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THE AGA KHAN

RURAL SUPPORT PROGRAMME

Shoaib Sultan Khan

The founders of the Aga Khan Rural Support Programme (AKRSP), started in 1982, had two objectives in view, namely, to increase the incomes of the small farmers of Northern Pakistan and develop a replicable model of rural development. The AKRSP did not confine itself to only a few villages. It is an NGO but by its sheer scale of operations, it aims at influencing government thinking to reorganise its administrative infrastructure to respond more effectively to the demands of a genuine rural development programme. The Pakistan National Commission on Agriculture has emphasised the need for an institutional framework of village organisations for rural areas and has also understood the importance of a support organisation to foster the village level institutions.

The AKRSP identified two essential components for its rural development programme: 1, the conceptual package and 2, the programme package. The conceptual package comprises fundamental principles of rural development.

The Conceptual Package

We were quite clear in our minds, as taught by our mentor and teacher in rural development, Dr. Akhtar Hameed Khan, that the theoretical framework of the Programme should be clearly spelled out. Designing a rural development programme without this framework is like building a crooked wall. We knew that capitalist and socialist models of rural development were not relevant to our situation. It was the Raiffeisen model of cooperation which held the greatest promise for the smallholders of Northern Areas of Pakistan — and, we believe, for others.

Opposite: Essential for cutting link roads or channels, pneumatic drills are purchased with the PPI subsidy.

Below: Map of Gilgit and Chitral province in Northern Pakistan, with indications of the productive physical infrastructure (PPI) subsidy — the investment in village organisations made by the AKRSP as of June 1987. Courtesy of the Aga Khan Foundation, Geneva.
all subsistence agriculturalists throughout the third world.

The Raiffeisen Model depends on establishing a development partnership, making collaboration and assistance dependent on villagers first fulfilling obligations, and then entering into a series of dialogues through village organisations, to identify their needs. Every village management group of AKRSP visited was offered a partnership encompassing the obligations of the villagers to: 1. organise and cooperatively manage their affairs, 2. generate their own capital through savings and 3. upgrade their skills. The villagers were offered assistance in meeting their needs, as perceived by them, in return for fulfillment of the terms of the development partnerships.

The Programme Package

In six years of our work in the district of Gilgit and over three years in the district of Chitral and Baltistan, the villagers responded to the terms of the developmental partnership by organising 993 village organisations (VOs), embracing over 50,000 households (nearly half a million people), and generating over 50 million rupees as savings, kept in scheduled banks. An army of rural cadres was trained comprising 2000 village managers, over 4000 village level specialists in livestock, plant protection, marketing, poultry, forestry etc. — half of whom are women. The VOs also responded to the call for evolving a programme package by identifying the following: 1. organisation and collective management, 2. land development, 3. increased productivity, 4. credit and banking, 5. marketing, 6. reduction in the workload of women, 7. coordination with the social sector.

Catalyst for Organisation

Our experience has shown that, left to themselves the villagers are capable of identifying a need, fulfillment of which would bring VO together and serve as the glue to bind them in a continuing relationship. This portfolio of needs has to be identified through a process of diagnostic survey, entailing a series of dialogues with every VO. There is no shortcut to this process, in view of the micro variations between the villages and identification of the development needs does not lend itself to a distant planning process. The productive physical infrastructure (PPI) is the investment in organisation necessary for community participation.

Concept of Self-Help

Another feature of this subsidy is payment of wages to villagers. To many purists this amounts to complete negation of the concept of self-help. Our experience has been that to expect subsistence holders to contribute their labour free day in and day out, is really asking for the moon. AKRSP, therefore, redefines self-help as villagers' willingness to organise, to generate their own capital through savings (they agree to allocate 25 per cent of the wages as savings), to upgrade their skills, to take full responsibility for management including record keeping, implementation, completion and maintenance of the PPI. The wages paid are negotiated and are normally 20-25 per cent less than the market wage, for the simple reason that work is provided at the doorstep of the village and his ultimate objective of self-help is to establish a self-reliant and self-sustaining system of management at the VO level.

Left: Perhaps the most vital infrastructure of the local environment are the water channels that bring water down from the mountains to the valleys. Here villagers in the Mastuj region of Chitral build a retaining wall to ensure the solidity of the channel (above) is maintained.
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**Investment in Organisation**
The amount of subsidy is determined on the nature of PPI as surveyed and estimated by the Engineering Section of AKRSP and is not an ad hoc figure. In fact the only criteria applied to determine a PPI is the capacity of the VO — what it can manage, implement, complete and maintain. The VO is forbidden from employing contractors or employing labour from outside unless VO members find it necessary. Since the critical factor, as a first step in ameliorating the condition of the rural poor is fostering an institutional framework or an economic and social infrastructure, AKRSP uses the subsidy in achieving the twin objective of responding to the identified need of the VO and strengthening the organisation. The small, one-time subsidy has proven a high pay off. None of the 770 VOs where PPI subsidy was given came back for a second grant but nearly 300 VOs obtained loans, by providing savings collateral, to undertake productive schemes, such as land development, acquiring agricultural machinery, nursery development, fruit processing units etc. A number of VOs also undertook self-financed PPIs. We feel that our trust in villagers that they are capable of acting responsibly once resources and responsibility is handed over to them, has been well placed. Without organisation the smallholders and the poor cannot rise above the level of subsistence. Their biggest handicap is their smallholding. To overcome this handicap, they must pool their resources to get economies of scale, to cut down overheads and to get the best prices for their produce.

**Size of Village Organisation**
The VO is an interest group and therefore, there can be more than one VO in a village. However, to qualify to be a VO there should be, besides common interest, geographical proximity of households and willingness of over 75 per cent of the population to form an organisation. The membership of the VO depends on the size of the interest group and varies from 8 households to 130. The majority of the VOs comprise more than 50 households or 450 people. The 8 households form a habitation geographically isolated and sustaining an autonomous agroecosystem. It would have been unfair and unrealistic to force them to merge with a bigger VO adjoining them because of lack of common interest and difficulties in communication. In many cases after the completion of a PPI and thus attainment of their common objective, VOs split off to form separate organisations, in the interest of regular meetings, savings and participation in other packages of AKRSP. The doubts as to whether VOs can be formed in other parts of Pakistan because of the larger size of villages, is not borne out by the facts.

Over 80 per cent of the villages in Pakistan have less than 2,000 population and over 90 per cent less than 3,000 (Rural Pakistan at a Glance: Ministry of Local Government and Rural Development publication).

**Equitable and Democratic Development**
A VO must meet as a general body regularly and not leave the affairs of the organisation to be managed by a few members. The VO does elect a President and a Manager as its office bearers, but it does not elect a committee to manage the VO. It may elect committees of members for specific activities, such as management of a VO tractor or machinery, resolution of disputes, enforcement of decisions of the general body on free grazings etc. It is through the regular meetings of the general body, which may be weekly or fortnightly but not less than monthly, that the supremacy of the members is assured. The role of the laymembers in keeping the VO on the right track has to be continuously emphasised. The members are urged to make sure that the office-bearers keep the members informed of VO accounts.

*Below: Bridges are very often the only means for establishing contact outside a village; they are built with community participation.*
Left: A water channel, often many kilometers long, carries water from the glaciers down to the valleys to sustain life and to irrigate fields in Bumbogh.

Top left: Near the town of Booni, in Chitrak, it was decided that protective barriers were needed to help avert further erosion of the river bank and the risk of losing cultivatable land above the river.

Top right: In the village of Panwah, it was necessary to bring the water from the channel across the valley in order to irrigate more fields. Frequently it is only the pressure of gravity on the water falling from very high on the mountainside that suffices — no pumps are required.

Sustainability of Village Organisation
Why should the VO stay organised once its identified need, namely the PPI, has been fulfilled? There is an element of sustainability inherent in the PPI as the catalyst for organisation. If the PPI has to be maintained, to ensure continuing gains, the VO has to survive to perform this function. However, what is more essential from the sustainability angle, is the development of a programme package for implementation by the VO. It is here that the real challenge lies for the experts and specialists. The responsibility for developing viable packages lies with the management group (MG) in AKRSP. AKRSP has attempted to meet the challenge by recruiting high calibre staff at the management level and by drawing on outside expertise within and outside the country, to help MG in developing packages in different fields. Without this input in the initial stages, sustainability of VO would be highly vulnerable.

Another aspect of this technical input for sustainability of VO is grafting of scientific and technological improvements on to existing traditional activities in such fields as engineering, agriculture, forestry, processing of fruits and orchard development and the overall management at the village level.

The Role of Village Activists
It is the village activist who helps the VO understand the vision of development; takes programme messages to the general body of the VO; brings about changes in the management system of the village; makes services provided by AKRSP accessible to the VO members. His forum is the VO. Our experience has shown that it is not impossible to find activists in the villages but they do need an institutional framework to come in bloom. The success or failure of a VO is directly attributable to the VO activist, usually the Manager of the organisation. In most cases he is supported by the President. In addition, there is a cadre of village level specialists, trained by Programme staff and remunerated by the VO, who help in implementing programme packages. Thus the actual responsibility for implementation of packages, is borne by the VO through its cadre of trained specialists. By way of illustration, a social organisation unit (SOU) of AKRSP (the lowest tier of its administrative infrastructure), comprising a social organiser (social scientist), a satellite social organiser and an engineer, has the support of nearly 350-500 rural cadres to implement and monitor programme packages in 75-100 villages.

Phasing Out
The issue of when to phase out the administrative structure supporting the VOs requires very careful consideration. The functions performed by the support

Left: Many areas have adopted a productive physical infrastructure project that involves reforestation in areas that were centuries ago covered with trees.
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Rs 194 million including administrative costs, from 1983-88, the Northern Area ADP amounted to Rs 2250 million excluding administrative costs, for similar period and geographical area. If there is a will and commitment, there is no dearth of funds. The donor interest in AKRSP type programme offers another window for mobilising resources for such initiatives. AKRSP, in addition to Aga Khan Foundation network funding, was able to raise money from donor agencies including the Canadian International Development Agency, the Government of the Netherlands, the Overseas Development (UK) and USAID.

Links and Coordination with Government, Social Sector Agencies and Other Institutions

What links with government institutions, local councils and existing developments agencies are envisaged or could a programme survive without such links? As the name indicates, the programme is in support and not in substitution of existing services. Existing government services are inadequate. But this inadequacy is further worsened because of the lack of accessibility of the majority of the rural population to the available government services by setting up credit institutions or operating new branches of banks does not necessarily mean that credit becomes accessible to all the smallholders and subsistence farmers. An AKRSP-type programme aims at rectifying the situation by firstly bringing the smallholders into an organised fold and thereby giving them access to existing government services. The most spectacular example of this type of access is the availability of credit to 50,000 plus small farm families in the Northern Areas where five years ago only a few hundred had access to it. The number of credit institutions and branches of banks had remained almost the same in the area. The Agriculture Livestock and Forestry departments of government agreed to act as trainers for village level specialists and whenever possible pooled the supplies at their disposal with AKRSP supplies to increase availability to villagers. The VO, in fact, is a development forum for the whole village and any agency is welcome to go through it. The more agencies use it the stronger it will become.

AKRSP welcomes the role of introducing the development agencies to the VO, and after the initial contact prefers direct interaction between the two without using the AKRSP conduit. A very good example of this advocacy has been the evolution of relationships between the VO and the Northern Pakistan Primary Health Care Programme and to a lesser degree between VO's and the Self-Help School Construction Programme of the Aga Khan Education Services. Both these examples also prove the efficacy and potential of...
VOs as forums for both productive and social sector development interventions.

The Role of Local Councils in Rural Development
Attempts have been and are being made now to undertake rural development programmes through local councils or elected representatives. No one denies the importance of local council structure in political education, in planning, implementation and maintenance of infrastructure above village level, coordination with development departments of government and other agencies, taxation, inter-village planning etc. but the structure is not an economic unit for undertaking rural development of the village. This requires a broader structure at the macro level, namely, an institutional framework of village-level organisations. The conceptual package for rural development demands and requires involvement of every smallholder in the process of development. Indirect or remote participation through an elected local councillor (or an elected representative) will not result in improving the economic situation of the rural poor of a village. It is not possible for the councillor or the representative to fulfill all the obligations of the smallholders or collective management, generation of capital through savings and upgrading of human skill. Not only in Pakistan but even in India, with a highly developed Panchayati Raj System, the record of local councils in undertaking rural development has been dismal. The explanation that paucity of resources and lack of funds at the disposal of local councils are the main reasons for this failure, is not wholly true.

Women in Development
Women form half of the population and without their involvement in the development process, little can be achieved in alleviating poverty or increasing the incomes of the family. In a conservative and traditional society any attempt to reach the women directly is not only met with resistance but proves counterproductive. There is, therefore, first a need to educate the men to involve the women in development. The AKRSP experience has been that where men were willing to involve women, the goal was to bring more benefits for themselves. Many advisers and consultants advocated segregation of women through separate programmes, but without first achieving emancipation of women, segregation does not work. In the case of AKRSP, which is a product sector programme, it was difficult to visualise programme packages which could nearly divide families, because such a unit works for the common good of the members. Even in the most conservative VO, there is no opposition to involving women in the development process, on terms mutually acceptable, for example, women should be contacted by women staff, women should be trained in the village instead of being asked to travel to training centres etc. The evolution of programme package for women took into consideration improvement of their existing situation, namely reduction of their traditional work, for example, vegetable cultivation, poultry, fruit processing, spinning etc. We avoided introducing radical ideas and concentrated on helping women do things they were already doing more productively. We have also been flexible in allowing women to either form a separate group or to merge their membership with the VO. As of December 1, 1988, 248 women's groups with 9667 members and a savings of Rs 4.82 million kept their identity separate, within overall umbrella of their respective VO's. The initial obstacle of identifying a PPI equivalent for women has now been overcome with the development of women packages. Hundreds of VO's participated in the women's programme package directly. Thousands of women were trained in poultry management, plant protection techniques, dehydration of apricots, management skills etc. The challenge now is horizontal expansion, for which the main constraint is women field staff. Although a cadre of women workers is slowly building up, because of the need for staff well versed in local languages, the progress is slow. However, there is a continuous effort at innovative and alternative approaches to expand proven packages for women.

Difficulties, Failures and Successes
It is too early to pass judgement on success or failure of AKRSP. However, we can discern trends which give indications of the direction the programme is going. Our offer of partnership to the villagers has received a positive response. What gives us hope and confidence is the majority of VO's determination to move onwards towards the destination. The percentage of VO's falling by the wayside has been very small. Of the 993 VO's only one decided to disband itself because of internal discord and factionalism. Of the 770 PPI's initiated by VO's, only one was a flop and one was abandoned and some are taking much longer to complete than what was originally stipulated. 514 PPI's have also been completed and are being satisfactorily maintained. 185 PPI's were started in 1988. 256 PPI's are awaiting completion. More than 300 VO's have taken loans, on the strength of their savings, to initiate self-financed projects of land development, purchase of agricultural machinery etc. The cumulative savings of the VO's, kept in scheduled banks, amount to more than Rs 51 million. In terms of building, their achievements are impressive:

- NEW IRRIGATION CHANNELS:
  - 206 measuring 633 km
- WIDENING AND EXTENSION OF IRRIGATION CHANNELS:
  - 192 measuring 576 km
- CONSTRUCTION OF LINK ROADS:
  - 131 measuring 409 km
- PROTECTIVE WORKS:
  - 98 measuring 26,956 m
- RESERVOIRS AND TANKS:
  - 48 measuring 505,912 m³

Their most impressive achievements, however, have been in bringing about changes in the system of management at the village level. Other achievements would not have been possible without organisation and collective management.

Shoaib Sultan Khan, General Manager of the Aga Khan Rural Support Programme, was born in India and educated at the universities of Lucknow, Egypt and Cambridge, Britain. His career in rural development started in 1959 when he established the Daudzai Pilot project in Pakistan. In 1970 he was consultant to the United Nations Centre for Regional Development from Nagoya, Japan, and from 1979-1982 he worked in Sri Lanka as a consultant to UNICEF, before joining the Aga Khan Rural Support Programme.
A wide gulf frequently separates the needs of the rural poor as they perceive them and those needs as perceived by the planners and ‘developers’ whose intention it is to resolve such problems. The latter are often from an urban background where the conditions are very different from those in rural areas, and may even have had their training (at home or abroad) in urban situations. This gulf between the perceptions of needs is being bridged, sometimes rather precariously, by concepts and actions that depart from the older, conventional method for rural development and these are explored in the articles that follow. Whether it is through the development of new social institutions (eg. the Village Organisation in the Aga Khan Rural Support Programme) or economic ones as with the Grameen Bank, a key factor is that people themselves are discovering and creating the ways to define their needs, then to set the priorities, and ultimately to obtain the necessary means.

The conventional models just mentioned which have been in fashion among development planners were either the “top-down” model and the “bottom-up”, or development from below, model. In a recent article entitled Does Development Trickle Up? Professor Bishwawariya Sanyal of Massachusetts Institute of Technology (USA) succinctly describes the two: the first, or “top-down”, model emerged in the 1950s, when advocates such as Sir Anthony Lewis urged poor countries to industrialise, to modernise agriculture but also to encourage urbanisation.

Hence it was state intervention that was seen as the principal force, or agent, in development and by investing heavily in industry, many Third World governments encouraged rural-urban migration. Social and economic inequalities, as well as those between cities and the countryside, were exacerbated.

In the 1970s a reaction set in, one which eventually fostered the “grassroots” or “bottom-up” model. As Sanyal points out, the notion of “development from below” meant that many of the inequalities could be rectified through new initiatives generated at the bottom of the social hierarchy, rather than as previously done by the bureaucracy. “The assumption was”, says Sanyal, “that these activities would generate profit, savings and investment at the bottom, thereby eliminating the need for income to trickle down the social and spatial hierarchy,” (p. 68). The clear bias of the revised model was in favour of a participatory planning process where the future beneficiaries of a project would be involved from the very beginning. Thus, a number of associations, non-profit or voluntary organisations sponsored small-scale, income-generating enterprises or building projects to promote these objectives.

Today we see a slightly altered approach, not a synthesis of the two earlier theoretical models, but at least a ‘partnership’ of sorts according to Sanyal and others, between government, the “grassroots” organisations and the market forces present in a given situation. The success of the Grameen Bank Housing Loan Project was apparently due, in large part, to consideration being given to what people could actually save themselves and how much they could afford to borrow and then invest in an improved dwelling. Much of what the AKRSP is doing in the Gilgit and Chitral districts of Northern Pakistan can be assessed along the same lines. Moreover, in both of these cases, the reader should note the strong role which women are playing in the development process, both in the management of family savings and loans and by undertaking new, income-generating ventures.

While the projects shown and described here reveal ways in which the physical environment of several areas is being affected (construction of a link road, excavation of a water channel), the impact of the so-called free capitalist market economy upon the development of newly opened areas is not always what was anticipated nor desired. Processess of rural development are often accelerated, with the entrepreneurs from urban bases moving rapidly to provide everything from seeds and fertilizers to money-
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lending services and consumer goods. These same entrepreneurs use the road paid for by the villagers—and perhaps even built by their own labour—to ply their wares, to offer taxi services, or simply to move in and purchase land previously inaccessible for their own commercial ends. The evidence shows that the market economy, in such instances, can be an essential ingredient but also a dangerous one in the development process if controls are not built in at the outset.

In the reconstruction of Afghanistan, the market economy will one day certainly have to be taken into account in projects conceived with government and with NGO participation, for the refugees will have seen already the world that lies beyond their former villages and will want to attain some of the real benefits or even outward representations of modern life.

Our photograph of a local taxi, overloaded with people and produce, plying the remote dirt tracks of Pakistan but here suspended over the torrent below, is emblematic of many things involved in rural development: of the resiliency and perseverance of the human character, of maximising the use capacity of any given modern invention—motor car or steel cable suspension bridge—and the list could go on. Let us say it represents the factor of time, or change, as a phenomenon in rural development: once the road has been opened, the expectations raised and the appetites whetted, the speed with which transformations take place seems to bear little relation to the slow, painstaking pace with which the very first project to bring improvements to a village or a region was conceived and implemented. What is or are the catalyst(s), in human terms, that causes perceived needs for "progress" once set in motion to seemingly run out of control? We ought perhaps to think also about the safeguards to rational development, especially in rural contexts.


Suggested Reading on Rural Development

RURAL DEVELOPMENT AND THE DEVELOPING COUNTRIES
Ian Poostchi
- Introduction to rural development
- Covers agriculture, technologies, social and economic development.

RURAL DEVELOPMENT: PUTTING THE LAST FIRST
Robert Chambers
Longman, London 1983
- Challenges some preconceptions of rural development, and attempts to uncover the hidden nature of rural poverty, as well as proposing action for change.

RURAL TECHNOLOGY, RURAL INSTITUTIONS AND THE RURAL POOREST
Ed. Martin Greeley and Michael Howes
CIDCAP, Comilla, Bangladesh 1982, available from Institute of Development Studies, University of Sussex, UK
- Proceedings of a workshop organised by the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP), and IDS.

SEASONAL DIMENSIONS TO RURAL POVERTY
Ed. Robert Chambers, Richard Longhurst and Arnold Pacey
Frances Pinter, London 1983
- The wet season before the harvest is the most critical time of year for the poorest inhabitants of tropical rural areas. This book explores both practical and analytical approaches to the problem.

RURAL CREDIT: LESSONS FOR RURAL BANKERS AND POLICY MAKERS
K.P. Padmanabhan
Intermediate Technology, 1988
- Looks at the debate between the 'banking school' which advocates the removal of subsidies and mobilisation of savings and the 'development school' which advocates the need to steer rural credit into productive projects and the hands of the rural poor. Examples from the Philippines, Malawi and the Indian subcontinent.

THATCHING: A HANDBOOK
Nick Hall
Intermediate Technology, 1988
- A guide to good quality thatching and the limitations of thatch—useful manual for rural builders, architects, planners and surveyors.

APPROACHES TO PARTICIPATION IN RURAL DEVELOPMENT
Peter Oakley and David Marsden
- Theory and practice of the participatory approach to rural development.

WOMEN AND BUILDING MATERIALS
Marina Fernando and Kate Gass
- Examines the contribution of women in constructing dwellings and in the industry, including specific recommendations for action.

MUD, MUD: THE POTENTIAL OF EARTH-BASED MATERIALS FOR THIRD WORLD HOUSING
A. Agarwal
- Examines what governments of developing countries are doing about housing and what the poor can do for themselves.

BUILDING WITH BAMBOO
Jules J.A. Janssen
- The potential and limitations of bamboo as a building material for walls, doors, windows, roofs, floors, ceilings—and how it can be woven.

BUILDING WITH EARTH: A HANDBOOK
John Norton
- From selection of soil to construction and maintenance.

BUILDING COMMUNITY
A Third World Case Book from Habitat International Coalition
Edited by Bertna Turner
- Twenty examples of grass roots development showing how the poor in Third World countries have built their own communities, and lessons they teach us for building in rich and poor countries alike.
THE GRAMEEN BANK
HOUSING LOAN PROJECT

The Grameen Bank Housing Loan Scheme in Bangladesh is giving some of the poorest members of the rural community the means and materials of improved housing—and improving the health, security and well-being of a significant proportion of the rural poor.

Since the scheme's inception in 1984, over 59,000 houses financed by the loans have been built in 13,000 villages over the country. As a measure of its success, the recovery rate, including five per cent interest, is close to 100 per cent.

The Rural Poor
Bangladesh is the second poorest country in the world. Of the population of 111 million, 85 per cent live in rural areas and about 60 per cent of them are classified as landless, owning either less than 0.5 of an acre or no land at all. Although the rural landless poor provide the bulk of agricultural labour in the form of casual work, few are farmers; the majority are involved in activities such as weaving, sewing, rice husking and small-scale trading. Lack of capital to purchase the necessary tools and equipment for their trades is often the barrier to rising out of the poverty trap.

The Grameen Bank Project
The Housing Loan Programme is an extension of the Grameen Bank project, which was set up in 1976 to help combat the problems faced by the rural landless poor—and especially women—when they tried to set up income-generating activities. Many women had fallen prey to moneylenders charging high rates of interest and then been forced to sell their goods at low prices in order to repay the loans. The project was the brainchild of Professor Muhammad Yunus of the Department of Economics at Chittagong University, Bangladesh, who believed that with appropriate financial support and organisation, the poor and landless could find self-employment without

Below: These are examples of typical family shelters in much of Bangladesh: bamboo and reed mats simply laid against a makeshift frame and without foundations. They are precarious dwellings, particularly vulnerable to high winds and flooding during monsoons.

Right: People are left to choose the materials for the walls around the basic structure. They either make them themselves or purchase bamboo partitions from a craftsman.
needing government welfare or assistance. Financial help in establishing the project was given by established banks and the Rome-based International Fund for Agricultural Development.

The significance of the general loan scheme from the Grameen Bank is that it offers credit at an affordable rate of interest (16 per cent), without requiring collateral. Security for the loans is achieved by the requirement that loanees form themselves into groups of five, and peer group pressure and collective responsibility ensures that the loans are paid back on time. Failure of an individual to pay back a loan jeopardises the possibility of other members obtaining loans. All loans are for a one year period and are paid back in weekly installments of 2 per cent, but the loan sum itself is determined by the borrower. (The smallest loan to date is 1 Taka (and the maximum is 5000 Taka); 30Tk = 1US$.) The groups are required to hold weekly meetings together with other five-member groups forming a 'centre', and each meeting is attended by the Grameen Bank Branch Assistant, who receives the loan repayment installments. The significance of this is that the rural poor do not have to face the often daunting environment of office desks and bureaucracy; the bank goes to them. If the loanee is unable to make the repayment, he or she is offered a larger loan rather than more time in which to pay. There are now 607 GB branches in operation, looking after 23,560 centres. Of the 580,754 GB members, 84 per cent are women, reflecting the GB belief that women among the rural landless poor are both the most disadvantaged group and the most reliable economic force.

The Housing Loan Scheme — Providing the Means
Better housing was a clear second priority after the improved incomes made possible by the GB general loans, and the decision

Above: Housing built by the inhabitants with Grameen Bank funding must use four reinforced concrete posts (produced by the Bank) and corrugated iron sheeting for the roof. This basic structure is more sound and more durable than the makeshift shelters. It was conceived by a GB employed engineer/architect for use throughout the country.

Left: Women are in the majority of recipients of housing loans from the GB. These have floors raised above ground level against floods and here a woman is putting the finishing touches on the entrance steps.
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to start the Housing Loan Programme was made at a National workshop in 1983 in which GB workers exchanged their views and ideas.

The greatest problem in housing for the rural poor in Bangladesh is posed by the climate - tropical monsoon with annual flooding caused by tidal surges in the south and the swelling of rivers due to melting snow. The rural landless poor are particularly vulnerable to flooding since they traditionally live in lightweight structures with a bamboo frame and a thatched roof of grass, bamboo and jute. The walls are made of bamboo matting or jute sticks, and sometimes plastered with mud (corrugated iron sheeting for the walls and roof and a timber rather than bamboo frame are always seen as preferable, but are often prohibitively expensive).

The GB was concerned to develop sound, waterproof and flood-resistant structures which would not only improve the health and living conditions of the occupants, but afford security for belongings and the valuable equipment (such as a sewing machine) necessary for income-earning activities.

To help to ensure this, the Housing Loan Project stipulates the use of four reinforced concrete columns for the corners of the structure and corrugated iron sheeting for the roof. The columns provide a secure attachment for supporting platforms for valuables and for the roof. In the event of serious land erosion, they can also be lifted out to allow for the whole house to be moved to higher, safer land. Concrete also reduces the problem of termite attack, and is a development from the wooden posts, which were used for early GB houses.

The success of the GB Housing Loan Programme is directly linked to the income-generating activities made possible by the GB general loan. Housing loans are only made available to GB members on the basis of a perfect record of repayment and reliability with the general loan. Priority is given to the most needy, to female loanees, to women having no earning male members in the family and to the landless. The land on which a GB house is built (which can itself be bought with a GB loan) must be in the borrower’s name. When, as is commonly the case, the husband is the land-owner and the wife the borrower, the husband has to transfer the title deeds of the land to his wife.

Above: A recently-completed GB house with one of the proud inhabitants.

Right: The beauty of the bamboo mats used for walls is stunning and simple. They often incorporate doors, windows with screens and other elements.
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In applying for the loan, the borrower has to supply a detailed breakdown of how the money will be spent, the type of house and possible repayment schedules. The GB centre then has to pledge repayment abilities upon failure to repay the loan. Processing of a loan is completed within two weeks and the house is usually built within four weeks of the loan being agreed.

There are now two types of housing loan — the basic housing loan of 10,000 Tk and the standard housing loan of 18,000 Tk. For the basic housing loan (taken by the majority of borrowers), the GB stipulates an area of at least 20m², 18 corrugated iron sheets and four reinforced concrete posts. The loan also includes provision for the purchase of a latrine base and four latrine pit liners.

The Materials
The columns and latrine kits are manufactured by the GB using moulds which can easily be transported to a different location. The corrugated iron sheets are bought on the local market according to the quality specified by the GB. Corrugated iron, though processed in Bangladesh, is essentially an imported material and as such, it represents a drain on the national economy. The GB have investigated the supply of corrugated iron sheets themselves, but this has so far proved unworkable. Other materials — such as the necessary additional posts of wood, bamboo or concrete and bamboo matting for the walls — are bought by the loanee as he or she wishes and can afford. All the materials are familiar and readily transportable by boat, cart or rickshaw, and no technical expertise is required in constructing the house.

The overall responsibility for design of the house rests with the loanee, and there is considerable scope for choice. The loanee decides how to fill the walls, the number and type of doors and windows, the height of the plinth on which the house stands (or whether to use a plinth at all) and the composition of the floor (most of the floors are earth). While the buildings adhere to the local architectural character — including hipped or gabled roof tops — they are designed to cater for the specific needs and requirements of the loanee.

Above: A Grameen Bank house, relying on traditional materials as well as the introduction of a few modern ones such as cement, nevertheless fits well into the local environment.

Below: Inside a new dwelling one corner serves as the kitchen, clean and well-ordered. The wall structure, seen from the interior, also doubles here as storage space for dishes and utensils.
Top: Activities by which the women generate income in order to pay back their GB loans include weaving and other home manufactured goods. Having sound, dry premises in which to perform such tasks clearly improves the standard of living and quality of production.

Above: A representative of the GB collects repayment instalments from loanees who, if they are in difficulty, are often asked whether they could use more funding rather than more time.

roof forms, no two GB loan houses are the same. Even the position of the concrete columns has in some cases been changed, to support the roof truss.

The GB housing loan provides a sound starting point for better shelter, and it is significant that many loanees allocate both income and savings to add improvements over the years — in the form of better windows, cement floors, roofed verandahs and additional rooms. Protection from the rain is good, and reduction of flood damage is significant, — less money was spent by GB Home Loan house owners than others on repairing their houses after the 1988 flood — but it would be misleading to call the houses, or indeed any such structures flood-proof. The durability of the basic components and the fact that no technical innovation is needed in erecting the houses, however, does mean that they can be re-built and repaired relatively quickly and easily.

The use of traditional materials such as bamboo and timber — while central to the minimal approach of the project and one of the main reasons for its success — carries with it some problems. The walls of a GB new house are not necessarily better than the walls of the old house it replaced and the organic material used is susceptible to termite attack and decay from dampness in warm conditions. Some owners have devised their own strategies for counteracting the decay; the bamboo is sometimes coated with liquid bitumen; other measures include wrapping the base of the bamboo posts in plastic and bolting the bamboo posts to a metal plate protruding from short concrete columns at ground level. There is also some concern about the high consumption of bamboo in Bangladesh. It is in particular short supply after annual flooding, which makes the price rise. Systematic replanting of bamboo would clearly help.

Above: The wife who took out a GB loan for a new house (background) was also later able to finance the purchase of a rickshaw for her husband.

This account was based mainly on the 1989 Technical Review Summary by John Norton for the Aga Khan Award for Architecture; the Grameen Bank Housing Loan Project was subsequently chosen for one of the eleven 1989 awards — see MIMAR 33. The Grameen Bank now has a regular newsletter called Grameen Dialogue.
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AFGHAN REFUGEE HOUSING

Olivier Scherrer

This article was written by a French architect, member of ACROTERRA (Association des constructeurs pour la rehabilitation et l’optimisation de la terre), following an evaluation trip to Afghan refugee camps in northern Pakistan. He went there to assess the success and the problems of a programme begun in 1987 to help the refugees improve their housing in the camps by training them in vault-and-dome building techniques to replace expensive timber roofing. The clear intent behind the project was that the Afghans could then employ these techniques based on mud brick construction when they eventually returned to rebuild their war-ravaged homes and villages in Afghanistan.

EDITORS

PHOTOGRAPHS: SCHERRER/ACROTERRA

House construction generally depends upon self-help among families or among villages. Although people are often capable of building walls, roof construction is usually entrusted to a mason whose know-how has been handed down from father to son or from a close relation. This is certainly the case with vaulted roofs.

While the large cities of Afghanistan have been relatively spared in the fighting until now, the average ratio of destruction in rural areas is estimated at 50 per cent, although it is impossible to obtain accurate information. The number of houses which have been deserted for years and damaged by lack of maintenance will undoubtedly increase.

It is difficult today to forecast how many refugees will go back to Afghanistan, partly because of their geographical location (Pakistan, Iran, as well as refugees from inside the country) and partly because of their particular situations (integration in the host country, emigration). Surveys in the camps show that the great majority of them will indeed try to settle back in their original habitat. Their first task will be to start farming again, and the second will be to rebuild.

Left: A mason completes a dome roof for a house; it will be totally closed or left open for light and escape for smoke.

Below: The Jalozay refugee camp, in northwestern Pakistan, where the pilot project of introducing dome construction to roof the dwellings was implemented.
Map of Afghanistan showing the geographic location by areas of prevalence of flat roof and vaulted roof construction. Most vaulting appears in the north, west and southwest.

Opposite page, top: Masons and their assistants finishing a vaulted roof.

Opposite, below right: The interior surfaces, like the exterior ones, are coated with an earth and straw plaster. The entire family pitches in to help.

Opposite, below left: The interior of a house in Hazekhel camp illustrates the traditional use of timber beams -- now quite scarce and expensive -- for roofs.

Right: Axonometric drawings of different stages in the construction process of covering a rectangular room with a mud brick vault.

their homes -- as the story of this Afghan refugee bears out:

Dost Muhammad and his family fled from their village, Dil Barchin in Balch province, after it was bombed eight years ago. Dil Barchin was composed of three smaller villages, one of which has been completely destroyed. All the houses are made of mud, and 50 per cent of these are covered with domes built by a skilled mason from a nearby village.

Before the revolution, masons used to charge 65 Afghanis to build a dome, and the labourers cost 40 Afghanis per day. There were two carpenters in the village, and a wooden roof beam cost about 120 Afghanis. After the revolution, as there was a lack of manpower and high inflation, the masons asked 4000 Afghanis and the labourers 600 Afghanis per day. Dost Muhammad has heard from across the border that people today find it is almost impossible to obtain timber and that it would cost at least 1000 Afghanis per tree.

Dost Muhammad's family settled in Badabera camp only a few years ago.
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Prior to this they were living in tents on the border but they moved when they heard that there was some assistance for refugees and that it was cheaper to live there. He and his family want to go back to Afghanistan as soon as possible – when there will be less risk of fighting – however, the men will go first in order to cultivate the land and rebuild the house; the rest of the family will join them if the harvest is good.

While there is a general trend towards the use of modern materials, especially in an urban context, the traditional materials and techniques used in some cities and in most rural areas meet the needs of the inhabitants perfectly. In addition to the destruction of buildings, the war in Afghanistan has caused a prolonged break in the transmission of traditional techniques and contributed to the problem of already scarce forestry resources. There will very probably be an inadequate supply of timber within the country to permit reconstruction along traditional lines. In the short term, the consequence of this shortage will be a rise in the cost of wood, and in the longer term, an ecological disaster.

With regard to the reconstruction problem, the following issues would seem to be paramount: insecurity; damage to road infrastructure; inaccessibility of many areas; public facilities (schools, basic health units); loss of know-how (break in the traditional skills); level of skilled manpower; absence of resources prior to a first harvest; scarcity of wood; rising cost of materials; lack of tools; areas of regular seismic activity.

In the light of the problems identified during this survey, and the precarious economic situation of the country, a realistic approach to the reconstruction should inevitably emphasize the use of locally available materials. Any action in the field of low-cost housing should consider among possible solutions, the following priorities: rehabilitation of traditional housing; improvement of the quality and the durability of local materials; proposal of a compromise between kachaa (mass clay and sun-baked bricks) and pakka construction.

The issue is not one of adopting a conservative attitude but rather to improve existing techniques in order to make them compatible within a radically altered context.

The Project

With headquarters in Peshawar, the Domestic Energy Saving Project (DESP), financed by the GTZ (German Cooperation), was created in 1984 to contribute to preserving the ecological balance in the North West Frontier Province of Pakistan. The main target group of the Project, until now, has been the Afghan refugees, of which there are about 3 million in Pakistan, most of them are located in this province.

A Housing Programme was introduced in January 1987, to complete the DESP activities. This programme was initiated for two main reasons:

- Timber is used in large proportions for building traditional flat roofs (the most common typology in NWFP), which do not usually last more than two or three years as a result of woodworm and termite attack.

- Many refugees were still living in precarious conditions without any chance of attaining minimum comfort.

It seemed vital to limit or to suppress altogether the use of wood in the building process, and at the same time provide a prompt and economical answer to the pressing need of housing for the Afghan refugees. Recourse to a traditional building technique from Afghanistan itself, called "gymbad", made it possible to reconcile these objectives.

The present "gymbad house" construction has evolved because of requests for assistance from the Housing Programme. The purpose is not to provide a "ready made" house to refugees but rather to assist them in building "non-timber" roofs on a self-help basis. The technician or the master advises the home builder about the dimensions of the rooms and the choice of the mud to use in brick making. When the building of the walls has been completed by the owner, a team of masons (one master mason and one or two apprentices) make the dome, their wages being paid by the project.

After two years of effort and the construction of 256 domes, it was necessary to undertake an evaluation of the project in order to verify whether the techniques were appropriate, to suggest improvements and to consider the implications of extending the project to the rebuilding of Afghanistan.

Traditional Techniques in Afghanistan

Traditionally, housing depends on the most easily available materials, those which also appear to be the most economical: kachaa (mass clay and sun-baked bricks) houses are the common type to be found throughout Afghanistan. Bricks baked by local craftsmen in small kilns are used in urban surroundings. However, the prohibitive cost of cement, which is mainly made for export to the USSR, limits its use to public works and prestigious institutional buildings.

The type of building which is most common on the plains utilises mud for the walls; in the mountainous valleys, mud is progressively replaced by stones bound with mud mortar. In the wooded regions – Nuristan and Pakta for example – constructions entirely of wood can be found locally. Several different techniques using earth are to be seen in Afghanistan. Mass clay and sun-baked bricks remain the most commonplace but wattle and daub (Nuristan) as well as pisé (multistoreyed houses in the Middle Pansher Valley, Bazatak) also exist. In the western part of the country, some people cover their reed structures with mud. Generally, the foundations are made of stones (boulders with mud mortar). When stones are not available at all or cannot be afforded, flattened earth is used.

The flat, mud roof is one of two prevalent types of roofing in Afghanistan. Wooden beams support small pieces of wood covered with reeds or grass (in rare cases, wooden planks replace the branches and the mats); the top is made of flattened earth and protected with a straw mud mortar. Variations of this sometimes appear, as in the fortress houses of Pakta, for instance; two-storey buildings in the Pusun mountains, built with mud bricks and stone, and clinging to the slopes in the way of the pueblos of New Mexico (USA) have flat roofs covered with slate.

Apart from constituting a covering for the house, the flat roof also plays other roles in the daily life of people. It is commonly used for sleeping out of doors in summer, for drying fruits and vegetables, and as an auxiliary work space.

However, the vaulted roofs that one finds in the north, northwest, west and southwest regions of the country are made of sun-baked brick, but only rarely of burnt brick. The dome, which is the most common shape, is constructed in a variety of ways: domes on a square plan in the west, on rectangular plan in the north, domes using pendentives near Ag Ghab (Jozjan), and farisuuw domes with a central hole for ventilation between Herat and Qala Yi Naw (Badghis).

Vaulting techniques are much less widely used and appear especially in the southwest, between Iran and Pakistani Baluchistan, up to Qandahar province. They also exist in Mazar-I-Sharif region (Balkh). Some regions even merge several techniques. In Yazayar-I-Sharif for example, there are three-storey houses with the first floor covered by a vault and the two others by domes. In Gazi, two-storey houses present a flat roof but the first storey is often built with a dome.

The study of the maps gives a better impression of the demarcation of zones of
vaulted roofs and presents the following characteristics:

* low or medium altitudes: generally from 0 to 1000 metres and not over 2000 metres;
* low rainfalls: from 0 to 400 mm/year;
* recent geological formations;
* negligible to minor seismic risks, with a few moderate risk zones.

The vaulted roof distribution probably reflects the best balance between the people's needs and the solutions they can find; however, it does not mean that this type of roofing may not exist elsewhere, nor that the adopted solutions do not raise any problem.

Know-how
Few full-time specialists live in a village, though now in the western part and especially in the cities, most people are professionals or technicians. The Afghan villagers are primarily farmers but a few are also craftsmen. Apart from their agricultural occupation, they are carpenters, masons, brickmakers, shoemakers, butchers, and mullah. “Occasionally, regional part-time specialists, seasonally travel from area to area during the “non-agricultural” season. The Andar Pushtun for example, are experts in constructing and repairing the qanat in winter; some Wardak Pushtun travel to eastern Afghanistan to construct gal'ah (fortress-residences with watch-towers)...”

(Louis Duprée, Afghanistan)

Above: Recently completed houses in Jaloza camp, having mud-brick domes, provide solid, insect-free shelter.

Below: In Swabi camp, a mason puts the finishing touches on the ‘belt’ of bricks around the base of a newly-built dome.

Improved Technologies
The use of improved local materials can entail numerous advantages: use of a minimum of energy for transformation of materials; diminution of imports; reduction of transportation costs; low capital investment; increased employment; contribution to rural industrialization; increases in land values; ecologically suitable and recyclable materials; climatically-adapted resources; respect for the site and for cultural identity; enhancement of technical expertise.

A policy which stresses the use of improved local materials, and the introduction of new techniques, should necessarily take into consideration both their acceptability and the problems involved in training people in their use. As a matter of fact, the difficulties met by the DESP constitute a good example of these very problems.

Acceptability
Since it was initiated the Project aimed at promoting construction of gambad as widely as possible, but the actual occurrence of the domes built in the camps clearly shows that only some groups, coming from regions where this traditional typology already exists, have chosen to live in gambad houses.

Refugees, like many people in precarious economic situations who have an opportunity to build at low cost, prefer to replicate their traditional habitat rather than to innovate and save money, thus benefiting from the many advantages explained by the Project representatives during information meetings. This has meant that the social acceptability among the Afghans of this type of roof constitutes a handicap for the future development and the dissemination of this technique and must not be overlooked. Apart from simple habit and local custom, a flat roof is functional also since it can be utilized as a working or sleeping area. In addition, its greater cost to produce than a mud-brick dome and its resemb-
Plan and section of a local bakery built by the refugees in Badabera camp and benefiting from improved techniques.

Plan and section of a bakery constructed in Jalozey camp by Afghan refugees.
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lance to other types of 'modern' flat roofs, involve greater social prestige for the home owner. These factors, compounded by the fear of living under a vault that 'holds up by itself', contribute to many Afghans' rejection of the proposed system.

It is nonetheless important to realise that there have been cases where existing prejudices have evolved, depending on the context. In the Swabi camp, seven families, fed up with having to renew their flat roof (destroyed by insects) every two years, decided in favour of domes, although this technique is not at all traditional in their village.

Training

Traditionally, knowledge is communicated from father to son, but some techniques already devalued by competition with Western technologies have suffered additionally from the war in Afghanistan; the situation has not been favourable to a continuation of apprenticeship practices. The desire to promote these 'non-timber-consuming' technologies has led the project leaders to include training as a vital component of the Housing Programme.

The training proposed is exclusively practical: the trainee is entrusted to a skilled mason who is in charge of teaching him all the stages of construction of a dome until the trainee is able to build one by himself. This kind of innovation upon traditional apprenticeship has some disadvantages:

* It relies on the mason's own qualifications and his ability to teach others (qualities which are difficult to evaluate in field work)
* Dome construction techniques in Afghanistan are the result of time-honoured craftsmanship, with no technical criteria but the requirement of years of practice to master
* The segregation of tasks is a common practice on site in Pakistan as well as in Afghanistan: the man who uses a shovel for example, does not touch a wheelbarrow, so an apprentice is sometimes obliged to do repetitive jobs for long periods
* The masons do not willingly transmit their craftsmanship; this reluctance is justified by the fact that they obtain social prestige because of their knowledge and to share it immediately would amount to diminishing their social status
* Learning in a real construction situation does not make the training easier, because mistakes during the building process of a dome can lead to its collapse. Therefore the apprentice does not get the opportunity of building by himself until months of training have elapsed
* However complicated traditional expertise may be, it is often limited to a specific context, and this is the case for gumbad construction. The mason's knowledge remains limited to past experience, and he does not have sufficient technical background to be able to adapt his knowledge.

Taking into consideration all of these components which were analyzed during the project survey, the GTZ and Acroterre decided to establish a Mason Training Centre in January 1990 which, beyond its demonstration role, will train masons and other professionals in building techniques with improved local materials. Moreover it will undertake experiments aimed at improving these techniques (applied research) and determining other low-cost alternatives.

Depending on the political and military situation inside Afghanistan, this programme will, one hopes, assist in the construction of basic infrastructures like hospitals and schools as well as housing in the rebuilding of the society.

Below left: In Peshawar, Afghan masons were trained in improved brick-making techniques, including stabilisation of earth with bitumen and use of presses.

Below: Masons and their assistants are here finishing the vaulted roof of a house in Badaber camp in Pakistan. Afghan masons train their compatriots in improved techniques.
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BUILDING IN THE AÏR AND TENÈRE REGION, NIGER
John Norton

Since 1982 the IUCN (World Conservation Union) and World Wide Fund for Nature have been developing a large scale programme which has gone far beyond the original objectives of conservation of the wildlife of the Air and Tenere region of northern Niger. It has now become a fully integrated natural resource management programme with a major component of rural development in one of the most remote areas of the Sahara, populated by nomadic and semi-sedentarised Tuaregs.

The programme is based on the sound view that 'conservation' in its largest sense, is a question of reconciling human needs and progress with the sometimes more delicate needs of the flora and fauna and natural resources upon which the rural human population in the end depend. Conservation is seen as a dynamic process, which can only really be viable if it is linked to an effective and realistic use and appreciation of resources by the local population. Failure to strike this balance between man's needs and land use, and the maintenance of the basic ecological structure poses inevitable questions about the future and the viability of increasingly large parts of the Sahel which are being eaten up by continued desertification and over consumption by the people who live there. This concern should be seen in the perspective that, despite pockets of urban growth, the region's population is still essentially rural.

The programme for the 'Conservation et Gestion des Ressources Naturelles dans l'Aïr et le Tenéré' has thus aimed at developing a model which can answer the dilemma faced by the increasing areas of the sub-Saharan strip which are becoming less and less able to support the people who live there, or indeed able to slow the encroachment of the desert. The project activities are three-fold: the conservation and development of the Air's natural resources — flora, fauna and, more recently, the potential for tourism; the rehabilitation of degraded or threatened land and habitats which are essential to support the plants, animals and people in the region; and the fostering of rural development techniques which best
Top: After the training project had finished, a number of houses were built spontaneously. In building this private house in the town of Filingué, the owner enlarged considerably the span of the domes from what had previously been taught to the masons.

Above: Such grass huts in the Ténéré region were usually built by women. Grass is now more and more rare in the region and people must travel long distances to obtain it. Its form has nevertheless inspired the form of round, domed shelters built of mud.
Top: This photograph shows the older type and norms for housing next to the mud-brick round houses which are being built in the villages.

Above: Adapting the building techniques they learned previously, the villagers have now taken to innovating with small round houses for themselves.
**RURAL DEVELOPMENT**

Left: Buildings shown here are the first ones built in Ifrouane as part of the training programme sponsored by the World Wide Fund for Nature, the International Union for the Conservation of Nature, and Development Workshop. (PHOTO: PETER TUNLEY)

Below left: A single-dome structure of this type takes only seven days to construct, usually by the owner himself and friends or family, as they cannot pay for a contractor.

Below: Two-domed structures such as this one are now able to be constructed without outside supervision.
respond to the local population's needs and the ability of the people to use them and sustain and develop them.

Fundamental to the whole approach has been the need to convince the local population by demonstration that the activities which are being undertaken can and do have a real value in their day-to-day lives. Thus alongside activities to promote the re-afforestation and re-seeding of some areas, and the creation of a protected area — the Air and Ténéré National Nature Reserve, the largest in Africa and covering 77360 km — the project undertakes a variety of activities aimed at overcoming specific development problems in the area. Typical of these activities has been watershed management and garden protection, achieved through the construction of dry-stone check dams to control flood water and encourage the deposit of water borne soil to increase fertility and plant colonisation. Such action has not only reduced the risk of damage to the vegetable gardens and fields which is caused by flash floods and which has thus had a direct and positive impact for the local farmers, but it is also promoting skills that they can go on using; water supply in the gardens has also been improved through training activities to develop simple well-building techniques and well maintenance techniques, and the project responds to local demands for assistance in repairing old wells and building new ones. The project supports the training of rural health workers (particularly midwives), the development of adult literacy centres, and has been introducing solar drying for vegetables.

Again typical of the activities of the project has been the promotion of earth vault and domed roofing systems which replace the need to use the increasingly scarce timber, branches and grasses traditionally used for housing, thus responding to a two-fold need — that of the population, who have found it increasingly difficult to obtain the local organic building materials or to pay for non-local materials (by the mid eighties it was estimated that over 2000 metres of building needed roofing) — and that of the ecology, suffering from the removal of grasses and trees. In Iférouane, an oasis where the majority of the region's population of 4,500 live, few of the doum palm trees that the inhabitants use for beams remain, and even thatching grass now has to be transported 15 to 20 kilometres.

The techniques of building vaults and domes with mud bricks and without the use of shuttering to support the roof were originally introduced into Niger by Development Workshop in a training programme in 1980 at the invitation of other buildings, initially meeting direct project needs, and increasingly finding ways of responding to public demand for buildings using the same vault and dome techniques, in both public building — including the small Iférouane clinic, and even more recently the local offices for the National Gendarmerie — and private housing.

The techniques of vault and dome roofing that have been chosen originate in Nubia, Upper Egypt, and the form of buildings using these techniques has become familiar to many, particularly through the work of Hassan Fathy. But in the nine years of building in Niger with vaults and domes, the forms have evolved and acquired a more distinctive local style. Perhaps harking back to the traditional round forms of housing in the area (both

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Above: Interior of the cooperative handicrafts shop in Agades.

ISAID, a Canadian NGO, at the time operating near Filingué, close to Niamey. Impressed by the buildings that were constructed following the training programme, and by the degree to which the techniques of earth vaults and domes was taken up spontaneously by the local population, the IUCN/WWF decided to promote these same techniques in the Air and Ténéré region, seeing that they were ideally suited to the desert climate of the area and to the material resources available. To launch the woodless roofing programme in 1985, the project constructed its own headquarters building in Iférouane using the ‘new’ techniques. This has been followed by a variety of
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The practical process of disseminating the techniques to the local population has been three-fold — by demonstration through the construction of buildings by the CAT project, by on the job training, and more recently by specific builders’ training programmes. The IUCN/WWF programme has supported these activities through the full-time presence of a technical assistant, Peter Tunley, who has been central in the development of local building skills and in designing the larger buildings for the project, and providing help to local builders when they are building smaller private houses. Development Workshop provides additional backup support dealing with specific technical issues encountered by the project, including the production of a supporting manual explaining the techniques being used.

The result of these activities over the past five years is that there are now, in addition to a large number of small and large buildings roofed with earth vaults and domes, a growing number of skilled builders in the area who are able to construct vaults and domes without supervision, and thus can begin to meet local demand. Interest has also come from further afield, and masons have been sent for training from Mali, as well as from elsewhere in Niger. Demand for buildings using these techniques has also spread well beyond the immediate project area.

The signs are that, as it is hoped will be the case with the other initiatives promoted by the IUCN/WWF project, the earth vault and dome alternative will become widely available and be able to smoothly fill the gap left by the disappearing and increasingly expensive natural resources that were used before.

John Norton is a Director of Development Workshop (Europe Office: B.P. 13, 82110 Lauzerte, France). With thanks to John Newby, IUCN/WWF Representative in Niger.

Top right: Another village cooperative that took funds received from the Paris-Dakar auto race had this shop for basket-weaving built using the new construction techniques.

Right: Old and New. A traditional house made of grass stands next to a new, mud-brick construction in a village. The new type accounts for roughly 50% of all recent construction now in the region.

Bottom right: This private house was built in Jefowane by a high-ranking national civil servant — suggesting that the system is taking hold at all levels of society.

Below: A view of the main project headquarters at Tomtieh, one of the earliest demonstration buildings for the training of masons.
Project Data

Client: His Highness Shaikh Jabir Al Ahmed Al Sabah, Amir of Kuwait. The Municipality of Kuwait.
Structure: Eugene Rent.
Electrical: Nada Kiblawi.
H.V.A.C.: D.P. Ahuja.
Quantity Surveyors: Ted Chester.
Total cost: (Phase I and II): 49.7 million Kuwaiti dinars (US$ 165.7 million).

The Kuwait Waterfront Project is a truly unique endeavour, combining architectural and natural elements with seascape and landscape in a richly diverse but coherent way. Phases I and II have now been completed, allowing one to appreciate the complexity as well as the innovation in what has been achieved. Kuwait City, which has grown from a fishing and trading town founded in the Eighteenth Century to a large metropolis, lost most of what it possessed in the way of traditional Arab architecture after the Second World War as a result of several, expatriate-designed master plans that ensured the demolition of the old urban fabric to adapt this to the needs of efficient automobile circulation. A new coastal highway, much of which was built on infill in the 1970s, sealed the city’s separation from the natural beauty of the harbour. Among the excellent qualities of the present achievement are the development of recreational spaces and facilities along a continuous 21-kilometre strip of land between the highway and the sea, and the creation of strong architectural features where there were none before (or practically none) without being ostentatious. Finally there is the integration of these with newly introduced natural features such as plants, trees and lagoon.

Sasaki Associates, the US landscape firm and Ghazi Sultan, a Kuwaiti architect, formed a team with Kuwait Engineers Office (KEO) to produce a detailed Master Plan for the entire zone in 1978, one which differed from all previous proposals in that it insisted upon recreational and cultural functions, rather than housing or commerce, as the means for giving the coastline beyond the highway back to the people. While acknowledging the primacy of the car as the preferred means of transportation, and hence providing adequate, easily accessible parking, the planners were also concerned that arrival on foot, on bicycle, by public transport and even boat should be possible. Moreover, the final version of the site plan incorporated twelve shoreline zones for development as a response to the needs of adjacent inland neighbourhoods and physical potential of each of the sites.

Seven key activity centres (called Major Use Areas) among the twelve zones were conceived in order to establish visual points of interest and concentrations of specific kinds of activity. The existing Kuwait Water Towers, for example, were enhanced by a park and promontory; further along the coast a special harbour with a Dhow Museum (to highlight the sea-going craft upon which Kuwait’s livelihood depended before petroleum was discovered) will constitute another focus of interest. An intensively landscaped, entirely man-made island and its protected lagoon have been among the first of these Major Use Areas to be executed. The swimming beaches and

Opposite page, top: Amphitheatre, phase 1, site plan.

Centre: Amphitheatre, phase 1, section.

Bottom: Amphitheatre, phase 1, floor plans.

SASAKI ASSOCIATES, INC.

Below: A site plan of the 21 kilometer long waterfront reveals the major activity areas and facilities provided in the Master Plan. Objectives included restoration of the fishing dhow harbour.
boat launch areas are interspersed with these concentrations, as are the children's playgrounds, fishing areas and pedestrian promenades. Although seemingly strung together like beads when seen in plan, the various components of design are in fact carefully linked and successfully woven into a coherent ensemble.

Much of the beauty of this project, which is still taking form, must be attributed to the close working relationships that evolved among team members, Ghazi Sultan and Abdulaziz Sultan, respectively the pivotal architect and engineer, and Paul Pawlowski, Frank James, Clarissa Rowe and Richard Rogers from the Sasaki firm. They were obliged, as Ghazi Sultan himself puts it “to draw up a detailed brief for non-existent users; we had to imagine, forecast, and predict what Kuwait would be like in the 1990s”. Fortunately, the dialogue they pursued with the architect-planners at the municipality (representing the Amir of Kuwait, the client) was a fructuous one, and the challenges of design continued to be exciting.

Quite conceivably, this was because the site had a history but very little remained, and there are very clear guidelines governing social behaviour in public which had to be respected. One had to imagine places for recreation in public that could offer privacy if needed as well. Doing so on a flat, generally featureless site 21 kilometers long was not a simple task.

Although the partnership Sultan/Sasaki/KEO worked well together, each bringing considerable experience in their own right, the results of Phases I and II reflect the special concerns of individual members, Sasaki Associates for the landscaping and all that this involves, and Ghazi Sultan particularly for the architecture. Educated professionally in the United States (and thus aware of the

Top: A ziggurat ramp leading to a lookout is one of the physical phenomena created on Green Island. Seen here from atop the tower, it stands at one end of the bridge linking the island with the shoreline and city (background).

Above: The amphitheatre on Green Island is one of numerous recreational and cultural facilities on the waterfront. Seating 400 persons, the installation has a projection booth and equipment for evening performances.

Opposite page, top: People seated in the amphitheatre have a wonderful view of the man-made lagoon and the sea beyond the stage.

Right: The artificial island with steps leading down to the water's edge and covered by a geodesic dome offers isolation from the crowded beaches.
Left: A geodesic dome on an artificial island sitting in the lagoon has plants beneath it and a fountain in the centre.

Below left: Swimming pools for males and families have been built along the waterfront and are extremely popular recreational points.

Below right: Originally conceived by Sasaki Associates as a 'water gun' or fountain shooting jets of water outwards from the centre, this semi-enclosed space is now used as a leisure area.

Bottom left: A restaurant on Green Island, linked to the breakwater, faces both the lagoon and the bay where a series of sandy beaches for swimming have also been made. (Distant background)

Bottom right: The small, pre-cast concrete structure on the breakwater enclosing Green Island lagoon.

PHOTOGRAPHS BY BRIAN BRACE TAYLOR UNLESS OTHERWISE CREDITED
methods and expectations of his American counterparts), Ghazi Sultan has nevertheless become renowned since his return to his own country for a number of buildings and private houses employing exposed brick construction, similar in some ways to the early works of Chadirji and Makiya in Iraq. For the Waterfront project, however, the proposed uses and scale of the facilities (amphitheatre, sports and entertainment buildings) as well as their exposure to the sea dictated more resistant, durable materials. The result is a series of structures of reinforced concrete, the exterior surfaces of which have a warm colouring, and which "fit in" comfortably with the overall conception. None of them attempt to make an extravagant architectural gesture; they are striking (compared to the Kuwait Towers) by their sobriety and their careful siting or individual detailing. Future buildings, by Sultan or by other designers, may diverge from the "style" of the first structures but fortunately there is now a solid context, a framework so necessary in a vast project, that has been provided.

Sasaki Associates, on the other hand, brought to the design project not only a wealth of experience in the technical analysis of the development potential for various natural environments but also in the delicate mix of natural and man-made features. Their Summary Master Plan (1978) is replete with information on the measures to be taken to reinforce and protect the coastline against tidal fluctuations, the wind-wave forces and the armoring required; yet these were subsequently tied in very sensitively to the proposed design responses (open spaces, recreational facilities, types of planting recommended, etc.) all of which was completely normal, given the brief; however, the achievement of Phases I and II reflect both competence and creativity on Sasaki's part.

Green Island, a totally man-made island, 1,300 feet in diameter and joined to the mainland by a 820-foot causeway, is perhaps the single most striking example of their collaborative design efforts. It offers a new, landscaped focal point offshore, a kind of "counterpoint" to the basic linearity of the project as a whole, and has a large scale recreational park. While the 100-foot high water tower and observation deck lacks any architectural significance, other features such as the ziggurat ramp which leads to another lookout, the open-air theatre, and the geodesic dome do work well together as forms. With proper encouragement, the plants, vines and flowers will enhance the overall image effect and provide outstanding backdrops for human activity.

It is rare to discover an entirely new, natural as well as designed environment of this scale which is not founded on monumental sculptures or buildings and which has been so well conceived and implemented (even more so in that the consultants Sasaki/Sultan/KEO did not have supervision responsibilities!). Creation of a setting for social intercourse and cultural activities for Muslims of both historically nomadic and sea-faring backgrounds, for those who have immigrated from afar, and those with time to spend and few places to go for recreation, was certainly not an easy task. Nonetheless, it would seem that Kuwait now has the sound beginnings of such a setting.

Top left: Palms planted along the seashore create a wind-break and shade. The famous Kuwait towers in the background.

Top right: A small children's playground and pond within the waterfront complex.

Bottom: The lagoon and bay at night.
Right: A three-dimensional frame structure with canvas covers a children's playground that includes a giant fish to crawl through.

Centre left: One of several gardens with trees which is protected by a surrounding wall provides a quiet place for relaxation and picnics.

Centre right: Open esplanades along the edge of the bay offer places to stroll or to congregate. Plants and trees have been recently introduced.

Below: Planters with flowers surround the children's playground, which is covered with a three-dimensional space frame and canvas for shade.
OFFICES FOR MILCO
NARAHENPITA

The new office building for Milco was designed to rest on existing foundations. The height of the foundations — six feet above the ground at one end — suggested the possibility of a dramatic entrance and interesting gable vista. The various levels of the building were harmonised by a false rubble plinth, interrupted by a large carport-cum-entrance bay, through which the trees are visible.

The initial sketch scheme, which was drawn up within a single working day (and which has remained unchanged in concept) proposed a simple building with its 30 foot width spanned by 6 x 2 inch RCC rafters incorporating steel ties where necessary.

The directors disliked the old offices because columns inside detracted from an open plan arrangement and the internal area was inadequate. The new interior is mainly open plan, incorporating a centrally located general manager’s office and a boardroom, both screened off by glass partitions.

The clients insisted, however, on retaining on site an old house which had been badly renovated. This now abuts the new building. The main rooms, kitchens and lavatories were retained and verandahs were re-introduced with newly painted columns and ‘tantric’ murals. A mirrored screen masks the entrance to the lavatories from the verandah and reflects plants in the courtyard and the painted columns.

The directors and staff of Milco moved into their new premises seven months from the start of re-construction and promptly approved the use of papier mache geese to discourage clutter from the top of filing cabinets and evoke the ambience of a farm. The mural on the gable facing the entrance (by Laki Senanayake) and the antique door inset in the screen wall of the board room provide further points of interest.

The new premises accommodates fifty employees and the cost of the project, including air conditioning, new office furniture, landscaping, signs, artwork and architects’ fees, was less than Rs. 2 million.
Below: Laki Senanayake's mural.
Below: Interior of the north west end.
Left: View of the entrance gable.

Below: View of the mirrored screen masking the entrance to the lavatories.
Brief is one of Sri Lanka's most enchanting gardens, and the paradisal private domain of Bevis Bawa. Now in his seventies, Bevis Bawa designed the garden for pleasure in 1929 and has altered it several times over the years. "I created Brief instinctively, by moods, and it was absolute fun" says Bawa.

The way to Brief is along the west coast of Sri Lanka through Alutgama, between Beruwela and Bentota. The drive through the jungles ends abruptly at a dramatic gateway guarded by two sculpted sentries as gateposts. From here, a magnificent driveway flanked by an avenue of tall majestic sealing wax palms leads one to a clearing surrounded by dwarf bamboo and the entrance to the house of Brief. A small archway and wrought iron gate leads through a leafy tunnel down into the garden.

Paddy fields and dense coffee trees still surround the two hectares which make up the house and garden of Brief. The entire garden seems to be laid out around three main characteristic plots. The first, which is clearly seen from the patio of the house, has a classical fountain with perfectly proportioned stepped pools of water falling down to a circular summer house topped with a wrought iron pineapple. The entire 120 foot length of the pools is flanked by narrow lawns which are in turn flanked by large clumps of dwarf bamboo leading one's gaze towards the summer house.

If one is fortunate enough to visit Brief in April, one might glimpse the rare sight of two Paradise fly-catchers. The female, native to Sri Lanka, is brown and the male, of Indian origins, is white with long tails that playfully skim the pools from one side of the bamboo clumps to the other. Another stunning scene at this time of year is a lilac carpet of large Tabubia Rosia flowers that fall onto the main lawn.

The entrance gateway at Brief. Palms soar to twice the height of the stone carved sentries emerging from the gateposts.
The second plot of garden is completely hidden from the house. A flight of steps descends to a large circular pool, in a cool clearing framed at the rear by a screen of giant bamboos. On either side of the gently sloped banks grows a low scrub-like plant which Mr Bawa has jovially named 'bim pol' as it resembles a dwarf coconut palm.

A beautifully maintained square lawn surrounded by a hedge and baricaded by large trees marks the third feature in this garden. A flight of steps descends from this lawn and leads to an intricately carved moonstone, set on a semi circular lawn. This pausing point allows one to ponder on the formality and informality of the garden. From here one walks down a tunnel of plants onto a pathway which was previously part of the garden but has now been called 'the forest' by Mr Bawa and which has deliberately been left to grow wild.

Around these three main plots nestles the rest of the garden. A pathway from the main square lawn of Brief leads to a hidden Japanese garden with a wooden bridge, stone statues and mossy pools, planted with ferns and other luscious plants. A flight of steps from there passes the square lawn and leads to a pavilion, and a fascinating statue within the clearing.

Another flight of steps which appears to lead nowhere from the semi-circular lawn emerges at an elevated clearing giving a spectacular view of the paddy fields beyond. A circular seat is well positioned to allow visitors to linger.

The recurring winding pathways are familiar features in this garden. Although they seemingly disappear into the distance, they always link one miniature clearing to another. Half a dozen miniature clearings evoke half a dozen different moods, making this garden a very personal experience to anyone visiting it. If one chooses to walk along one of these pathways close to the classical fountain garden, one will come across an overgrown path which leads to a seemingly forgotten flight of steps. Here one finds yet another fountain in which water falls from the sculptured mouth of a turtle. The square clay tiles which stud the rear wall of the fountain are decorated with intricate embossed leaf designs.

Descending from the square lawn towards the edge of Brief one comes across a large clump of giant 'screaking' bamboo. This is the periphery of the garden. Beyond lie the paddy fields. Above the giant bamboo is a vast pavilion which houses a barbecue pit complete with chimney, and is a perfect site for entertaining with superb views overlooking the paddy fields below. Large urns, mellowed with age and covered with moss, can be found here and indeed all over Brief and draw one's eye to focal points.

The lushness of Brief is almost overpowering. Large, bright red flamboyant trees with spreads of 60-70 feet, various types of palms, three varieties of bamboo, temple trees and fruit trees all grow together in a wilderness of luscious green.

Left: One of the many stone statues at Brief, to be found lurking in the foliage. This one shows a boy holding a shell.

Right: Stepped pools, flanked by bamboo.

Below: A view over the square lawn, from which another flight of steps descends to a contrasting wild area called 'the forest'.
There are also crotons, philodendrons, dracaenas, 40-50 varieties of ferns, cactus, hibiscus, bougainvillea and anthuriums along with other rare plants. When you think you have seen the entire garden and nothing can surprise you further, suddenly the mysterious black lilies with their strange spidery petals peak at you from the corner of a flight of steps and you wonder how you ever missed them.

Around and apart from the house lie the many miniature gardens with bacchanalian bird-baths, exotic sculptures and anthropomorphic water spouts. The statuary and other decorations which are also a special feature in the garden are made of alabaster, concrete or metal, some even set with pieces of broken crockery, bottles and shells in unusual colours and textures. It is in one of these private courtyards that we witnessed a rat snake feasting on a frog.

Any account of the garden would not be complete without mentioning the house, which is an example of indoor space turned inside out. The garden seems to flow into the house, with its many screened courtyards and long corridors leading into extended verandahs and large rooms. The outer patio is part of a simple structure covered with vines. All views from the house are of courtyards or the garden. One courtyard with a shallow lotus pond has an open bathing area with only a giant araliya or temple tree as a leafy roof. The interior of the house is hidden by a winding tunnel of steps and is seen only by a privileged few.

Beris Bawa was born in Sri Lanka in 1909. Educated at the Royal College in Colombo, he later joined the Ceylon Light Infantry. Mr Bawa was Aide-de-Camp to the Governor of Ceylon from 1934-1950. His drawings and cartoons were published in 1981, and a collection of reminiscences and articles entitled Briefly by Beris in 1985. Mr Bawa is a self-taught horticulturalist. His garden has gained local renown, and provoked the above appreciation by a group of students from the Sri Lankan Institute of Architects Course. Beris Bawa is the brother of Geoffrey Bawa, the architect whose own splendid garden at Lunuganga features prominently in a publication by Mimar Books – Geoffrey Bawa, by Brian Brace Taylor (available from Concept Media Ltd., £27.50.)

Below: A gabled gateway in one of the inner courtyards.

Bottom: 'Araliya' or Temple Flower tree at the corner of the house, framed by urns containing pineapple clumps.

PHOTOGRAPHS BY NELA DE ZOYA
Drawing showing the design of the gardens at Brief; three main plots are visible.
Drawing by Sumangala.

Plan showing the house and gardens at Brief.
TEXTILES OF DAGESTAN

Robert Chenciner
The Soviet Socialist Republic of Dagestan ('Land of the Mountains') is a small country, roughly the size of Scotland, lying in the Caucasus between the Caspian and the Black Sea. Seventy per cent of the 1.8 inhabitants are scattered in more than 700 mountain villages, and 33 different languages are spoken.

Derbent is the oldest city of Dagestan (the archaeologist Professor Gudriatsev has excavated pottery there from about 3000 BC.) The walls of Derbent meander up the mountains from the narrowest point between the great Caucasian mountains and the Caspian sea. Built by the Iranian Sassanian Emperor during the sixth century AD, they provide a 130km barrier to the southern migration of nomads. Earlier settlers of Turkic, Persian and Caucasian origins were forced to take refuge from the nomads in the mountain villages.

Despite the existence of these earlier settlers, the barrier appears to coincide with areas of different techniques of textile production. To the north of Derbent, the villagers made and still make flat tapestry woven Davaghins and Dumi, felts, Arabash cart covers, Istang wall covers, masks and boots. To the south they make Soumakh wattled brocades, pile rugs and, further to the south, kilims. The southern group of textiles are still sold at the Sunday market on the outside of the northern walls of Derbent. The market has been held since at least the twelfth century outside the city to avoid paying taxes.

A typical mountain village is south-facing, with stone or wattle and daub houses stacked up on a steep slope. The rolled earth roof of the gound floor stables (now covered in tin sheet) serves as the verandah of the main living area. There is a well-used guest room with a hearth and hearth-chain — symbols of hospitality — and a display of the family dowry pillows, blankets, pottery and other trophies. There is also a communal sleeping room for the family, the cold back walls of which are covered with rugs. The Tsagour or food storage room is faced with carved wood with two small doors flanking a great wooden column. In some houses the column is used for the balcony. An ancient Caucasian curse way "May this column fall" (James Russell, Thesis, University College, London 1986). The column symbolised strength of the family and the three metre wide capital was often shaped and decorated with sun and horn signs — motifs which are found on wool rugs, tombstones and
the rare silk embroideries from the Kaitag region used as cradle or pillow covers.

In the northern Avar, Dargin and Kumyk regions, the rugs with traditionally Dumi or Davaghin tapestry weaves, about 4.5 by 1.5 metres, and they were hung horizontally on cloth or leather loops. (The Davaghin has three borders and the Dumi one). These warm, stiff, woollen textiles were made thick by the doubled warps, and draught proof by overlapping on shared warps at colour changes (unlike kilims, which have slits). They were often woven during the winter by young girls, and the finished result was shown to the village at the Godkan — men's meeting place, where the skills of the future bride were thereby assessed. The flat weaves used wool dyed with indigo blue for the background, or sometimes black from the outer skins of walnuts, with designs mainly in red from madder roots. (Madder dye was a valuable export cultivated near Derbent from the thirteenth to the nineteenth centuries and madder still grows wild on the banks of the Sulak river).

The Davaghin is often decorated with a design called Rukizal, meaning 'house' in Avar. This is possibly derived from the form of the surviving ram cult shrine at Rekom in nearby North Ossetia — a wooden building whose gables have zoomorphic head terminals. Similar examples are also found in mosques in Dagestan. There is another undeciphered design known only on two Dumi, which is reminiscent of a Chechen tower — a building used for a single family as a refuge from another family during the blood feuds. The front door of these towers was three metres above the

Below: A family show off their home-made rug and patterned knitted wool boots in Bejia village, over 2000 metres up and cut off by snow for four months of the year. Only chemical dyes are as yet available, although a project may start soon to cultivate the madder plant for natural dyes once more.

Top right: An embroidered cot or pillow cover in laid and couched silk on blue cotton cloth from the Kaitag region, made by Dargins or Tat Jews.

Right: Detail of a five metre long 'Dumi' with motif possibly of a tower. This was found in Istanbul where over 50,000 Dagestani emigrants live.

Bottom right: A coloured drawing of an Istang, hung in the top room of a Chechen tower (by B. Stepanova from Dekorativnom- priladnaya Iskusstva Checheno-Ingushetii, Grozny, 1974).
Top left: A bedroom in Axyanli mountain village with machine-made piled rugs hung on the walls and dowry pillows on the bed. China and metal ewers and pots are also included in the permanent display.

Left: Lezghin women weaving Soumak rugs in the factory in Ikra village. The cartoon which is behind them on the floor is not needed. The steel tipped wood comb is for beating down the wefts. On the left, the shaggy side of the Soumak faces the weaver; she cannot see the result of her work while she is weaving.

ground and there was no internal stairway to the next floor — retractable ladders were used for extra security. The top room was adorned with a colourful felt mosaic with zoomorphic horn designs called an Istang. It was about 3.5 by 1.5 metres and was hung horizontally. Over it, the head of the house hung his Shashka sword and his Pandur, which he strummed when he sang. In 1923 the Soviets officially outlawed the blood feud so the towers are abandoned today. But modern houses with sheet-tin pitched roofs still have the now treasured machine-made piled rugs hanging on the walls, above which the few family photographs are pinned.

Few piled rugs are now woven at home. Since chemical dyes were introduced in 1865, carpets became cheaper to make and merchants standardised formerly exciting designs remembered by the weaver, drawing up cartoons or patterns for the weaver to follow. This continues in the Derbent carpet factory and village workshops. Recently weavers in the factory in Khuchni village were — to their dismay — commissioned to make Soviet ‘Bugs Bunny’ rugs.

Above: A corner of a Lezghin Soumak showing the Criovelli star medallions and the ‘darts’ — 15th-16th century designs found on modern rugs.

Below: Detail of Arshbash felt, about 3 metres long, from Malehchabala Nraychoveskii Museum, showing the mosaic technique of joining the different colour felts and the white ribbon covering the joints.

There is an exception, however, in the Soumak weft brocades woven in over 20 villages in the Lezghin regions south of the wall. In Ikra and Kabir villages, near the Samur river, women weave the long shaggy-backed Soumakhs using classical designs, the means of whose transfer there is not known at present. There are certainly interesting nineteenth century examples in their homes, but the star medallion which appears on a rug in a Criovelli painting is of fifteenth century Turkic origin and the ‘darts’ between the star medallions are found on sixteenth century Damascus rugs. The Soumakhs sell for about 300 roubles in the village shops and at the Sunday market along the walls of Derbent. In guest rooms (in Koubachi village, for example), they are used as soft sleeping palettes.

Rugs are also used in mosques. Last year there were only 25 working mosques in Dagestan (two thousand were destroyed during Stalin’s anti-religious period between 1928 and 1938). This year 200 are being re-built by the villagers themselves. The floors of the mosques are covered with rugs — Soumakhs in Derbent, Duns and Davaghins in Avar, Kunykh and Dargim villages.

Homes are fixed places of protection and the textiles provide a high-status insulation for walls and floors. However, men sometimes had to move away from home to look after livestock, go to market or go to war. Textiles were used for protection in the open — and as a mobile shelter. Examples are the Arshbash cart
cover, the Bourka cape and the Papakha sheepskin hat, still worn, and the mask, once used for war and now reserved for ritual festivities.

The ‘Arbabash’, ‘cart cover’ in Turkish, is of a standard size (about 3.5 by 1.5 metres) — the Turkic Kumyks and Nogais used these or kilims to cover carts on lowland roads. The vegetal designs are cut out of different coloured felts and sewn together like a mosaic. The joins are then covered by a sewn-down narrow band of white cloth. Two-coloured Arbabashi were often made in pairs to use up all the dyed felt.

The bourka is a shaggy full length cape with wide square shoulders — the traditional all-purpose mountaineer’s garment and a symbol of Dagestan. Men liked to be photographed in their bourka and ‘papakha’ hat and, presented as a gift, it confirms kinship. The first mention may be in the 7th century AD by Moses of Chorene, (uncorroborated by Paustus of Byzantium whom he usually plagiarised), writing that the giant leader of a savage group of Caucasian mountaineers, invading Armenia from the north-east, was covered in spear-proof felt armour. Shamyi’s Murids (followers — meaning ‘adepts of the Naqshbandi Sufi order’) showed that the cape was also reasonably bullet proof! A good bourka should stand up on its own. Black bourkas can still be seen folded, tied to the saddle of a shepherd’s horse, sheltering goods or lambs in shepherds’ camps, or used on a bed in a mountain village. A mountaineer can roll up his bourka and sleep in the open. The long hairs (5–10cm) stop water gathering and penetrating the felt. White bourkas are used for festive wear.

Bourkas were first made in Andi, but today they are made by women at the factory in Rakhata — an Avar village — not far from Botlich. Akhmedzhab Baqaudinov, the technical director, believes their method is traditional, except that they use machine-carded short wool. Long autumn wool is collected from Akvakh, Gumet, Tsumada and Botlich flocks. After the long wool is hand-carded on vertical steel combs, it is taken to the felting room. The wool is first teased with a strung bow and laid in the shape of a cape on the floor where it is wetted. A second layer of short wool is laid on top, watered, and then rolled up by two women. During half an hour the roll is

Below: Magomedkhan Magomedkeev, wearing a karakuli sheepskin papakha hat, with his sister and nephew, who is tucked under the Bourka shaggy felt cape. They are part of a nationality of 700 people with their own language, who live in a group of six alpine villages around Archib.
repeatedly lifted onto a table, unrolled, the long hairs combed, wetted, rerolled and pounded on the floor. This is hard physical work.

Then the felt is dyed black in extract of boiled white bark of the willow ('Iva' in Russian) from the forests of Chechenia to the north. The cape is immersed in a water bath outdoors, taken out after a few minutes and held, dripping, by a ring of women who beat it with sticks. The felt is laid on the ground where the hair is steel-wire brushed: it is then dried, sprinkled with cow gum for waterproofing, and dried further in the yard. The felt becomes a bourka when the shoulders are stitched into a square shape. Donkeys are loaded with folded bourkas to be taken for the last wash in the river. The bourkas are finally dried outdoors over a rail. As a finish, grey cloth linings are machined in and two small coloured triangular tabs are sewn on the lapels. The process takes about a day and a half. They hope to make 16,000 bourkas (and arbabashi) a year, which are all brought locally, retailing in Dagestan for up to 300 roubles. The official average monthly wage is 150 roubles. A family might own two or three of these garments.

The felt helmet masks survive in the same village — Koubachi — where steel helmet masks were made, at least from the twelfth century (there are examples in the Moscow State Armoury and Hermitage museums). Shilling (Kubachintsy i ikh kultura, 'Nauk', Moscow, 1949) thought that they were related and they seem to be in the tradition of 'scare armour'. An early example is Heracles' (a legendary father of the Scyths) lion skin helmet, which also had the magical effect of transferring the power of the lion to the wearer.

In Koubachi and Itsari villages, felts are used during the three-day-long wedding ceremony; on the second afternoon, young male friends of the groom interrupt the feastings with a ritual performance in masks and costumes; the Cruel Khan kidnaps the bride, who is rescued by the Rider after a battle in the presence of the Shaitan (Devil). Shilling wrote (1949) that such customs had died out before the 1920s, but masks are still popular. The 'Rider' mask is painted felt, stiffened by diagonal close stitched cloth.

Below, left and right: Daraghin tapestry weaves, decorated with the Rose Ikat design — possibly derived from the rams' horn motif. These were made in the Avar village of Bartalch.