The Experiences of the Development Workshop in Iran

by Julia Williamson, 15 Strathmore Road, St. Catherine's, Ontario, Canada, L2T 2C4.

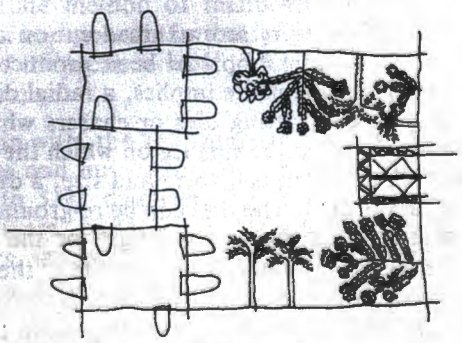
Solutions to inappropriate technology

In Iran, over the last few decades, a disproportionate amount of investment went into the development of urban rather than rural areas. One result of this was a vast discrepancy between regions in available education, medical care, employment, services, food, and energy supplies. With the migration of workers to the cities, the passage of legislation allowing only registered contractors (usually urban-based) to construct public building projects, and a heavy-handed government policy of capital-intensive development, indigenous methods of building were disrupted. Local materials such as mud brick, an excellent insulator against extremes of heat and cold, were ignored in favour of expensive concrete and steel which generally had to be imported. In the north, metal sheeting replaced roofing tiles, creating unemployment at the kilns. Throughout Iran, the traditional narrow streets which protected inhabitants from sun and wind were ripped open by wind-swept boulevards which offered no shelter.

In 1974, the Development Workshop was invited to participate in the large Selselsh Integrated Development Project in the mountainous western province of Luristan. The majority of the province's inhabitants, the Lurs, had only a short history of permanent settlement, and their agriculture, building, and settlement planning were not very highly developed. While their nomadic tents were skilfully designed, their permanent housing was of extremely poor quality. The ambitious Project sought to improve literacy, agriculture, roads, water supply, building, and planning, with the Development Workshop involved in the latter two.

Development Workshop researched local techniques, assessed the potential for development, and discussed what could be done at regional and village levels. It was decided that the following should be established to develop self-reliance and keep capital within the region:

1. A building team to do contracting on a co-operative basis with local labour.
2. Small industries such as kiln manufacture for making bricks and lime.



Village builder's drawing of his house.

3. A building team to handle community projects such as schools and clinics.

Training

Training was directed to a group of men who had, in the relatively short period of permanent settlement, assumed the task of building for other villagers. These men were generally from a landless class of the area. In a society where land is the prime investment and the only security, these people represented one of the poorest economic classes of the community and had little technical knowledge. Despite their lack of skills, however, they were able to identify the problems and resources of the area, and the appropriateness of suggested solutions. Training was assisted by traditional master builders from central Iran, where vault and dome building is among the most technically sophisticated in the world. Kiln-fired and sun-dried mud bricks were their basic material.

Development Workshop acted as a catalyst between the two groups. In the winter of 1977 when the project area was snowed in, they organized a training workshop in the desert city of Yazd. This city maintains an active tradition of building which still responds to today's needs. In addition, Yazdi master builders had been employed in Luristan in public building projects so a precedent for a 'technology transfer' had already been set. Discussions took place indoors while an outdoor yard was used for testing and practising.

In the chilly mornings, the builders sat in discussion around the classroom stove while the workshop leader made every effort to draw out even the most reticent participants. In the afternoon, different designs for such items as arches and foundations were taken out to the yard, constructed, tested, and compared. In this way, the builders tested a variety of techniques that they could adapt independently in their own work and continue to improve upon. The evenings were devoted to literacy classes which incorporated the terminology encountered in the day-time technical sessions.

Combining modern techniques with local skills

Early on in the instruction, a cross-cultural problem emerged: how could the villagers, master builders, and Development Workshop members communicate ideas when each had a different method of designing buildings? The village builders did not use drawings; the master builders used graphics but only to show the intricate patterns of their tile and brickwork, *not* the form of the building; the Development Workshop used modern drafting plans, sections, and elevations. It was obvious that some standard practice was needed, particularly if the local builders were ever to compete for commercial contracts. Modern techniques had to be adapted to local drawing skills and perceptions.

The village builders were asked to draw their houses and all produced the same sort of drawing (Fig.1), consisting of a combination of a building plan, and elevations of doors, windows and trees, as if these were folded flat. There is much more emphasis on the main door, the courtyard space and trees than on the physical structure. One could view this drawing from any direction; there is no top or bottom. This drawing technique reflects the

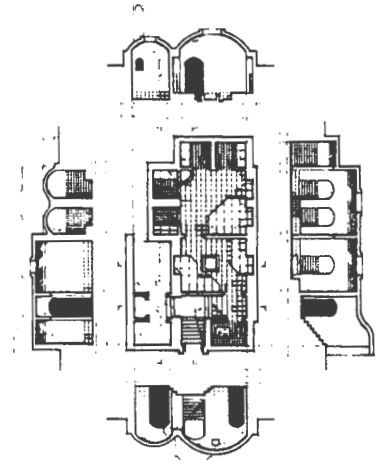


Fig. 2 Village Bathhouse. Drawing technique adapted from local technique.

way in which buildings are designed in the Project area: customer and builder walk around a building site, roughly sketching the form on the ground: construction details come out of the builder's head. Likewise, the trainees may sit around a sketch and discuss it, unlike the modern draughtman's drawing which can be read from one side only. Development Workshop combined the local approach with more formal drawing techniques (Fig.2) for a village bathhouse later built by the workshop participants. Four sectional views are folded out from the plan drawing in the centre; like traditional drawings, it can be viewed from any side. The concept of sectional views was explained by cutting sections in cardboard models.

Other simple and affordable techniques were introduced. Though Luristan is a region with frequent major earthquakes, few people built houses resistant to them. The possibility of strengthening traditional vault construction with wooden ring and tie beams was tested and later incorporated into construction projects in the villages (Fig.3). An ordinary soft-drink bottle was found useful for testing soils: local soils and water were mixed in it. When the components settled, the proportions of sand, clay, and silt could be determined and the soil's bearing strength estimated to determine if more sand or clay needed to be added for a particular application. Buoyed by a new-found confidence, the trainees experimented with adding stabilizers such as lime, bitumen, or cement to mud-wall coatings to improve their weather resistance.

The three-month workshop completed, the builders went on to on-the-job training in community projects. Armed with new technical solutions and a training technique all within their abilities, the following winter they conducted their own workshop on their own initiative. They took on more apprentices, roughly followed the previous curriculum, and doubled the size of their team to about thirty. ●

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