085 AD), for instance, has arched windows with a circular opening inserted at the top, in both the dome and the minaret. This is possibly an Abbasid type of window which was imported into Egypt and from there to Yemen. The structure of the windows can be seen clearly in Figure 9, from the Dar al-Izz in Dhu Jiblah. By the Mamluk period in Cairo the circular window appeared in many fine houses. The Dar Yashbak originally built in the fourteenth century, and the Dar al-Amir Taz (752-59/1351-57), in Cairo, both exhibit this type of window. The Dar Yashbak has windows with two to four lower arched openings surmounted with one, to as many as five round openings. The vaulting, elaborate portal, muqarnas and ablaq work on this residence, however, were not imitated in Yemen.

Apparently there were some close stylistic as well as economic and religious ties between Egypt and Yemen in the Fatimid and Mamluk periods. From the time of the Sulayhids in Dhu Jiblah through the end of the Rasulid period, Yemeni architecture of the southern highlands must have looked to Fustat and Cairo for outward stylistic cues. Any decoration or structural adaptations, however, did not change the essential character of south Arabian architecture which remained for the most part rural and pragmatic. One

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251 Ettinghausen and Grabar, Art Islam 650-1250, 181-86.
252 Ronald Lewcock personal conversation. See also Lewcock and Smith, "Two Early Mosques," 117-130. In the mosque at Shibam (233/847), this type of window may have been added later.
can speculate, however, that Dhu Jiblah and Ibb may look somewhat similar to Fustat. The Old City of Ta'izz must have been somewhat similar to Cairo of the Mamluk period.

In comparing examples of vernacular architecture from neighboring areas from the past, it becomes clear that houses in the south central highlands of Yemen were developed to meet the needs of the area. Certain practices such as the use of plaster were generic in the Islamic world by the medieval period. Artistic influences on Yemeni house builders between the Sulayhid and the Rasulid periods, were from Egypt. Close economic, religious and political ties between the two areas help explain the imported details which appear in medieval Yemen architecture. They do not, however, explain the absence of other details such as the muqarnas, for instance.
CHAPTER 6

SOCIAL AND ECONOMIC DIMENSIONS
OF TRADITIONAL VERNACULAR ARCHITECTURE

If social expectations dictate the form of vernacular architecture in south central Yemen, then what considerations do people take into account when building a house? The importance of defense and the use of spaces in various parts of houses are considered here. Conceptions of space are a conscious or unconscious part of people's thinking. The idea of private house ownership, for instance, is documentable from antiquity and the possession of written verification is still important. Space is conceived both horizontally on the ground, and vertically in Yemeni vernacular architecture. The house as a structure, however is not the exclusive location for the family. Finally, some economic aspects of vernacular domestic architecture are considered. In summary, these considerations which are documented ethnographically in the present, are compared to medieval descriptions gleaned from the Cairo Geniza documents. Comparison of the earlier written record with an understanding of contemporary practices in south Arabia helps establish a concrete picture for historic vernacular architecture.

From the foregoing discussion, it becomes clear that though some ideas may have been taken from neighboring groups, notably Egypt, most of the ideas were indigenous to Yemen. Domestic vernacular architecture in Yemen is a reflection of the social practices of the people. Present perceptions of the use of spaces in houses gives clues to past uses.
Presently for instance, the need for defense is high in most remote rural areas of south Arabia. Though attack by neighboring villages is not likely under the present central government, it is not improbable. Baraqish, for instance, was abandoned by order of the Imam in the nineteenth century because three groups could not agree over ownership. Their continued fighting over the ancient town caused the Imam exile all three groups.²⁵³ Brian Doe and R.B. Serjeant describe a tower house in the Hadramawt which had a strictly defensive function.²⁵⁴ This function of a house is breaking down, however, along with the use of city walls to keep out intruders. During the Yemeni civil war from 1962-1970, aerial bombing of citadels like Kawkaban, made it clear that the old defenses were no longer adequate.

The basic arrangement of storage and animal housing on the lowest floor, living spaces in the center, and public reception space on the top floors, has already been discussed. This type of spatial arrangement is useful in an agrarian economy. It is also a reflection of the needs of the family which occupies the house. The lower storage rooms may be used for fuel and grain. They might also be used for storage of transport merchandise. In larger houses, a hawsh or courtyard might be attached to the house. This area was not a garden, because the children, goats or chickens that might occupy it would prevent plant growth. Areas of the house reserved for women and children are found in the central section of the house and on the rooftop. Apartments or rooms in the center section of the house allowed the ceremonies attending marriage, childbirth, and death to be carried out in the home. Such daily needs as eating and sleeping were also met in the central rooms of the house. The same room would be used all of the main functions of ordinary life. Furniture consists of mattresses arranged around the perimeter.

²⁵³ de Maigret, "Excavations ... at Baraqish," 159.
²⁵⁴ Doe and Serjeant, "Fortified tower-house."
of the rooms with back and arm rests provided for comfort. Blankets are simply spread over these for sleeping. During the day, bedclothes are placed in niches or cupboards built into the walls. Clothing is kept in trunks or hung on pegs, so there are no closets. At mealtimes, a cloth or plastic sheet is spread in the same room. Members of the family gather around trays set on the floor to eat. Spaces within such houses are multi-functional and very simple.

The men in a family are largely absent from the house during the day. A clear picture of this is presented by Susan Dorsky in her dissertation titled: *Women's Lives in a North Yemeni Highlands Town*. Men interact in the public sphere of the mosque, the marketplace (*suq*), and the reception room (*mufraj*). The reception area on an upper level of the house appears to be a fairly recent innovation. As mentioned earlier, the reason for the *mufraj* is so that men can chew *qat* leaves. This practice has evolved into a ritual by this point in the twentieth century which is practiced all over south Arabia. Before noon, men buy bundles of the *qat* leaves in the marketplace. After midday prayers and lunch, they gather in the homes of friends. Here they chew *qat*, smoke the water pipe and transact business. Women of the host household may go out to visit friends, or may congregate in another part of the house for the afternoon. The evolution of this ritual has evidently created the large upper rooms of houses which have big windows looking out, if possible, over beautiful vistas.

Previously, business was transacted in the lower rooms of houses. In the example of the mufti of Ibb, Brinkley Messick reveals that, in the qadi's house private quarters are on the upper floors and that the room in which he receives the public, is on a lower

floor. On the outsides of older houses, there were benches: "...built into the curved buttresses that direct rainwater away from the grain stores below Ibb houses." This was the setting for the shari'a court held at the home of a judge. Interestingly, al-'Umara mentions a similar type of arrangement almost nine hundred years earlier. In revealing the life and deceptions of Jayyash, al-'Umara quotes Jayyash ibn al-Najah saying: "I dwelt close to the royal palace, and when people went forth in the morning, I used to proceed to the mastabah (bench at the outer gate) of 'Aly ibn al-Kumm, who was the governor appointed by the King al-Mukarram ibn 'Aly." The designation of part of a house for official business therefore, was not unusual for holders of public office.

Religious spaces in houses are as fluid as living spaces. There are no shrines in Yemeni houses. Women pray at home. Requirements of ritual cleanliness and a clean place facing Mecca are easily met in the home. This important function of Muslim life can be and is, often performed in the house. The interesting exception of shrines in houses at Ibb, mentioned by Brinkley Messick, has already been mentioned. The desire for houses oriented towards the south is presumably for physical comfort and has no religious or spiritual function. Some practices, evidently held over from pagan times are present in some houses in Yemen. Snakes are sometimes represented as a talisman against these animals. The placement of ibex horns on the outside of the upper stories of houses appears to be a practice left from very ancient times. Sometimes ghosts or jinn (spirits) are mentioned in connection with a house. The tower house described by Doe and Serjeant was avoided because of the ghost of a dead woman.

256 Messick, Calligraphic State, 135.
257 Ibid., 167.
258 Kay, Yaman, 89.
259 Serjeant and Lewcock, San'a', 131, 459 (22.56), 487.

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Ownership patterns in south Arabian houses partially explain social arrangements. Land ownership, after water rights, is probably the most serious aspect of life in south Arabia. Most houses are owned by a family group. A father or mother may at death leave all or part of a house to sons and daughters. There are cases of houses being inherited in pieces by various siblings. For the most part, however, the sons inherit a house. Several generations of people, therefore may expect to inhabit the same house. Women might inherit land or houses from their own families or as widows, from their husbands. Martha Mundy describes household makeup and women's rights clearly in her recent book, Domestic Government.

From very early times, houses were also bought and sold, as was mentioned. The documentation of house ownership extends to antiquity. Even though literacy may be limited, documents relating to property ownership are extremely important in south Arabia. According to Messick, papers relating to sale or inheritance of buildings and lands may be as old as 300 years. Every one of the tiny terraces which rise up the mountains around Ibb and Dhu Jiblah, for instance, are named and have documents relating to them. The authenticity and provenance of such documents are carefully authenticated. In cases of inheritance, houses might be divided among relatives. One such case is given in the appendix to Rathjens' article on Jewish houses in San'a' which describes a document of inheritance dating to 1662. In this case, the house was divided vertically among two brothers and a female cousin. Another case reports a

261. Rathjens, Jewish Domestic Architecture, 71-75.
263. Ryckmans et al., Textes ... sur bois.
264. Messick, Calligraphic State, 217-230
265. Rathjens, Jewish Domestic Architecture, 71-75.
woman who did not know she was part inheritor of a house until it was being sold and she was required to sign the sale document.266

Conceptualization of the ownership of land and buildings is concerned with both the horizontal and the vertical dimension of property. In an informative discussion of the establishment of early Muslim towns, Jamel Akbar discusses the concept of land that is "dead."267 This is fallow land without buildings or cultivation. Such land can be given by rulers, or it can be appropriated. To claim land in order to revive it, one must mark it out, usually with stones. The same process is necessary for houses. Akbar states: "From all this, we can conclude that khatta means the act of claiming a plot of land on which one intends to build by marking it out, with the ruler's permission, and that it almost always preceded the actual building."268 A further step in this process is that in the newly established towns such as Kufa, Basra and Fustat, order grew out of the organic subdivisions of property within kinship groups. Akbar also points out that the claimants who erected buildings, considered the site private land. Any open spaces were owned in common by the residents, and were not open to strangers. The corollary here is that the residents were responsible for keeping their spaces clean. It seems likely that the towns of Dhu Jiblah and Ta'izz may have been established in a similar way, but this is unclear. Certainly until the revolution of the twentieth century, private ownership of spaces and streets was the type of order which prevailed in Yemen. Many older people complain today that the streets were cleaner under the Imam and that the new municipal government does not keep the city as tidy as it should.

268 Ibid., 24.
The vertical dimension of houses and spaces is also taken into consideration. Previously mentioned is the house which was divided vertically for inheritance purposes. Equally interesting is a house deed involved in a scandal of the 1930's. In this instance, a Jewish man had sold a house to a Muslim man to avoid a dispute with his aunts over their possible share of the property. In this case the house was sold which was: "... known to belong to him, its upper and lower parts (6), mud and wattle, bourne and bounds, doors and timbers, iron and palm branches, stone and clay; ...."\(^{269}\) The deed then describes the boundaries of the property. The idea of selling the upper part of the house here refers to several expectations about the vertical dimension of houses in south Arabia generally. The first is that it was unlawful for people to build houses so that they could look down on their neighbors. The second is that the owner has the right to build on top of his house. According to Serjeant, in the area of Habban, the owner had to pay a tax on any additional stories he built. House deeds in the Wadi 'Amid area of Habban, are said to specify the "house, its atmosphere (hawa-hu) and the sky adjoining it."\(^{270}\) According to another report, houses in the Hadramawt had animals slaughtered as a sacrifice (fidu) for each story that was added to a house.\(^{271}\) Eggs and grain could also make acceptable sacrifices, presumably to the jinn (spirits) to appease them. This information helps clarify the epithet leveled at the Yafi' tribe in north Yemen which was reported earlier in the discussion of Ibb. Sacrifice must be a remnant of much earlier, and therefore non-Muslim, practices. It should be remarked, however, that Serjeant's reports refer to the Hadramawt in the extreme southern area of Yemen and may not have been relevant to


\(^{270}\) Ibid., 127.

\(^{271}\) Doe and Serjeant, "Fortified tower-house," 276-277.
Jiblah, Ta'izz and Ibb. One suspects, however, that there were parallel practices in the central highlands.

The house is obviously the seat of family life, but is not the exclusive location for the family. Even in an agrarian setting where land was inherited and held for generations in the same family, groups moved around a surprising amount. The idea of migration does not appear at all odd to people of the south Arabian highlands. It will be remembered that Dhu Jiblah was an entirely new site for the Isma'ili rulers of Yemen. The Sulayhid family migrated there from San'a'. Queen Sayidah liked to spend the summer at the fortress on Jebal Ta'kar. The Rasulid Sultans were even more peripatetic, spending half the year in Zabid and the other half in Ta'izz. The bride is expected to move from her father's house into the house of her husband and his family. Even in the modern period, the presidents of North Yemen move from house to house in a manner which is remarkable to outsiders. Relatives visit over long distances, as for instance from Zabid to San'a'. Such visiting patterns are probably more likely with the availability of modern transportation and roads. Though some people never leave the areas in which they were born and reared, it is not uncommon for many Yemenis to travel long distances. The concept of the house appears in some ways to be a temporary shelter in people's minds as opposed to a fiefdom to be held forever and a permanent address.

Economic considerations of Yemeni houses are important because the house represents the most important investment of most families. These houses, as has been discussed, are intended for several generations of an extended family. The reason, of course, for this consideration is the agrarian nature of traditional society. Farming, however, was coupled with the transport and distribution of goods from other areas, bringing wealth into Yemen. At some times, south Arabians had export goods for sale. Incense (frankincense and myrrh) in the pre-Islamic period and then coffee in the early
period of European and Turkish expansion were the two most important cash crops for the area. In the past, the wealth of Yemen was based on good harvests of sorghum and high tariffs on transport trade. The periods of the Sulayhid Isma'ili rulers of Jiblah and the Rasulid sultans of Ta'izz were periods of economic expansion in the southern highlands of Yemen. Ibb has prospered more slowly, but more steadily than the two royal towns.

The family structure in traditional Yemeni society was a means of consolidating wealth within a family group. The family is patrilinial and patrilocal. Women marry into the household and become part of the husband's family. The land and resources might then be directed by the strongest of the male relatives. Very clear explanations of this process are presented by several anthropologists. Martha Mundy in particular clarifies women's standing within the household. Often, the important storage spaces within the house, the storerooms and the water supplies, are under the supervision of women. Exactly what the arrangements with slaves and other household servants in large households was, is unclear as yet.

Commercial storage was controlled by men. This type of space might not be contiguous with the house. If it was attached to the actual house, a commercial space might not have a connecting door into the house. Beit al-Aziz in Ibb has such a disconnected storage space in the lower floor of the house. These spaces were considered to be part of the house when the house was sold, even though direct access to the rest of the premises did not exist. The same was true of shop spaces which might be attached to the outside of houses. Spaces which were not attached to the house itself, such as a threshing floor, were not considered to be a part of the house and were

272. Martha Mundy, *Domestic Government* and "Women's Inheritance".
considered separately. Storage spaces for transport goods was found in *samsaras* or *khans* in the large cities. Such enterprises were limited, however. In small towns and villages, no such accommodations existed. Because of the importance of trade in the medieval period, it appears likely that some goods were stored at home. The nature of such goods, moreover was often small and precious. Small quantities of spices could bring high prices. Cloth yard goods, the other favorite trade item in the middle ages, could also have been stored at home.

The institution of the *dallal* was mentioned in connection with Dhu Jiblah. The term *dallal* generally means a broker or commission sales agent. In Shibam, in the Hadramawt, R.B. Serjeant describes a situation: "Whereas the tribeman coming into San'a' stays in a *samsara* or *khan*, in Hadramawt he stays with the *dallal* as his guest, while the latter sells his animals for him and buys what he needs - all this on a commission basis." This circumstance is, Serjeant believes, a remnant of much earlier practices. Hospitality was expected of people in the medieval period, a duty which was enjoined by religion in the Jewish community. According to S.D. Goitein, the host accompanied the guest through the scrutiny of the city gates and placed him in a separate establishment for his own privacy. In one instance the traveler reports that his hosts had: "... made ready for us a beautiful place for lodging, an excellent house with an upper and lower floor [in this sequence] entirely reserved for us." Rulers of the medieval period in Yemen made arrangements for important visitors such as Ibn Battuta

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to be lodged, possibly in houses belonging to the ruler. Unfortunately, most sojourners went about their business without describing the details of their physical surroundings for posterity. It appears clear, however, that houses were put to commercial uses and that distinctions between domestic and commercial enterprise were not hard and fast.

The desirable home of the medieval period is described in S.D. Goitein's translations of the Cairo Geniza documents. In them, the late antique idea of houses had evidently been replaced by several medieval concepts including the dar (compound, palace), the bayt (house), the manzil (dwelling), and the sukin (residence). In addition in Egypt, there was a type of apartment building known as a rab. House features were regulated by laws such as those concerning the height or width by which porticos could intrude on public thoroughfares. Window balconies, such prominent features of Egyptian houses, however, do not occur in south central Arabia. The ground floor in houses in medieval Fustat or Cairo contained a central courtyard (qa'a), which was the functional center of the house. Materials included brick, limestone floor tiles, gypsum, clay and lime. The master builder in medieval Egypt was a bricklayer, not a stone mason. Carved woodwork used as ceiling cross beams was referred to as "Syrian fashion." As discussed earlier, such wooden ceilings were apparently common.

A description of the furnishings of the medieval Egyptian home, however, could almost be substituted for a contemporary Yemeni house. Mattresses (firash) placed on the floor with carpets or mats were used for seating in the day and sleeping at night.

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279. Ibid., 60.
280. Ibid., 63.
281. Ibid., 103-04.
Bolsters and cushions were used behind them. The same arrangement, called a farash, is used Yemeni homes today. Curtains and carpets are mentioned in passing in the Yemeni sources. In Egypt, food was bought outside the home and bread was usually baked at the local bakery. This is unlike the Yemeni custom of baking in the open oven (tannur) at home. Communal trays for eating, however, are still used routinely in Yemen. One minor detail is interesting in its persistence. A merchant writing to a friend in 1139 AD, from Aden, describes purchasing an iron pan for him rather than the requested stone pot which broke. Stone pots called harad, are still used in Yemen today because they hold heat a long time, making them excellent slow cookers, totally unlike metal pans. Indeed, the medieval accounts sound very familiar to anyone who has spent time in modern south Arabia.

282. Ibid. 108-09.
283. Ibid., 142.
CHAPTER 7

GENERAL CONCLUSIONS AND CONTEMPORARY DEVELOPMENTS

The form of traditional domestic vernacular architecture in the southern highlands of Yemen is best seen through its construction practices and details. The early building traditions of the Sabaean era include marginally drafted and pecked ashlars. Sabaean building practices of square-cut stone pillars and lintels may have been influenced by Egyptian building practices, or they may be indigenous traditions. Judging from the sockets used to secure lintels, however, this type of architecture did not lend itself to multistory construction. Most public buildings, which are the most important type excavated so far, are built by the trabeated methods described. Temples appear to have been single story buildings. Houses, on the other hand, may have been multiple storied from an early period. This remains to be proved.

By the Himyar period, some different ideas become apparent. Himyar building methods are reflected in heavy foundation walls made with cyclopean masonry topped with coursed rubble walls. This type of architecture is not as clearly defined as Sabaean so far, but was probably post and lintel construction also. By the Islamic period, Himyar building practices were evidently being used to produce multistory-story housing and refuges for extended families in the southern highlands of Yemen.

Isma'ili religious influences from Egypt paired with the establishment of firm trade centers in Egypt and in India, placed south Arabia geographically in the center of an
economic network which brought it great prosperity. In both the Sulayhid and the Rasulid periods, Yemen became an entrepôt for trade passing in both directions through the Red Sea and Indian Ocean. This increased traffic revived south Arabia which had languished for centuries after the breakdown of the incense trade of antiquity. Ships bringing wealth also brought ideas and trade goods which were incorporated into the daily life of south Arabia. Building materials such as wood were brought from India, Africa and Egypt. Arches and building in plaster were introductions which probably reached Yemen ultimately from Sasanian Iran.

Indigenous stone construction at Dhu Jiblah and Ibb was apparently used at Ibn Janad and in the area of Ta'izz also. By the Rasulid period, however, a new type of construction combining brick upper floors with stone lower floors was introduced at Ta'izz. This resulted in a more fluid style of building which was in some cases covered with an outer coat of plaster. The idea of the plaster outer coating and the brick upper floors were possibly imitations of builders in Mamluk Egypt. Cut plaster became the preferred decoration of the inside of the houses as it had been in the courts and palaces of the Sasanian kings and the Abbasid caliphs. By the period of the Rasulids, the function of houses in towns had become more ceremonial than defensive or pragmatic.
THE EXAMPLE OF CONTEMPORARY DEVELOPMENTS (1974 TO 1984)

The hypothesis for this study is that domestic vernacular architecture repeats the style which developed during the period when the area enjoyed its greatest prosperity. Furthermore, only when the economic fortunes of an area refloresce will the style of its vernacular architecture change. An interesting corollary to this is that as the economic conditions change, the social conditions also change. It appears inevitable therefore, that styles of domestic vernacular architecture will change because houses directly reflect people’s circumstances. Domestic vernacular architecture serves socioeconomic functions of the period in which it is designed. The artificially induced stasis of the agrarian economy and the isolation of the period of the Imams in Yemen prevented economic and social change from 1919 to 1962.

Since the end of the Imamate, the southern highlands of south Arabia have undergone rapid and profound change on many levels. Some of these changes include the construction of paved roads and streets, major shifts in population, a switch from individual to collective responsibility, and the introduction of a public service infrastructure (water projects, electrification, telephones, hospitals, schools, radio, and television). None of these existed in Yemen before 1962. Moreover, the eight year civil war from 1962 to 1970, disrupted society, causing further change. Such massive changes on the national level are reflected on the personal level as well. Young married couples are more likely to live outside the parental home. Young women work outside the home and need daycare for young children. These facts create a demand for smaller houses
and apartments. Cars are a major factor in people's lives and have to be parked and serviced at or near the house. The rising costs of traditional materials such as stone masonry, has caused people to turn to alternative building materials. Migrant workers returning with cash and skills learned in the building trades in Saudi Arabia and the Persian Gulf states, help facilitate changes in the structure, materials and function of buildings, especially in Ta'izz and Ibb.

The initial work for this study was begun in 1974, in Ta'izz. At that time the town of Ta'izz had a population of probably 81,000, though this is unclear because there were no population figures.\(^\text{285}\) The first modern census was begun in February, 1975. Returning to Ta'izz after ten years' absence was startling because at a guess, the population of the town had quadrupled between 1974 and 1984. This explosion of the population was attributed to people moving in from the countryside, and people moving up from South Yemen, which was at that time the People's Democratic Republic of South Yemen. Returning migrant workers and foreigners also helped swell the population of Ta'izz.

Ibb lies along the road built from Ta'izz to San'a', in the 1970's. At that time Ibb had a population of about 20,000 people.\(^\text{286}\) Population growth in Ibb by 1984, also expanded wildly. The population of Ibb was almost 50,000, by 1984.\(^\text{287}\) As a consequence, the scene showing the remnants of the old city walls of Ibb in this paper, no longer existed even in 1985. The old walls were gone by 1984. (See Figures 41 and 45.)

Dhu Jiblah has seen some population increase, but it's growth has not been as spectacular

\(^{286}\) Ibid.
\(^{287}\) Aga Khan Award for Architecture, *Development and Urban Metamorphosis*, vol. II of *Yemen Background Papers* (Singapore: Concept Media Pte Ltd., 1983), 12. The note on Table 10, states that the figures were taken from World Bank figures for 1981.
as that of Ta'izz and Ibb. Presumably in 1974, Jiblah had a population of 250 people.\textsuperscript{288} This seems a little low, however, because by 1984, Jiblah's population had grown to somewhere between 5,300 and 20,000 people.\textsuperscript{289}

Obviously there is some confusion about the exact numbers of people involved here, but the populations of Ta'izz, Ibb, and Dhu Jiblah, increased over a ten year period by remarkable numbers. In 1985, roads were being built up Jebal Sabir to the south of Ta'izz and villas for well-to-do people were being built in new suburbs overlooking the old city and the fort. In Ibb, the core of the old city had been engulfed in a wave of new building which can be seen at its beginning even in 1974. (See Figure 55.) In the 1974 photographs, all of the building activity on the slope below the town is new construction. Many of the buildings in the photo are newly constructed with very large windows and were only half finished at the time.

A number of factors influenced the changes which took place in the ten year period between 1974 and 1984. The population growth represents a desire for a better and easier life for most people. Easier access to services and goods in the towns made them magnets for people. Everything from medical services to ready-ground flour was beginning to be available in towns. At the end of the Yemeni civil in 1970, the country was opened for the first time to the type of goods and services available to most other areas of the world earlier in this century. Though some people clung to the old life, more were eager for new possibilities.

\textsuperscript{288} Swiss Technical, Yemen Final Report Airphoto Project, I/146.
\textsuperscript{289} The figure of 5,300 people is given in: Suzanne and Max Hirschi, L'architecture au Yemen du Nord, (Paris: Berger-Levrault, 1983), 92. The figure of 20,000 people is given in: Barbara Croken in Aga Khan Award for Architecture, Development and Urban Metamorphosis vol. II, 27. It is possible that the 20,000, figure includes people living in the area of Jiblah, and not just in then town itself.
Water is a case in point. Probably the most important type of development project carried out in Yemen has been expansion of access to water. By 1974, in Ta'izz, a water project pumped water into storage tanks on the roofs of many people's houses. Some of the photographs in the old town of Ta'izz, however, even in 1974, lack the square water storage tanks. (See Figure 37.) In the rural areas of Yemen, some hamlets still have no running water available, even on the eve of the twenty-first century. In many rural areas, women still carry water for daily household needs on their heads from a storage cistern that serves the whole community. This is the type of reason that caused people to abandon terrace agriculture and move into cities.

In the urban centers there has been a growing secularization and the adoption of technological and social innovations. Growing prosperity has meant that more people buy and use machinery that their grandparents never dreamed of. In al-Ahjur valley in the north for instance, a television transmitter was brought on-line on a Wednesday in May of 1979. Najwa Adra reports that on Friday, ten men went from one small village in al-Ahjur to San'a', to purchase television sets. By Saturday of the same week, four days after the transmitter installation above the valley, "...virtually all of al-Ahjur's 4,000 residents had seen a television programme, most of them for the first time."\(^{290}\) This incident helps emphasize the rapid pace of change that has taken place in Yemen in the last twenty-five years.

With these rapid changes has come growing prosperity. Before the 1962 revolution, Yemen was a closed society with little access to the outside world, Arab and Muslim or not. Men had gone outside Yemen to work before the Revolution in North

\(^{290}\) Najwa Adra, "The 'Other' as Viewer, Reception of Western and Arab Televised Representations in Rural Yemen," in The Construction of the Viewer, ed. Peter I. Crawford and Sigurjon B. Hafsteinsson (Højbjerg, Denmark: intervention press, 1996), 255.
Yemen, slipping out through the British colony of Aden. After the Revolution, however, many more men went abroad to work. They sent home immigrant remittances which helped create disposable cash for families at home. Some of these returning migrants use their cash to build new houses. Other people, however, invest their capital in shops and stores. In establishing such trading ventures, they are carrying on a long tradition in the area.

In the 1980's, oil was discovered in Yemen. Though Yemen's oil revenues may never match those of Saudi Arabia or Kuwait, this has also bolstered the economy of the most populous part of the Arabian Peninsula. This is not to say that Yemen does not have deep economic problems. The new prosperity and shifts in public attitudes, however, have created a climate of change. This change is felt and seen clearly in the building industry.

The old style house in Ta'izz seen in the examples given in this paper, was disappearing even in 1974. (See Figures 36-40.) In Figure 53, taken in 1974, several buildings are seen in various states of construction. This is a good example of the kind of change which took place between 1974 and 1984. At the lower center of the photograph, two pack camels and two laden donkeys are tethered to a low wall. To the right of the animals, a partially built wall of mixed stone and cinder-block construction appears. This wall is evidently a process similar to *khatta*, the marking out of future construction. Often construction proceeds as funds become available. On the lower left side of the picture is a shop/house combination which is built of concrete pillars filled in with traditional stone construction. The edge of the big steel doors on the front right edge of the building mark it as a shop. The laundry on the roof indicates the presence of a family. The steel reinforcing rods pushing through the roof from below show the owner's intentions of adding a second story as soon as possible.

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Fig. 53. Street in Ta'izz, photographed in 1974.

Fig. 54. New construction in Ta'izz photographed in 1984.
In the unpaved street in Figure 53, two land cruisers and a man on a motor bike pass by. Across the street, a third land cruiser is parked with three camels standing beside it, and one lying. In front of the vehicle is a loaded mule. One heavily laden camel is being led by a man who may be negotiating with other men in front of the shops facing the viewer. Heavy steel doors decorated with welded steel designs, secure the shops at night. Above the shops on the ground level are apartment or house constructions. The center building is unfinished. Steel reinforcing rods protrude from the concrete framing. The walls are constructed of cement breeze blocks (cinder block). To the left of the center and behind the middle building are finished apartments which have an outer skin of cement. This is painted in bright colors such as pink, aquamarine, white, yellow and pale blue. The left hand buildings across the street have balconies or parapet walls filled with open cinder blocks with designs that serve as places to observe life around the houses.

A second illustration from Ta'izz was taken in 1984, and shows a whole street of buildings like the ones seen in the earlier photograph. (See Figure 54.) At the end of the street is a new hospital. The camels, donkeys and mules are gone. The street is now paved and wider than in the earlier photograph. The houses are several stories high with balconies on several levels. Shop doors can be seen on the lowest level. Large windows with fanlights appear on the upper levels. This type of construction is completely different from any of the older type of building. The materials and the construction methods are entirely new to Yemen. The plans resemble establishments from Egypt or the Levant. Their commercial character is in marked contrast to earlier Yemeni practices. The plans of such buildings are also different. While the lowest level is a commercial establishment, the upper levels are separate apartments in which the shopkeeper might live, or which he might rent out. Often the plans of such apartments
Fig. 55. Ibb, photographed in 1974.
Fig. 56. New house construction in Ibb, 1984.
have a central open hallway space which rooms off of this that is very different from earlier Yemeni houses. The central space is roofed, and is not an open courtyard. Large windows and doors open at ground level but are covered with iron bars or large steel doors. New materials, new plans, new techniques and new purposes have resulted in a rapid transformation of the built environment of Ta'izz.

In Ibb this process was not quite as drastic, but it has been just as thorough. Ibb in 1974, is seen in Figure 55. The buildings of the old town are crowded together. Housing in earlier times had to fit inside the city walls. Newer buildings appear on the slopes below the old town. The same process can also be seen in Figure 41, where new construction lines the road at the bottom of the photograph. The pattern of mercantile outlet or small eating establishment which is seen on the lower floors of new construction in Ta'izz also appears in Ibb.

New houses in Ibb, however, retain some of the characteristics of older building practices, as for example those seen in Figure 56, taken in 1985. The plan is still closed and the walls are traditional hand-crafted stone, though not set with mortar. The houses, however, are not as sharply vertical as earlier buildings. More large windows appear on the ground floor levels, but stone masonry seems to be preferred. It should be noted that hiring a stone mason is expensive in Yemen. Such craftsmen are paid well and ready-made cement blocks would probably be a cheaper building material, though not nearly as good for climate control. The house lowest on the hillside in Figure 56, has a hawsh, this time constructed out of imported chain-link fencing. Various types of plaster and paint patterns are being tried out. The built environment in Ibb is obviously changing.

The idea approached in this study was that the style of domestic vernacular architecture would change with a reintroduction of local prosperity. In the case of Ta'izz and Ibb, this appears to be true. Dhu Jiblah, lying farther from the main road linking
San'a' with the south, has changed the least. Numerous other changes have accompanied the tremendous modifications made in Yemeni society since the 1962 Revolution. In the case of the southern highlands of Arabia, however, the idea that vernacular architecture changes with fluctuations in local economic fortunes appears to be true.

It becomes clear in studying the historic record that changes in domestic vernacular architecture took place in the Sulayhid and in the Rasulid periods. Certainly by the Sulayhid period the form of the house in the south central highlands was well established. There may have been some minor influences from Fatimid Fustat and Cairo. Certainly by the Ayyubid and the Rasulid periods, there was some imitation of building in Mamluk Cairo, in the houses of south central Yemen. In comparing the established styles from earlier periods with the growth and change since the end of the civil war in 1970, it is clear that the older domestic vernacular architecture has been revolutionized by extensive economic and social changes. Yemen is not a center of the Islamic world, but it has a strong architectural tradition dating to pre-Islamic times. Yemeni styles in the south central highlands of Arabia are not based on Mediterranean or Mesopotamian types of open courtyard house plans. The multi-story house with closed spaces existed before Islam. It is only being supplanted in the twentieth century by a hybrid of Yemeni and western origins. This new style, briefly documented here, retains some aspects of Yemeni thinking in planning and materials. For the most part the conglomerate style known variously as "Cairo modern," and "Cocktail-construction," is the product of the past twenty-five years (1970-1995).^391 The rapid adoption and diffusion of modern

^391. The term "Cairo-modern," is used by the foreign community in San'a', though is unclear exactly where the style of building in concrete originated. The term "Cocktail-construction," refers to the hybrid use of traditional and modern materials such as brick and stone with reinforced concrete. It appears in: Werner Lingenau and Wolfram Schneider, "Qamariyas im ganzen Land." Trialog 19 (1989), 17.
materials and techniques can be "blamed" on the influence of foreign development projects for large banks, government buildings, hotels and hospitals. The use of modern foreign materials and techniques in domestic vernacular architecture, however, appears to be prompted by a complex mixture of economic and social changes.
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