Twenty Years of Change in the Built Environment of Yemen (Part 1)

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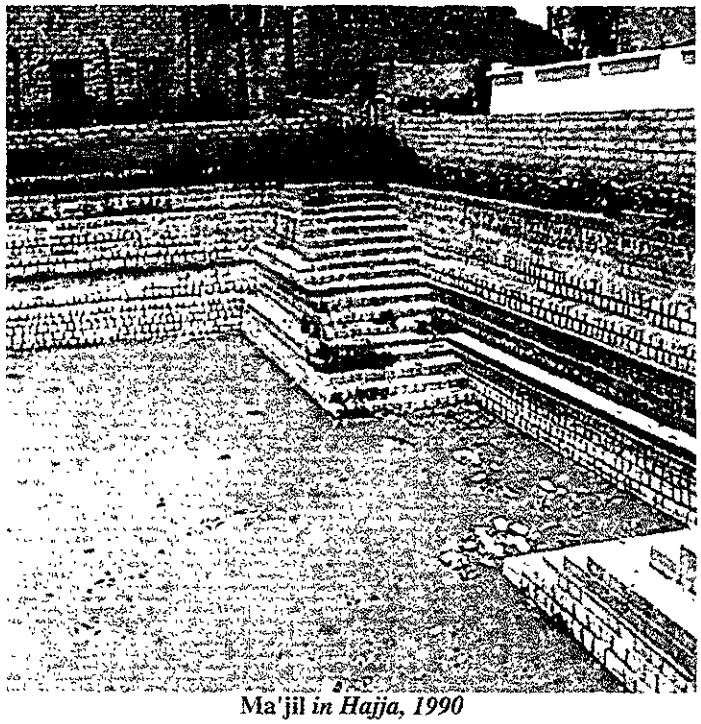


Ma'jil *in Hajja, 1990*

Until the 1970s the built environment of North Yemen conveyed a general image of homogeneity, consolidated through centuries of isolation. There were episodic partial occupations of envoys from the centers of Islamic rule, but the area was never controlled by any of the Western powers that dominated, politically or economically, the surrounding countries. The Republican Revolution of 1962, however, introduced many changes in a short period. This report examines a few aspects of the changes that took place in the built environment between 1970 and 1990. These years have local political significance and may be seen as milestones in the progression of the culture of North Yemen towards exposure to the world beyond long-established natural and political limits: 1970 was the year of the "Reconciliation": between the intervenients of the Civil War that followed the Revolution: and 1990 was the year of the "Unification" of North Yemen and South Yemen. The report attempts to describe some changes in the forms of buildings during this period and their contribution to the transformation of regional vocabularies. It also looks at a few aspects of the country's urbanization, understood not only in terms of physical expansion, but also as the diffusion to rural situations of values and attitudes from central areas.

Yemen is the name given since antiquity to the southwestern corner of the Arabian Peninsula where the chains of mountains running between the desert of the Rub'al Kha'li (Empty Quarter) and the Red and Arabian Seas meet and rise to more than 3,700 meters.

Fringe areas of this region are now included within the political boundaries of Saudi Arabia and Oman, but its bulk, approximately 490,000 sq.km., comprises the Republic of Yemen, formed in 1990 through the unification of the Yemen Arab Republic (also known as "North Yemen") and the People's Democratic Republic of Yemen (or "South Yemen"). The Republic of Yemen's capital is Sana'a; its main port is Aden.

Broadly speaking, present-day Yemen incorporates three major natural regions; the coastal strip, the mountains, and the desert fringe. Steffen has presented a convenient classification of natural regions in the country based on the orientation and characteristics of its three main mountain escarpments: the western escarpment slopes toward the Red Sea, the eastern toward the desert, and the southern toward the Indian Ocean. These mountain features condition climate and form specific drainage systems. The natural region defined by each is further subdivided, according to altitude and a climatic progression from hot and humid to temperate and dry, into lowlands (sea level to 500-1,000m.), midlands (lowlands to 1,500-1,700 m.), and highlands (midlands to 3,760m.). The central spine of the highlands is marked by a series of alluvium-filled valleys where some of the most important mountain towns, including the capital, Sana'a, are located. Of the country's other important areas, the western (and part of the southern) lowlands-the coastal strip- are known as the Tihama; the eastern midland and lowlands, encompassing part of the desert, comprise a region commonly known as Al Mashriq, or the Eastern Plateau; and the southern midlands, mostly located in what was formerly South Yemen, form another distinct region, the Hadhramawt.

Physiographic characteristics may explain many building differences, but other factors, such as social organization and territorial delimitation, have also contributed to the regional distribution of building techniques and styles. In particular, tribal affiliation has been important, its influence increasing as one progresses from the coast to the highlands and Eastern Plateau. In interior regions, the tribe has served as the core of social organization since pre-Islamic times.

For more than a millennium before the arrival of Islam, Yemen's culture was based on control of the incense road. Impressive remains are still being uncovered of towns, temples, and irrigation works, of which the best known today may be the Marib Dam (500 BC to 500 AD). However, after the arrival of Islam, Yemen became a mosaic of states with shifting borders, controlled in turn or simultaneously by local dynasties, the mountain tribes, or envoys of the dominant Islamic

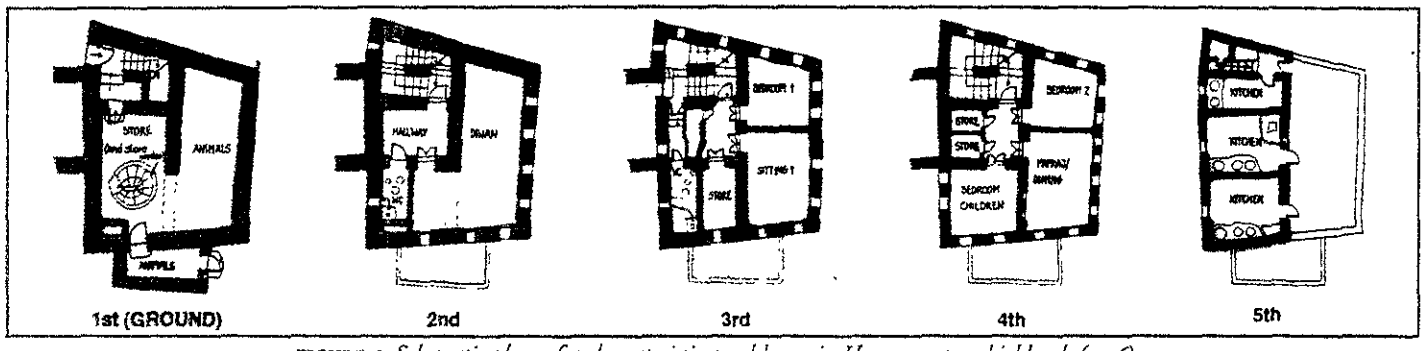
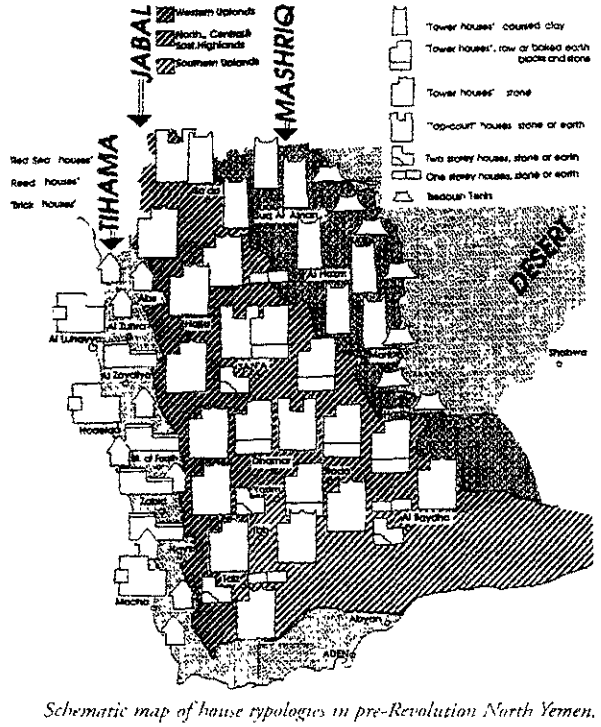


FIGURE 5. *Schematic plans of a characteristic rural house in Haraz, western highlands (1976).*

power. Such states often comprised territories which began at the coast, progressed inland, and stopped where they could no longer win over the highland tribes. This partly explains differences between the culture of the coastal areas and the southern mountain slopes, whose populations came to profess the Sha'fi school of Sunnism, and the culture of the northern highland tribes, who came under the influence of the Zaydi Shiites.

Thus, the isolation of North Yemen until recently can largely be explained by two factors: the rugged nature of its mountainous core, and its inhabitation by close-knit tribal units with a high degree of autonomy who were able to rally under a general leader - the Zaydi Imam- in the face of strong common enemies. The latter trait was particularly evident in response to the Turkish invasions in the sixteenth and nineteenth centuries. Resistance to the Turks united different factions i common cause, and ultimately proved the motivating force allowing the Zaydi Imam to consolidate its rule over the country, making Yemen the first independent state of modern Arabia - a fact which, however, did not lead to any appreciable opening of the area to the outside world.

Paradoxically, the autocratic and isolationist rule of the Imam relied on a military force whose officers, trained aboard, became exposed to ideological principles established in Egypt in the 1950s under Nasser. Thus, in 1962 the "Republican Revolution, "led by a group of army officers, brought an end to the Imamate, whose autonomous rule had prevailed for a millennium over some part or another of Yemen. The officers found support both among segments of the population eager for



Schematic map of house typologies in pre-Revolution North Yemen.

modernization and among conservatives who disagreed with the Imam's intention to continue rule through dynastic line instead of through the Zaydi principle of elections. A civil war followed which lasted until the end of the decade, pitting adopts of the Imamate against the government of the new "Yemen Arab Republic" - the former backed by Saudi Arabia, the latter by Egypt. At the same time, the British, who had Aden and its hinterland for more than a century, were faced in the South with the struggle for independence of what became, in 1970, the "People's Democratic Republic of Yemen".

The changes brought about by the Republican Revolution in North Yemen have, since the early 1970s, clouded the image offered by the country's traditional built environment. At that time, buildings appeared to express a collective identity that often led expatriates to use statements like "all Yemenis are architects" when summing up local culture. Implicit in such a view was an association of tradition with harmony in the relationship between dwellers and environment, in involving the direct relation of body with matter, and reflecting on social and individual values".

In the ebullient twenty years that followed the Revolution, however signs of idiomatic differentiation began to appear in the built environment which foretold an increasing social and spatial heterogeneity - notwithstanding the prevalence of local formal models, however subject to new interpretations and however cladding structures from exotic origins. The question today is whether and how the inspirational value of traditional construction and the intellectual concern for historical continuity can contribute to a representation of global identity in the lineage of the built environment for which the country became known.

AGRICULTURAL TERRITORY

Although not unique to Yemen, terraced agriculture has long been one of the country's most characteristic traits, particularly on the western and southern slopes of its highlands. However, the last quarter of a century has witnessed the decay of the terrace structure for a number of reasons, among which are a preference for tracts of land which support mechanized agriculture, the impact of low-priced imported foodstuffs, the tearing of terrace tissue to expand the country's road network, and a shortage of manpower for maintenance due to emigration and the progressive rejection of the hardship involved.

The rehabilitation of the terraces, a costly task and a much-debated question in 1990, has been considered a government responsibility, both to prevent the erosion of mountainsides and the disastrous flooding of valleys below and to maintain the terraces' emblematic value (Yemen without terraces, for many, is unimaginable). However, in the years since 1970 terrace maintenance has, for all practical purposes, been left to local initiative Revolution, but without the level of necessity and collective responsibility once required by a society reliant on terrace agriculture for self-sufficiency.

Water collection and distribution methods, one of the achievements of Yemen's antiquity, were

Outskirts of Al Tawila, 1990

Dhu Al Awlayin (Dhamar), 1976 (destroyed by the 1982 earthquake).

by 1970 reduced to simple forms of spate irrigation along *wadis* and the collection of runoff water by open-air cisterns *(ma'jil)*. The variety and formal quality of *ma'jil* are an important part of Yemen's identifying patrimony, but the use of mechanical methods to extract water from deep aquifers has largely rendered them obsolete. *Ma'jil* today often serve as dumps, with garbage floating in filthy water.

It has now been recognized that "neglect of terrace maintenance, excessive ground water extraction and consequent salinization" are key factors behind the trend toward desertification in the country, considered almost irreversible by the end of the 1980s. Other side-effects of development, such as organic and chemical pollution and the generation of waste, have become major concerns in a society which traditionally produced no waste in quantity or nature other than that which could be immediately recycled.

DWELLING TYPOLOGIES AND SETTLEMENT PATTERNS

Generally speaking, building and dwelling options in the country can be grouped according to its broad natural regions. Except in the desert, where, according to the traditions of Arabian desert dwellers, shelter was traditionally provided by tents, regional specificities developed to include particular typologies, materials, and formal treatments.

The most elementary level of shelter was represented in the mountains by caves and ledges adapted for use by individuals and even small communities. Some of these were still occupied twenty years ago, and showed a preoccupation with the formal treatment of the interior. However, the clearest expression of entirely manmade basic shelter was the *saqif* (literally, "roof"). These one-room earth-covered, stone structures, mainly used by shepherds, were either quadrangular, roofed by stone slabs on monolithic beams and arches, or round, roofed in the manner of a false dome by increasingly smaller rings of stones. The quadrangular form, in particular, represents something of a constructive model for Yemen, its flat roof having been adopted for use in structures from simple houses to large mosques.

In the mountains the identification of house types depended more on structural complexity and consequent spatial organization than on the material out of which they were built. The most primitive forms were always made of stone, but earth and stone were used for all the three major types: single-story; two-story with an external stair (with living quarters located above ancillary spaces); and multistory with an internal stair, a form commonly known as the "tower house". The latter were the most widespread form of dwelling structure in the mountains. They were present from the smallest rural cluster to the largest town, and they have provided the publicized version of the "traditional Yemeni house".

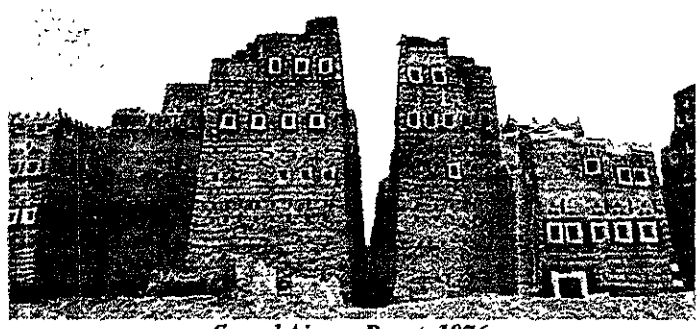
Within a tower house, space was organized on levels along a continuous interior stair, from ancillary spaces on the ground floor, through reception rooms and household storage at the intermediate levels, to private quarters above. Roofs were fully accessible and used as terraces, often equipped with a kitchen, a bathroom, or a reception room called the *mafraj* or *mandbar*. One variation of the town house consisted of rooms around a courtyard on the top floor, with light wells offering illumination to the floors below. This form may have been derived from a form existing since pre-Islamic times, which was transmitted by local Jews (the last Himyarite rulers had converted to Judaism), whose houses in Sana'a resembled scaled-down versions of this model.

In the Tihama three major house types developed: reed houses, brick houses, and Red Sea houses. Both reed houses (made of various types of thatch, with round or quadrangular plans and conical or pitched roofs) and brick houses (made of backed-earth blocks, with quadrangular plans and flat roofs) were basically organized as compounds of single-story, single-room constructions around a courtyard. Yet, while their functional organization was similar, they were differentiated in terms of structure and decoration both by material and by kinship to dwelling forms in Africa and India, respectively. Red Sea houses, of which a few ruined examples still existed in 1990 in Moccha, Hodeida and Al Luhhayia, represent a distinct typological enclave. They were part of a family of structures existing on both shores of the Red Sea from Ethiopia to Sudan and Saudi Arabia, characterized by, among other things, the variety and qual-

Aerial photo of Sa'da, ca. 1973

1) fort; S) square;
2) market; G) gates.
3) great mosque;
(Source: pfysical planning Division, Ministry of the Municipalities, Sana'a).

ity of woodwork in their wall openings. Red Sea houses were generally two or three stories high, with an internal stair and a spatial organization close to that of multistory mountain houses.
Settlement formation and siting follow a few basic patterns. Along the coast, besides fishing villages and harbor towns, settlements developed along the trade paths of the mid-plain. In the midlands and throughout the Eastern Plateau, farming villages and hamlets concentrated near *wadi* basins. In the highlands there was a characteristic preference for settlement locations on peaks and rock outcrops. This has been explained in a number of ways: by the need for defense and visual control of the territory; by the necessity to reserve all land fit for farming; and by such subjective reasons as a taste for disengaged views.
The exterior boundary of highland settlements was usually well defined. In smaller settlements the protective and delimiting role of natural features such as rock outcrops might be complemented by construction of a solid outer ring of houses, whose lower, windowless, floors were used for animals and storage and served the same function as a rampart. By contrast, upper-floor living quarters in such houses had sufficient windows and could be used as lookout positions. On flat ground, watch towers at some distance from the settlement would serve an additional protective purpose, but larger settlements relied on free-standing walls for confinement and defense.
The houses of community leaders might serve as elementary citadels, where community foodstuffs could be stored, and where in times of war villagers might seek refuge. Yet, although they may have been identifiable by their location or relative size, such houses did not usually present exceptional external signs of distinction.
Even the smallest settlement had a mosque, if in no other form than as a small structure adjoining the headman's house. Mosques inside a settlement were frequently paired with mosques outside its boundaries. A congressional mosque meant a settlement of a



Suq al Ainan, Barat, 1976

certain importance: in large towns neighbourhoods normally had their own mosques.
The association of places of prayer with sources of water has been a pervasive part of the mountain scene. Elementary forms, consisting of a paved area with a raised stone marking the direction of Mecca, could be found adjoining *ma'jil*. The small mosques dotting the countryside also often displayed large ablution pools, whose size may be explained more by the need for irrigation water than for ablution.
Markets provided regular intersettlement contact. They received physical expression either as open spaces where tents and awnings could periodically be set up, or as clusters of simple stalls made of stone or mud (in the mountains), or of reed (in the Tihama). These would normally be deserted except for one day a week, although occasionally they might have a small permanent population of caretakers with no tribal status. Such marketplaces could appear as nodes within a trade network established outside and at a distance from the settlements they served. Or they might appear as an integral part of the space within the walls of a town. In the latter case, the structure of market areas might take the form of an itinerary, beginning at one of the town's main gates where an open space would be informally defined as the location of a periodic market, proceeding into the settlement by means of a market-stall-lined street, and culminating at the town's great mosque, where the association of great mosque and market would define the town core.
Places of polity were not necessarily located in this core, and by themselves they defined no special instance of public space. Nevertheless, the ruler's quarters were often sited near the marketplace, this being the natural place for mass concentrations and for public acts, including the carrying out of punishment.
The coming together of places for prayer, trade, and the exercise of leadership may functionally characterize an urban space. But the peculair urban atmosphere of Yemen's mountain settlements, independent of their size, owed much to the homogeneous texture of streets lined by tall buildings, whose treatment always revealed attention exterior appearance. The relationship between buildings and their environment resulted in a formal mimetic component which is particularly suggestive in the highland skylines of tower-house clusters and rocky peaks. It is also possible to see a mimetic component in the relation between the spatial organization of houses and the uses of land in the surrounding environment. Both can be understood as vertical structures of ascending horizontal layers with corresponding functions. Thus, spaces to grow food -*wadis*, terraces- correspond to spaces to store it on the lower floors of the house. Spaces for transient populations on the mid-slopes -markets and roadside mosques- correlate with reception rooms for general guests *(diwan)* on the floor above. Higher up, access is restricted for outsiders to the spaces of the village or hamlet, just as access is restricted for outsiders to family rooms on the upper floors of the house. Finally, at the highest point of the settlement, the *shaykh's* quarters find a correspondence with the *mafraj*, the isolated top room of the house, the realm of the eldest man where only selected guests are received.

Synopsis

* Subject of the Issue:
The role of areas in planning the Arabic Urban city.
This subject comprises a historical background on the formation of gardens in different eras, starting from ancient Egyptian, Assyrian, Babilonian, Roman and Spanish civilisations and ending with Arabic civilization. Green areas were important elements in planning these societies and the new methods influence the design of these areas and spaces. (P. 13)

* Projects of the Issue:
- Arafa Hotel Project
Arch. Eng. Ali Azzam and
Eng. Tamer Azzam
The hotel is located in Tanta city, the architect tried to use some of the Islamic art items in the facade. The hotel consists of three identical floors, each one consisting of 10 lrooms, a number of suites, in addition to a conference and ceremony hall which can hold 300 persons, cafeteria, main restaurant, hotel roof used as entertainment area containing a swimming pool, gymnasium, a video and billiardo. (P. 18)
- The Administration Building of Fox Company
Arch. Madeeh Taher,
Eng. Amr Sherif.
The administration building for fox tourist company is located on the main road in front of Hurghada International Airport, on an area of 750 m². The hotel consists of three main architectural items, which are the employees offices, reception, administration offices. The building preserves the architectural properties which suit the environment. It is designed on an internal open-air courtyard, the elevation has been designed in a way to combine function with form. (P. 20)
- Multipurpose hall Exhibitions Area-Lisbon-Portugal
Architect: Skidmore, Owings & Merrill and Regino Cruz.
This hall is considered one of the biggest buildings in the exhibition area of the portuguese capital Lisbon which can hold a number of different activities like sports events, festivals, and shows. The building takes the egg - shape (oval shape) his two axes are 120-80 m. The designer was concerned wih the entrance. The hall is designed to hold 11.000 seats, annexed to it another smaller hall to take 2500 seats. (P. 24)

* Technical article
Dr. Ali Abdel Raouf Ali.
A methodological approach to evaluate contenporary Egyptian architecture. (P. 32)