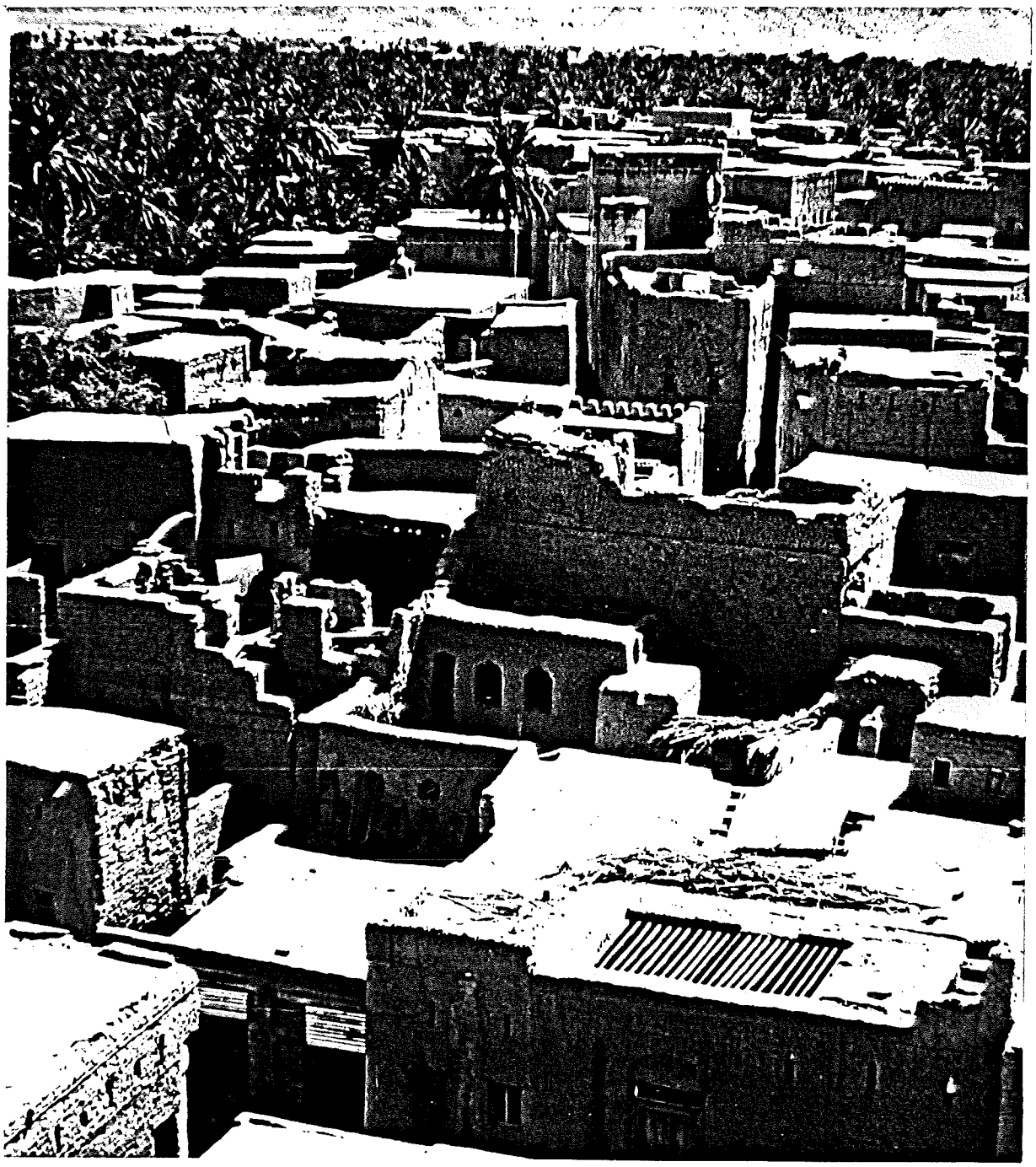
Building Policies and Realities



1. The Existing Situation

The Economic Report 1972 for the Sultanate states:

"Regional Development should be at the heart of the Government's development strategy and should have as its objective the stabilization of rural society. Development is as much a social as an economic concept which should mean that people work together to build up their village rather than become a rootless class of urban industrial workers".[1]

Given the above objectives, a program for improving the indigenous built environment, much of it in the smaller settlements and rural areas, would be obviously relevant.[2]

However what was observed happening in 1974, if permitted to persist, would make the achievement of the stated objectives and the program to be proposed here very difficult to achieve. It is therefore worth setting the study's proposals within a discussion of these current trends and their implications.

Two interrelated trends were marked in 1973. Firstly, an emphasis on large-scale infrastructure and building projects relying heavily on capital intensive, mechanised construction and sophisticated technologies. Secondly, the rapid development of the Batinah region, specifically the capital area — Muscat, Mutrah-Rui — relative to the rest of the country as manifested by the concentration of these projects.

Some Examples: The new Mutrah harbour-cost £20 million — using the most advanced and expensive design of breakwater unit (as yet untried elsewhere), Seeb International Airport — cost £5 million, 232 Kilometres of road between Muscat and Sohar-cost £10.5 million, a low-cost housing scheme of 250 units — cost £1 million.

Some emphasis on developing the Batinah Coast is understandable given its strategic location vis-a-vis trade and security consideration and its status as a national capital. Certain construction projects are by their nature necessarily capital-intensive and require sophisticated technologies. For a newly emerging nation such as Oman, the attraction of such projects is also naturally great since they are associated with the success of industrialised countries and carry much prestige. They thus serve well to herald Oman's entry into an age of development.

It is not within the scope of this study to assess the extent to which the emphasis on such projects and on the Capital Area is warranted by the above factors. However, it is worth considering the characteristics of such projects and their impact vis-a-vis Oman and its development objectives.

By definition such projects make severe demands on capital resources, particularly foreign exchange. The capital requirements are even more so compared to similar projects in developed countries since much of the materials, equipment and skills for construction usually need to be imported. Furthermore such imports may have to carry on at least for a time until local materials and expertise can deal with maintenance and repair. Where the country does not have a well developed transport, technical and managerial infrastructure, implementation takes longer and is more prone to errors thus adding to cost. Finally contractors' overheads and profit margins in large-scale projects can amount to a significant proportion of total costs.

Such projects may still make sense where capital is plentiful and labour scarce. This is not the case in Oman.

At present Oman's capital needs are being met by its oil revenues (approximately 85 percent of all revenues[3]). Oil reserves are expected to last another 20 years. The extent to which this limited capital is already being depleted was underscored by the Economic Report.

"The infrastructure projects now being built and planned will require annual recurrent expenditure. There is a danger that if building continues at current rates, within a few years there may be insufficient funds to meet all the consequent expenses."[4]

To make up this shortfall in capital, domestic and foreign investment is urged. But the experience of other developing countries shows that such sources are seldom adequate. Massive development loans have to be solicited, and from the same experience, it appears that, above all, these result in crippling debts for the recipient country from which recovery seems impossible.[5] In fact a recent U.N. conference outlining strategy for developing countries proposed that the only way to deal with these debts was to simply cancel them.[6]

Superficially, Oman's population of ???,000 may suggest the need to adopt capital-intensive methods. However, a closer look at the employment situation suggests otherwise. Labour shortages exist in the semi-skilled and skilled categories, while in the unskilled categories, there are more Omanis employable than there are jobs available. Capital-intensive projects per Pound investment tend to create a greater demand for the skilled and semi-skilled than for the unskilled. Thus such projects aggravate the existing imbalance in Oman's employment situation rather than easing it. The task of training sufficient skilled workers, at best of times difficult, becomes more so when the gap between existing skills and those required is widened as when demand is created for skills in unfamiliar and relatively sophisticated construction technologies.[7]

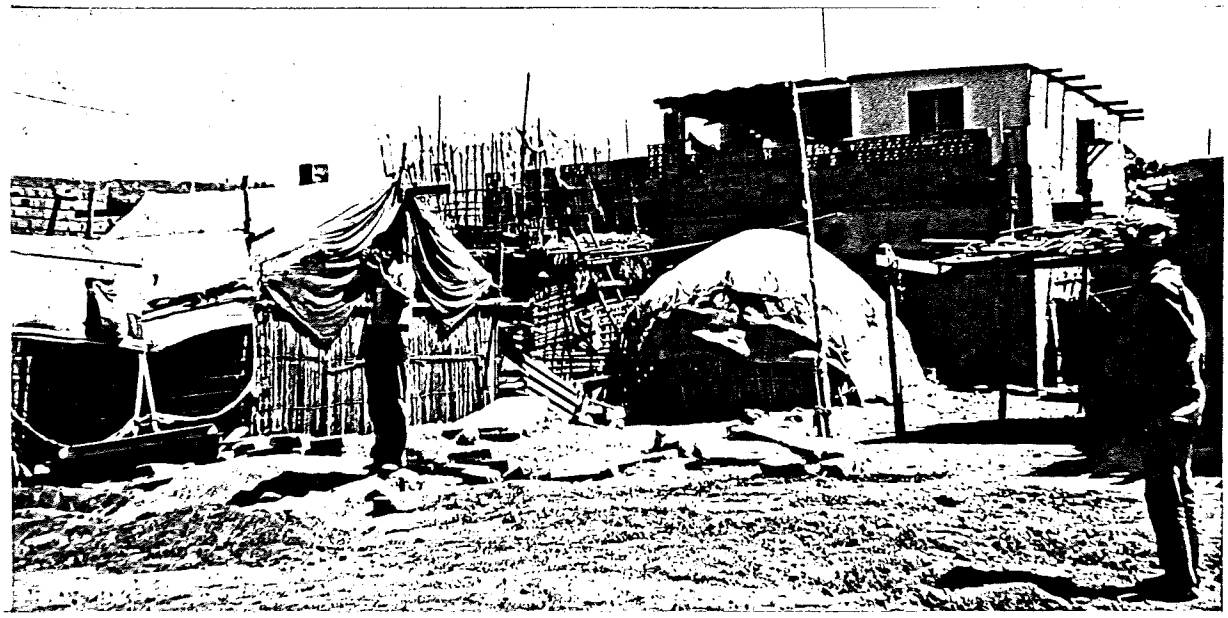
In housing projects a critical measure of the inappropriateness of such an approach is that the resulting costs per unit are too high for most Omanis to afford and clearly beyond the nation's resources to subsidise in sufficient quantities. Typical costs for government construction 'low-cost' housing schemes were £4500.0 per unit.[8]

This was clearly not affordable by the low-income Omani household whose total annual income was probably something less than £360.0 or £30.0 per month.[9] Thus even assuming the unrealistic, that is the government has the capacity to construct enough houses and finance mortgages *interest-free* with 50 years to repay, the household would have to set aside 25 percent of its income for repayment (monthly £7.5). International experience indicates that low-income people can afford to invest no more than 6% to 10% of their income towards housing.[10]

At one time or another some developed and developing countries alike have applied industrialised housing techniques to try and achieve the number of houses required at reduced costs. The basic characteristics that make capital-intensive, high-technologies problematic also apply to such housing production methods. They make demands on scarce resources of capital and skills and require a well-developed matrix of infrastructural and service supports. To quote Charles Abrams, a leading authority on housing in developing countries:

"Industrialised housing techniques have been tried by less developed nations with small success and sometimes near disaster — in the less developed world where labour is cheap and plentiful and where standards are simple, the precast house is unessential and premature. Despite the glib sales talk of prefab peddlers from abroad, the handicraft product is still cheaper, more expandable and more realistic."[11]

Now there are circumstances in which large-scale construction of flats and housing or even prefab units are necessary such as when an industry urgently requires housing for its workers, or emergency shelters are required after an earthquake. However such methods should not constitute the main thrust of a nation's housing effort.



Given the current emphasis on large scale, capital-intensive methods for meeting infrastructure and building needs and their characteristics as described above, we can now see how their benefits are limited spatially and to the upper-income groups. Since such projects are expensive they can only be a few and cannot be replicated across Oman. Furthermore, they must also be located where infrastructural and service supports are most available or are easiest to create. The natural choice therefore is the already advantaged capital area. Thus in 1973, 81 percent of development funds were invested in projects in the Batinah region leaving only 19 percent for the rest of the country. Of this 81 percent, 31 percent was spent in the capital area alone.[12]

The proportion of this investment that is not lost to other countries as import payments is captured by the relatively few indigenous Omanis who either entrepreneurially or professionally are involved in the construction related business thus generated. Similarly the facilities produced such as housing benefit the few who can afford them or are favoured with subsidized units. And while the capital requirements of such projects insure that this region captures most of the government's financial resources, the manpower requirements for their construction insures that the same region captures much of the country's labour resources.

The shanty towns springing up everywhere around Muscat-Mutrah and Rui are filled with those who have left their lands and homes in other parts of the country in the hope of a job. From our interviews with these people it was clear that many at best were only intermittently employed. On the other hand interviews in villages showed that both housing and cultivable land was being neglected by owners who had diverted their attention to the hope of a better life in the capital. The prospects for employment of all these new migrants once the construction boom is over are not promising.

2. An Alternative

If "regional development", "rural stabilization" and "people working together to build up their villages" are Oman's objectives then an alternative strategy is obviously required, one that restricts large-scale capital-intensive construction to when absolutely necessary and emphasizes instead an improvement of the indigenous built-environment of the small towns and rural areas.[13] That is, what Oman outside the Capital Area consists of, and it is there that the majority of Omani's live and work. This program of improvement must command enough resources at the sites of implementation so that it can be implemented in a spatially decentralized manner and be inexpensive enough to be replicable at a scale large enough to have significant impact.

It must therefore achieve two complementary objectives:

1. Increase the total resources-financial and in kind available for improving the built environment.
2. Reduce the cost of this task of improvement.

Before outlining such a strategy it is useful to make explicit a fundamental difference in perception that underlies this alternative strategy versus current practice in Oman. Underlying current practice seems to be the perception that built environment needs — physical infrastructure, community buildings and housing — are commodities to be manufactured with certain minimum quality specifications and sold on the market or rationed at subsidised rates to specified groups. Underlying the strategy to be proposed here is the view that the indigenous system of meeting environmental needs should be reinforced. This system is the incremental upgrading and expansion of habitable space by the occupants of that space.

What is required is a framework of supports that will encourage and complement individuals' and communities' willingness and capacity to invest their own resources in meeting their built environment needs. By encouraging private resources to complement those of the government, the sum total of financial and material resources for improving the built environment is increased. By encouraging incrementally inexpensive but cumulatively significant improvements we can insure their costs and complexity remain low enough to be widely replicable.

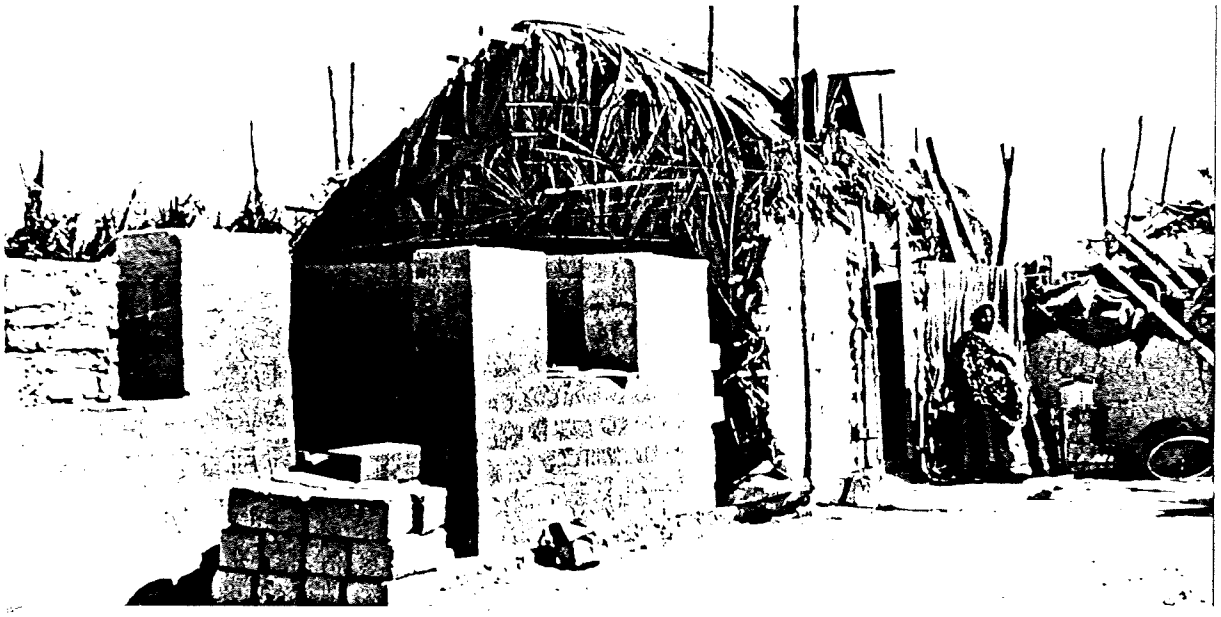
Let us illustrate with two examples from the Omani indigenous built environment.

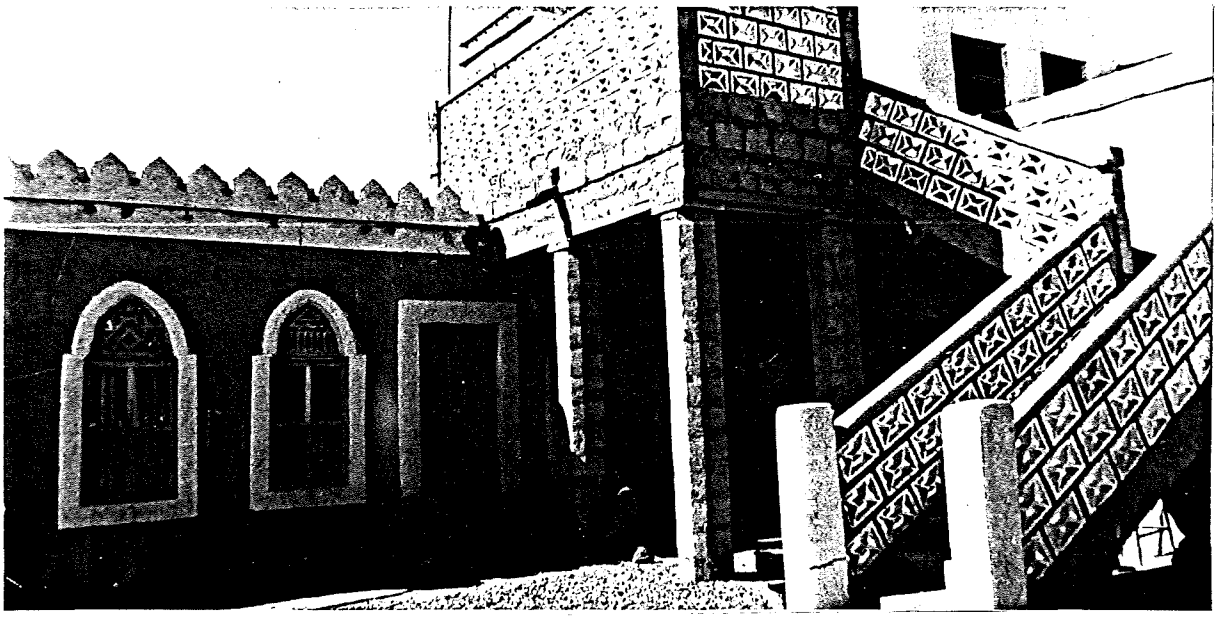
An old Arab proverb says to complete your house is to end your life. Examples of housing from past and present Oman showed that this was not simply some mystical quote but one that reflected in reality the nature of housing. In Sallala for example the old courtyard houses had been constructed room by room, floor by floor over generations as the occupants became wealthier and family members increased. In 1973 several of these houses were still having rooms and floors added to them.

In the same town the government, in an enlightened move, has laid out an area for new migrants and alloted them plots to settle on. Consequently, the whole community is busily involved in constructing their own homes. Shelters of different types and quality can be seen. It is not uncommon to see a tent, a *barasti* shelter and a limestone structure, gradually carving out a courtyard space on a single plot, repeating the various stages the old courtyard houses must have gone through before they became the substantial three and four storey stone structures of today. Indeed some houses in this relatively recently settled area have already been upgraded to this level.

The government grant of a plot has assured occupants they will not be ejected and therefore encouraged them to invest their resources in home construction.

However in most cases, land provision, though basic, is not sufficient for insuring a well planned





Housing built by the user begins as a basic shelter and develops into a substantial house, in time, with the user's needs, income and self-expression.

and fully serviced community. The household willingness, capacity and indeed legitimate responsibility to upgrade the environment declines as the object of improvement moves further from his private dwelling space. The community may participate in lane paving and drainage but may rightly refuse to do so in main road construction. Thus the framework of supports should not only cover all aspects of the built-environment but also take account of diminishing community responsibility and increasing government responsibility.

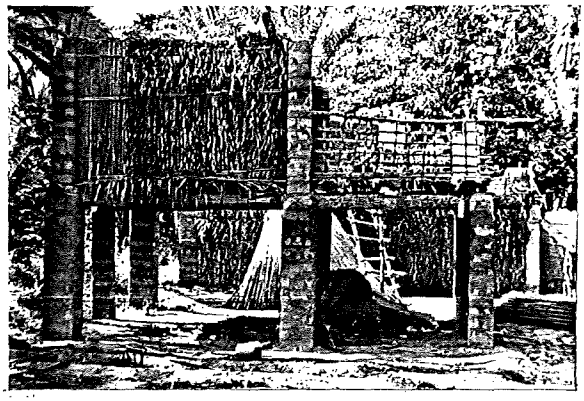
In outline the following can be suggested as the necessary supports:

1. Finance schemes such as housing loans designed for the repayment characteristics of low-income households and matching grants designed to stimulate community participation in basic services such as lane paving and drainage.
2. Affordable land with easy access to employment sources and major services such as transport, roads, water-supply and main drains.
3. Access to cheap construction materials and implements.
4. Advice and training on the technical and managerial aspects of construction to house owners, builders and small-contractors.

Complementary to the above strategy that increases the availability of resources for upgrading the built environment, should be one that reduces that cost of this task. Another example from the indigenous and main environment will suggest how this second objective may be achieved.

In Sohar many families have improved their houses in a simple but effective fashion. Concrete block has been used up to plinth level and as supporting columns, leaving the rest of the structure in *barasti.*

The builders have selectively used the relatively more expansive concrete block where it will be most effective, and continued to use the cheap



Indigenous builders make appropriate use of both new and traditional materials.

and locally available traditional material, *barasti,* where it is most advantageous. The concrete block plinth provides a dry base and firm durable structure. Isolating the *barasti* infill walls and roof from the floor damp, increases the material's life span significantly. Furthermore, wall and roof sections can be repaired, progressively upgraded or replaced without requiring the dismantling of the whole structure. The lattice screen openings, strategically located in the infill walls, allow ventilation and cut glare, both essential to comfort in a sunny and humid climate. Finally the same lattice screens permit an occupant to view the outside without being seen, another great advantage in a society where privacy has a high premium.

Some housebuilder with a firm grasp of the problems and potentials of his indigenous built environment has develped and demonstrated an innovation that is sensitive to local climatic and cultural constraints, represents a significant improvement in housing quality and, most of all, reduces the cost of improvement to affordable levels. (The previous only alternative to *barasti* and mud walls was the relatively expensive all concrete block or brick walls). Thus appropriate, significant and affordable, the innovation has caught on and spread.

This indigenous process of innovation needs to be reinforced. Thus to reduce the cost of upgrading the built environment the strategy should be a program of Research, Development and Demonstration (RD&D) of low-cost improvements to the indigenous built environment. In its implementation such a program should actively elicit the collaboration of local building materials' craftsmen such as limestone quarriers, brick and tile producers, and building craftsmen such as carpenters, masons, *barasti* mat makers, etc., on a regional basis. The tasks of this program should include at least the following:

1. An assessment of materials, materials industries and skills and how their quality and supply can be improved in a low-cost fashion. (See for example discussion on limestone in Sallala Section).
2. An assessment of the design and technology of the built environment-housing community buildings, water supply sanitation and roads — and how these could be improved and yet remain low-cost. (See for example, low-cost improvements developed through this study and proposed in the following section).
3. Laboratory and small-scale testing of promising low-cost alternatives (see for example sections which describe laboratory tests carried out by the authors for this study).
4. Dissemination of information through (1) pamphlets and publication, (2) training workshops, and (3) demonstration projects.
5. A program of construction in the smaller settlements which applies and demonstrates the results of the R&D while simultaneously providing necessary buildings and physical infrastructure.

Such an RD&D program can in the first instance be undertaken by a research cell located in the Planning Ministry with direct links to all construction departments, and those dealing with building related industries. It may later be upgraded to an Institute serving all these departments. It is important that a strong link exist between the RD&D program and the building departments, since the latter may be resistant to adopting innovative technologies and procedures unfamiliar to them.

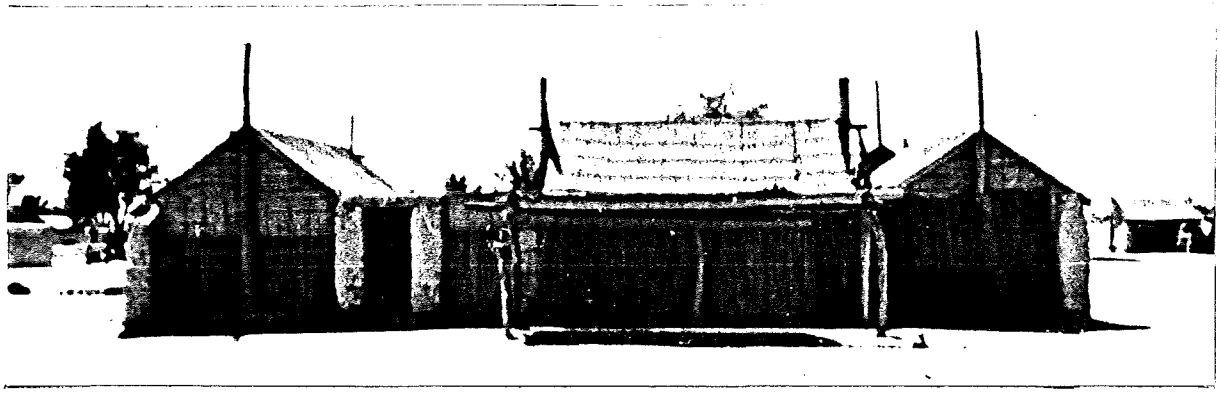
To develop the small towns and rural areas a modest nevertheless significant building program has been launched by the government. Essential buildings such as schools, hospitals, government administration buildings, Wali's (mayor's) residences, police stations, experimental farms and rest houses are being constructed.

The investment embodied in these buildings, although small relative to the amounts spent in the Capital area, could be a significant instrument for generating development in the host communities. The construction program proposed in point 5 above could use the funds earmarked for the current building program, construct the same building types but in accordance with the general objectives of the proposed RD&D program. Before discussing the proposed construction program further it would be useful to discuss the existing program.

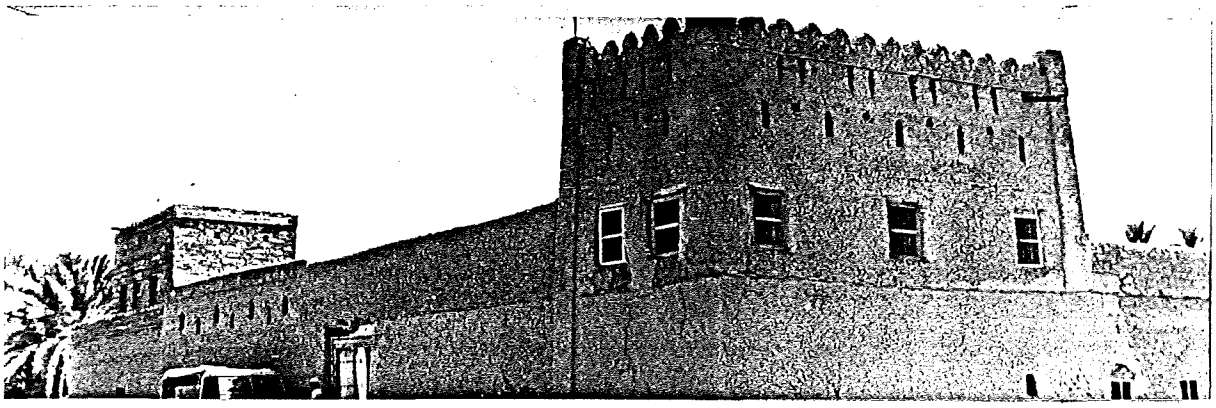
The manner in which this program has been designed and implemented does not fully tap the developmental potentials of building activity. In some cases this program may be having detrimental effects.

By and large the program ignores the indigenous built environment and the local resources of the area. Many settlements we visited had a well-defined traditional cenre of social, commercial, administrative and religious activity manifested by there being cafes, a suq (market), a fort used as the Wali's residence and offices and a mosque in close proximity. This traditional centre was surrounded by the residential neighbourhoods. This was the case in Nizwa and Buraimi for example.

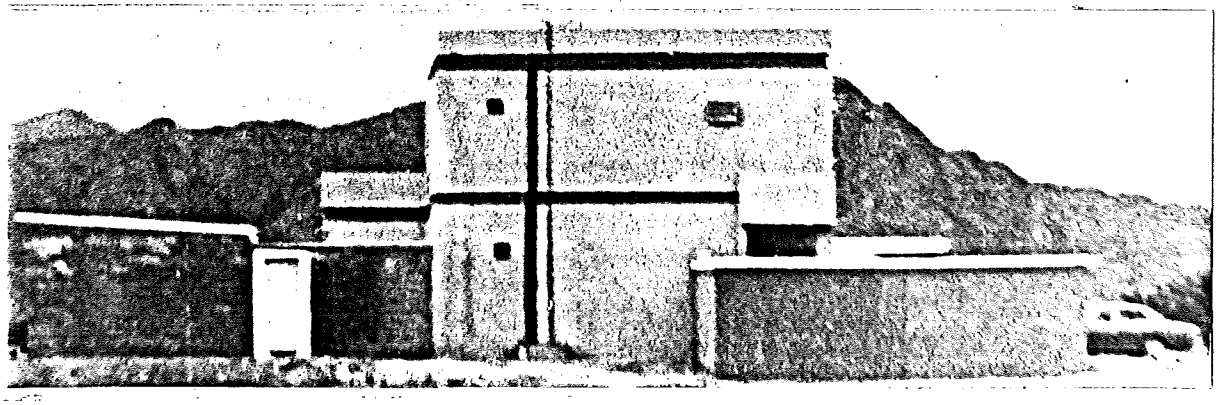
The building program largely ignored the existing settlement. The newly constructed buildings were



Indigenous rural housing in Muladah.



Wali's traditional house and headquarters in Iski.



Recent building, such as Wali's house in Nizwa set new models for aspirations.

set apart from it often at some distance away. Thus children had to walk some distance to get to the new facilities. Similarly the Wali in his new residence was also physically set apart from the town-folk.

Secondly, the buildings paid little recognition to the cultural and climatic conditions and the material resources available in the area. Their design, materials and technologies, brick, concrete block, reinforced concrete lintels and roofs — were direct copies of new construction in the Capital Area (where too they bore little relation to the indigenous environment). Thus doctors and patients complained of the glare and heat in the new hospitals. One Wali was adding a *maglisse* (reception room to meet visitors) to his new house since the design had not made adequate separation of this room from the private quarters.

As potential demonstrations of environmental quality improvements, the buildings failed since they were either climatically or culturally inappropriate or too expensive for most of the inhabitants to adopt. Those who did, risked severely straining their financial resources.

Finally since the buildings used imported technologies they naturally also used contractors and skills from outside the region. The hospitals with adjoining schools for example were one of six identical turn-key projects contracted to a Swedish firm to construct in different settlements for £4 million. Needless to say the benefit to the local populace in terms of income, employment and skills upgrading was minimal. This was limited to the temporary employment some building workers received during construction.

As a result of these new buildings and their locaiton, one could envisage a settlement pattern emerging that has already proved so problematic in other places such as Cairo and Dubai. That is a new town centre develops, favoured by government funds, higher quality buildings and facilities to which the wealthier gravitate with their residences and commercial establishments. Meanwhile the indigenous centre and residential neighbourhoods where the poorer majority continue to live, deteriorates into slums for want of funds and facilities. The westernised form of the buildings and the life-style of its occupants also set the new centre apart from the indigenous one.

The government's objectives to provide essential buildings and infrastructure could be met along with the RD&D objectives outlined earlier and with much wider benefits to the community. What is required is an alternative program design and implementation method, one with emphasis on upgrading the indigenous built-environment, low-cost designs and technologies and community participation. The guidelines for such a building program should include at least the following:

1. As far as possible rehabilitate or upgrade buildings and infrastructure in the indigenous town centre — the Suq, fort, residences, etc. in which the new facilities should be housed. Where this upgrading is not possible or inadequate, the new buildings should be integrated within or adjoining the indigenous centre. This infusion of new construction and facilities will revitalise this centre and its surroundings; the upgraded access ways, water supply, and sanitation facilities will benefit those who already reside in this centre, and it will be easier to extend these facilities to the adjoining neighbourhoods.
2. Low-cost designs and technologies develpoed from indigenous methods and yet tangible improvements of these methods, using indigenous materials and skills and appropriate to the climate and culture, should be used in the construction. Thus the construction projects will be visible examples of appropriate and affordable building quality improvements that the local people could adopt in their own construction.

3. The project should advise and assist local entrepreneurs in the efficient development of building materials' industries. By specifying matierals using local resources, such as stabilised mud-brick, timber or brick and tile in the buildings, and encouraging their use amongst the inhabitants, the program would stimulate a demand for such industries.
4. Local labour and masons should be given intensive training workshops in preparation for the main construction work followed by in-service training during construction.

Points 3 and 4 would insure that a maximum proportion of the building investment would accrue to the local community through the incomes and employment gained by local residents involved in materials production and construction work. A cadre of locals trained in these activities would also result who may then be used as trainers in similar projects elsewhere.

5. Individuals and community groups could be encouraged to implement the low-cost infrastructure and building quality improvements within their own neighbourhoods and homes through such mechanisms as educational workshops informing them of the advantages of these improvements, loans and matching grants. These measures would now be more effective since the community will have visible demonstrations of these now affordable improvements, a core of trained masons to implement them, and an incipient industry to supply the materials. Once private housing adopts these construction methods the sustained demand for the required builders and materials would have a more substantial effect on generating local incomes and employment as well as developing the local materials' industries.
6. The cost of such a program should not exceed what the government has currently budgeted for buildings in these settlements. The additional costs implied in the educational and training components would probably be offset by the considerable savings accrued by using much lower cost materials and technologies.

This study has done much of the groundwork illustrating the various components of the RD&D program including the construction component just outlined. Naturally more work is required particularly in materials industry research and in designing an operational construction program. Given these the next step would be one or two pilot projects from the experience of which a regional program could be implemented.

In conclusion one can say that reorientation of construction priorities and implementation methods urged in this study would not only help Oman towards achieving its own stated objectives but would also be an invaluable precedent guiding other developing countries who share the same problems and aspirations in improving the lot of their people.[14]

1. Sultanate of Oman: *Economic Survey 1972.* Prepared by Whitehead Consultants, introduction p.? This report was the most comprehensive document on development conditions, objectives and strategies of Oman that was available to us. We were informed that it should be the reference point for our study and proposals.
2. Apart from the capital area Muscat-Mutrah-Rui (pop. ???,000), all Oman's settlements are small towns or villages. The largest of these settlements are Sallala (pop. ??,000), Nizwa (pop. ??,000), and Buraimi (pop. ??,000).
3. Middle East Economic Digest Report on Oman. July 1973.
4. Sultanate of Oman: Economic Survey 1972 in "Key Points for the Government to Consider".
5. Mexico's annual repayment is £260 million much of it interest for its £900 million loan ("Guardian" 28th January 1974, London).
6. UN General Assembly Special Session on raw materials and development. April 9th ??? May 2nd 1974.

7. "In the unskilled category there are many more people employable than there are jobs. In the semi-skilled and skilled categories however there are many more jobs available than Omanis to fill them. Such training as is taking place is wholly inadequate" *Economic Survey 1972,* Employment and Skills Section.
8. Quoted by the housing engineer, General Development Organization (later the Planning Ministry) which deals with such projects. He also said there had been some discussion on whether kitchens should be of the traditional or western type. The latter was adopted adding to cost.
9. Our estimate from interviewing Omanis across the country. No income survey was available as yet. Income per capita figures exaggerate real income in a country such as Oman where oil earnings account for 80 percent of revenues and income distribution is highly skewed.
10. See Turner, J. (Feb. 1974) "The Fits and Misfits of Peoples' Housing". RIBA Journal.
11. Abrams, Charles. (1971) The Language of Cities, New York Viking Press, p. 243.
12. Calculated from investment figures for Oman's development projects in the Middle East Economic Digest, July 1973. Included in the 19 percent spent on projects in the rest of the country is a building program for the smaller settlements and rural areas. This program will be discussed in the next section.
13. A larger question surrounds the one presented here. This is whether Oman's development strategy should emphasize capital intensive *industries* or agriculture and agro-linked small-scale labour intensive industries. The former tends to concentrate near larger urban centres and requires similarly concentrated construction investment of the type noted in Oman, whereas the latter disperse economic activity largely in the small towns and rural areas and require supporting infrastructure and building construction programs of the sort to be elaborated on in this section.

    This latter agricultural and rural industry strategy with its complementary construction program would better promote regional development and rural stabilization objectives through creating employment and improved living conditions in a regionally and rurally dispersed fashion. We do not pursue the larger development strategy question beyond acknowledging it since the construction aspect is the focus of our study.

    One might add that "rural stabilisation" meaning *no* rural to urban migration may be unachievable and even undesirable since agricultural improvement usually leads to a shift from farm to non-farm urban jobs. What rural oriented strategies and construction programs can achieve is a slowing of this migration to keep pace with urban job creation preferably in the first instance in the smaller settlement.
14. Some of the ideas presented in this section were subsequently implemented by the authors albeit modified according to the different circumstances, in a rural project in Iran. See Development Workshop, "The Selseleh Integrated Development Project in Loristan, Iran" in *Rural Development Technology: An Integrated Approach,* Pergamon 1978 and "The Development Workshops Work in Iran" in Mimar 1. 1981.