THE CRISIS AND MODERNITY OF HOUSING DISASTERS IN DEVELOPING COUNTRIES: PARTICIPATORY HOUSING AND TECHNOLOGY AFTER THE MARATHWADA (1993) EARTHQUAKE

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Abstract

This paper examines the social, spatial and technological impact of post-disaster housing projects on rural communities in Marathwada, India. Based on field research in 1994 and 2001, as well as academic work, this case study will shed light on an area of design that is poorly understood by architecture and planning professionals. *Section I* briefly examines how post-colonial land reforms and market competition in India have marginalized artisan castes and vernacular building technologies--leading to a deterioration of local building trades and the vulnerability of both people and housing to disasters. *Section II* contrasts this "vulnerability" perspective with formal architecture and planning practices that assume restructuring space and social life around urban environments is the only way to mitigate future disasters--despite two decades of research to the contrary. And *section III* examines how this norm is also embedded in international development self-help housing policies--a fact that has a negative impact on the development of appropriate housing technologies by non-government organizations who work with rural communities. In short, this paper is both a critique of the post-disaster housing field, as well as a call for professionals to rethink their housing practices in developing countries.

India; relocation; World Bank; earthquake; participation; housing; non-government organizations; Maharashtra; Marathwada.

INTRODUCTION

> *Established disciplines and dominant institutions of government have chosen to treat [disasters] not as crisis of modernity or the predicaments modernity creates on the ground, nor as failures of a research paradigm or policies and organization. Rather…these hazards are placed, intellectually, socially and geographically, at the frontiers, as part of the unfinished business of modernization.* (Hewitt, 1995, p. 117)

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email: alexsalazar1138@hotmail.com. The author would like to especially thank architect Amol Gowande of House of Consultants (Latur) for his help with field research in 1994 and in 2001; and the Graham Foundation (Chicago) for funding the initial research in 1994.

In the early morning of September 30, 1993, an earthquake of 6.4 on the Richter scale destroyed thousands of stone masonry homes in Marathwada, a hot-dry agricultural region of Maharashtra State. With over 9,000 people dead and hundreds of thousands of others homeless, the International Development Association immediately offered assistance, and by May 1994, the World Bank Group, Government of India and Government of Maharashtra (GoM) officially launched the Maharashtra Emergency Earthquake Rehabilitation Project—a $326 million dollar aid program that affected over 264,500 households in 13 districts. At the epicenter, near the Terna River in Latur and Osmanabad districts, approximately 24,000 households were relocated from 52 villages into new industrial townships (World Bank, 1995). And at the periphery about 240,000 homes were rebuilt in-situ using industrialized materials (World Bank, 1994; ASAG, 1995).

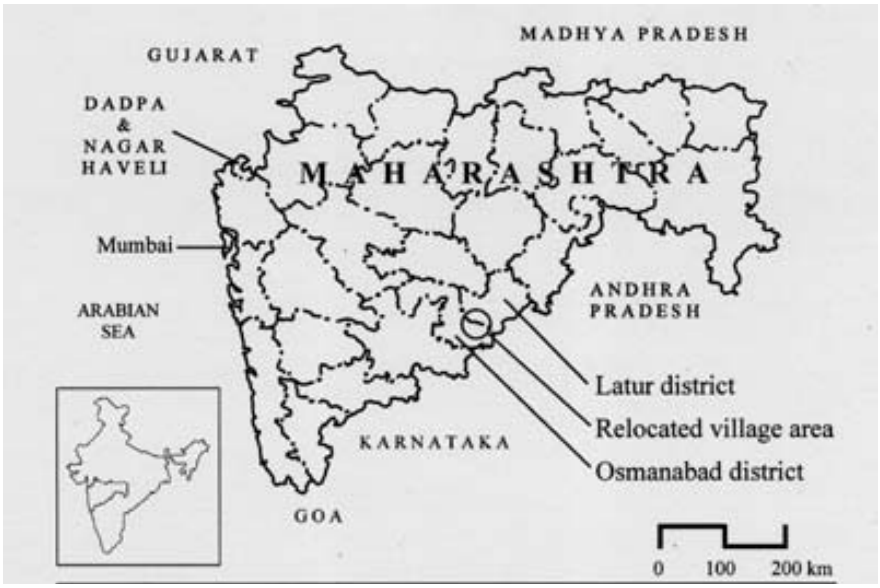

Figure 1: Location map of the earthquake

Along with humanitarian aid came hundreds of development professionals who roamed the villages and relief camps for disaster “victims” by day while returning to the shelter and security of near by Latur city at night. With its handful of hotels and restaurants, numerous photocopy places, and dusty streets lined with small shops and colorfully decorated taxis, Latur city, a district capital, was an ideal place to be stationed for nearly every organization involved in the relief and rehabilitation process, including groups such as Tata Relief Committee, OXFAM, Malayala Manorama, EFICOR, and Oil Industry Members.

This concentration of highly varied personnel in the sleepy city of Latur, of course, was not coincidental. It followed the standard practice of humanitarian aid organizations who flood “needy” disaster affected regions with development capital even when this "aid" can often do more harm than good. And, it was a phenomenon that tied nicely into the World Bank’s effort to institutionalize neo-liberal mechanisms

of relief and reconstruction. Along with the streamlining of the government's post disaster management functions, and transfer of construction contracts to the private sector, the World Bank pressured the Maharashtra government to integrate many of these private and non-government organizations (NGOs) into its "participatory" housing development strategy. Latur city, in this way, became a beachhead for global capital and expertise which was then dispersed into neighboring villages. Although Latur city is not the focus of this paper, its globalization after the earthquake was evident. And, to paraphrase Hewitt, the villages surrounding Latur suffered the "predicaments modernity creates on the ground," namely: the marginalization of villagers from development processes despite the World Bank's effort to allow them to participate in development.

This paper unravels this predicament by examining how limited the scope was for participation in the World Bank's new post disaster housing policies. First, for background purposes, Section I briefly outlines a vulnerability approach to understanding the disaster. It examines how post-colonial land reforms and market competition helped marginalize artisan castes and undermine vernacular building practices in the region. Section II contrasts this perspective with the technocratic norms of the rehabilitation program which assumed, a-priori, that restructuring space and social life around urban environments was the only way to mitigate future disasters. And Section III examines how these norms—which are embedded in the World Bank's participatory housing policies—helped undermine the Bank's effort to involve villagers in the development process. Specifically, the World Bank's and GoM's ethic of "enablement" is criticized vis-à-vis the work of NGOs which developed projects outside these structures. The connections between these various topics will become clearer as this paper unfolds. Let us now turn to the issue of vulnerability.

VULNERABILITY AND HOUSING

Prior to the earthquake, Latur and Osmanabad districts were considered some of the more "backward" drought prone areas of the state. Many villagers killed or hurt by the relatively moderate 6.4 tremor were from the Maratha community—a land owning majority, some of whom had increasingly become involved in cash crop production since the mid 1980s. The remaining, approximately 50 percent of the population, were classified in policy documents as marginal or landless farmers and services castes, consisting of settled tribes, Dalits, and other commonly disenfranchised groups (Parasuraman, 1995; TARU, 1993).

Within this group one finds building artisans—the Suthar who are carpenters, the Gawandi who are masons, and the Wadar who are stone cutters. Employed through both cash and barter relationships, these artisans were highly skilled at producing *wada* style courtyard homes. This vernacular style accounted for approximately 80% of the rural housing stock in Latur and Osmanabad districts while reinforced concrete construction accounted for only approximately 2% (TARU, 1993). Vernacular homes consisted of three basic spaces: at the center or front of the lot

were courtyards for keeping cattle, bathing, cooking, storing farm equipment, and so on; open to this space were verandahs used for all kinds of living and working activities; and at the very back of the lot were storage rooms used for the long term storage of grains, and daily used items such as food and utensils (ASAG, 1996; TARU, 1993).

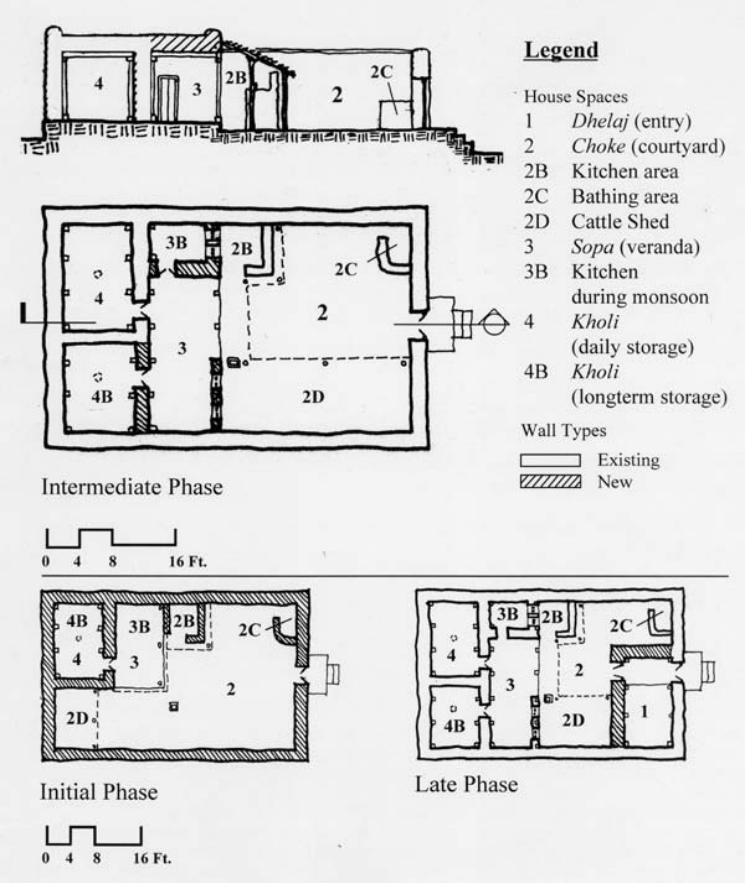

Figure 2: Section and plans of a typical *wada* house showing how it is used and expanded over time by the household.

Despite the traditional form and function of this housing style, land and housing relationships had substantively changed over the years. During colonial times in Maharashtra artisans exchanged their services for rights to farm small plots of land or receive portions of crops as payment. But with progressive Nationalist land reforms in the 1950s—which turned tenant farmers into land owners—artisans lost their customary rights, and their work shifted mostly to a cash basis (Dadekar, 1986, p. 127). With the higher income potential in cities like Mumbai, the limited benefit of "green revolution" agricultural practices, and the growing disillusionment of villagers with local materials such as mud, thatch and stone—on can say that this shift in land holding policies took its toll, over the years, on vernacular building trades.

Among other things, researchers noted that Wadar community households were especially enterprising and had increasingly worked as sub-contractors in the formal building industry—not only as stone cutters, but as stone masons as well. "*Their control over stone cutting activity" gave them* "*comparative advantage versus the Gawandi*" to obtain contract arrangements (TARU 1993, p. III: 13) in the construction of government buildings and house additions for wealthy castes in villages and towns. The occupational pattern of the Gawandi also shifted in recent years: they became involved in agricultural production to support their families, and younger artisans were less willing to take up the vernacular stone masonry trade as a profession. This led some Gawandi to blame the construction of low quality masonry walls (which used round, improperly bonded stones) not just on households who were trying to save money, but on the Wadar community who had encroached upon their traditional domain (p. III: 12).

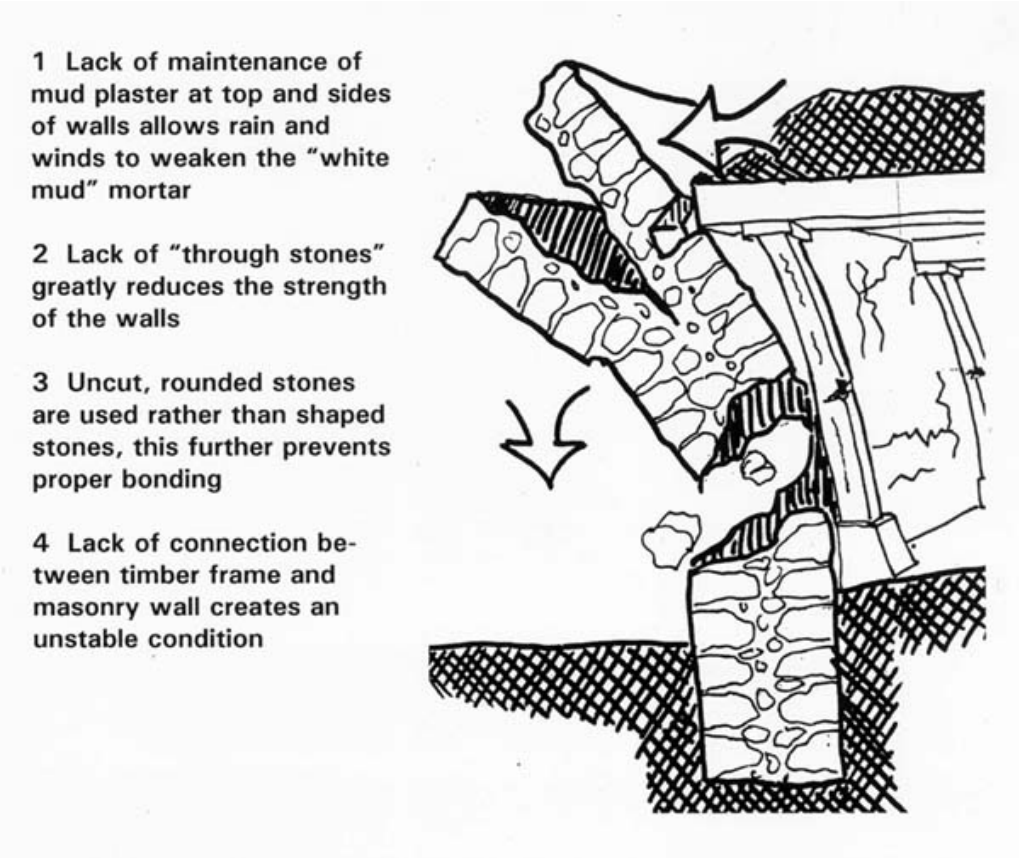

Figure 3: Typical contributing factors to the "overturning" of vernacular stone masonry walls

Although no in-depth academic study of the local building industry has been done, there was field evidence that these social and economic changes contributed to a deterioration of building skills. Among other things: (i) in many villages older buildings survived the earthquake (including temples and the homes of stone masons) while newer buildings collapsed; and (ii) structural engineers working on

relocation projects found that older artisans understood proper stone masonry techniques while younger artisans were less knowledgeable and harder to retrain.

Thus, one can point to a wide range of issues that may have prepared the ground, so to speak, for the disaster that followed: post-colonial land reforms, green revolution technologies, the migration of artisans to urban centers, the integration of some communities into the formal building industry, and so on. All of these factors most likely contributed to detrimental changes in vernacular building practices--a conclusion that would be consistent with vulnerability related studies by writers such as Kenneth Hewitt (1983 and 1997), Anthony Oliver-Smith (1986), Piers Blaikie (et al., 1994), Ann Varley (1994) and others, who demonstrate the historical complexity of disasters and their links to development processes. Thus, to borrow Hewitt's phrase again, the Maharashtra earthquake was a "crisis of modernity" where the preceding history of environmental, political, economic and social transformations helped undermined the safety and security of village families.

A NORMALIZING APPROACH

Even though this vulnerability perspective was rather obvious to some NGOs and professionals in the field, it ran counter to the conventional wisdom of hazard and housing experts. Rather than see the earthquake as a crisis of modernity, most policy makers viewed the collapse of so called traditional buildings as the result of the "backwardness" and "poverty" of rural life. As such, the lack of modernity became the culprit and disaster mitigation efforts became focused on a series of high tech solutions, namely: the rapid provision of temporary shelter, the use of satellite mapping to “scientifically” locate new relocation sites away from deep pockets of agricultural soils, and the mass production of housing using industrialized building materials.

Despite the fact that similar housing efforts have been criticized in the hazards and development literature for over 20 years (e.g. Davis, 1981), the GoM was initially confident about its plan to relocate about 24,000 families into row after row of concrete bungalows, with endless paved roads, and miles of piped water, sewer and electrical lines (GoM, 1993, p. 49). This initial effort, however, was met with months of opposition by NGOs. Policies were subsequently rewritten for final reports using language that was more palatable to the World Bank. Rather than marginalize villagers, peoples’ participation became the essential strategy which the GoM hoped would “ensure socially, culturally and economically self-sustaining communities in an environment that includes appropriate housing and civic amenities...” (GoM, 1994, p. 2-3).

To the undiscerning eye, this literary “truth” of policy documents has assumed the status of being a fact. Rather than recognize how artisans were marginalized by reconstruction work (ASAG, 1998), the World Bank and some research organizations characterize the GoM’s efforts as participatory simply because villagers were involved in spatial design decisions (e.g. EERI, 1999)—where the

spatial layout of housing is made to look traditional even though it was built with industrialized materials. Such a view, of course, sees participatory housing not as the material work of artisans practicing their trade, but as an objective implanted from above where urban-based building contractors are simply directed to involve villagers in pre-planned housing projects.

In terms of villagers' long term safety, this approach was no small policy mistake. First, it was extremely expensive and difficult for contractors to properly mass-produce homes in the rural Maharashtra landscape. At many sites, the scarcity of water, extremely hot temperatures (which made the curing process difficult to control) and unavailability of high quality sands, made it impossible to insure good quality construction. According to local structural engineers, most concrete block production in the region was cured only for a few days rather than the required three weeks—a common practice that was rarely stopped, due to the lack oversight and lack of technical proficiency of government engineers. Second, this initial problem has become a serious issue for many relocated families who do not have the capital nor technical knowledge to maintain the buildings. During site visits by the author in September, 2001, it was observed that approximately 50% of the housing units were not being used (except as storage), and that many buildings have subsequently fallen into complete disrepair. Excessive cracking and water infiltration has lead to the spalling of the roof slabs— bolstering villagers' awareness that new homes are seismically unsound. At Killari village, for example, distrust of construction and social pressures have lead to the abandonment of entire neighborhoods. According to local architects, some families have built new houses on their farmlands, while others (often wealthy families) have moved to nearby small towns.

Figure 4: An abandoned row of housing at new Killari village, 2001

It is here, then, that one can locate mainstream architectural and planning norms: rather than deal with long term vulnerability issues and address the reality of dangers related to the particular building practices of local artisans, hazard and housing experts adopted a view of disaster mitigation grounded on generic urban environments using industrialized materials. This normalizing approach was

predicated on their education, training and practical experience in industrialized housing markets, and it is a pervasive problem that lies at the heart of participatory development debates between NGOs situated in rural India, and NGOs based in the urban sector. Let us turn, now, to examine this debate.

PARTICIPATORY HOUSING TECHNOLOGIES

Despite the top down character of the GoM's and World Bank's housing strategy, it continues to be remembered as a successful participatory project by researchers who live outside of India (e.g. EERI 1999). However, within India the relocation and reconstruction in-situ work is a well known for its faults, according to housing professionals and local journalists interviewed by the author in 2001.

Indeed, rather than being a simple, straightforward idea, the World Bank's ethic of participation was a very contentious topic debated not only in policy circles, but in the popular press and between design professionals (e.g. D'Monte, 1993; Moore, 1993; Sharma, 1993; Unhale, 1993). Out of these debates, two methods of participation stand out as central, conflicting tendencies, namely: (i) *participatory rural appraisal* (PRA) methods of disaster mitigation supported by the central government and (ii) *enablement housing policies* institutionalized as the official response by the GoM and World Bank.

PRA and Appropriate Technology

The history of how participatory methods became embedded in relocation housing practices is generally well known; it has developed in response to the failure of previous relocation schemes that provided, at best, cash compensation to displaced populations and relocation into entirely different environments at far away places—such as moving people from agricultural valleys to forest land due to dam projects (see World Bank, 1992, 1994b and 1998). As is widely recognized by many social science scholars, the principle failure of such projects rested in the inability of the displaced population to re-establish place-bound social-cultural and economic practices (Hansen and Oliver-Smith, 1982). Relocation of housing, one can argue, exacerbated these problems by being designed by planners, structural engineers and architects who knew little about rural life and the vernacular organization of space (Aysan and Oliver, 1987; Davis 1981).

During the 1980s, after years of NGO and community based organization (CBO) opposition to relocation projects around the world (Caufield, 1996; Rich, 1994), these problems were recognized by the World Bank and their ad-hoc method of policy formation as previously practiced—where sociologists and anthropologists reviewed projects *after* construction—was rejected (Cernea, 1993). And, with their new focus on "popular participation" and "poverty reduction" in the 1980s and 1990s, the World Bank's policies also shifted toward the use of PRA and Beneficiary Assessment methods, where project beneficiaries are consulted during policy formation (Mosely, et al., 1995). The acceptance of PRA research in policy-making

practices, thus, became a way to maintain a social-scientific basis for policy decisions as well as a political device to bring NGOs and CBOs into the development process.

In India, PRA methods of post-disaster planning fall under the jurisdiction of the Ministry of Urban Development who commissioned The Action Research Unit (TARU) to carry out the only comprehensive investigation of housing conditions after the Maharashtra earthquake. TARU is a professional organization normally hired by the ministry to study disasters in India. It is comprised of sociologists, geographers, anthropologists, architects, engineers and other professionals. The report was the basis for many of the recommendations of the Government of India policy report (1993) and internal World Bank recommendations (1993). Integral to TARU's study was the work of consultants from Ahmedabad Study Action Group (ASAG), one of the few Indian NGOs specialized in both affordable housing and post disaster development.

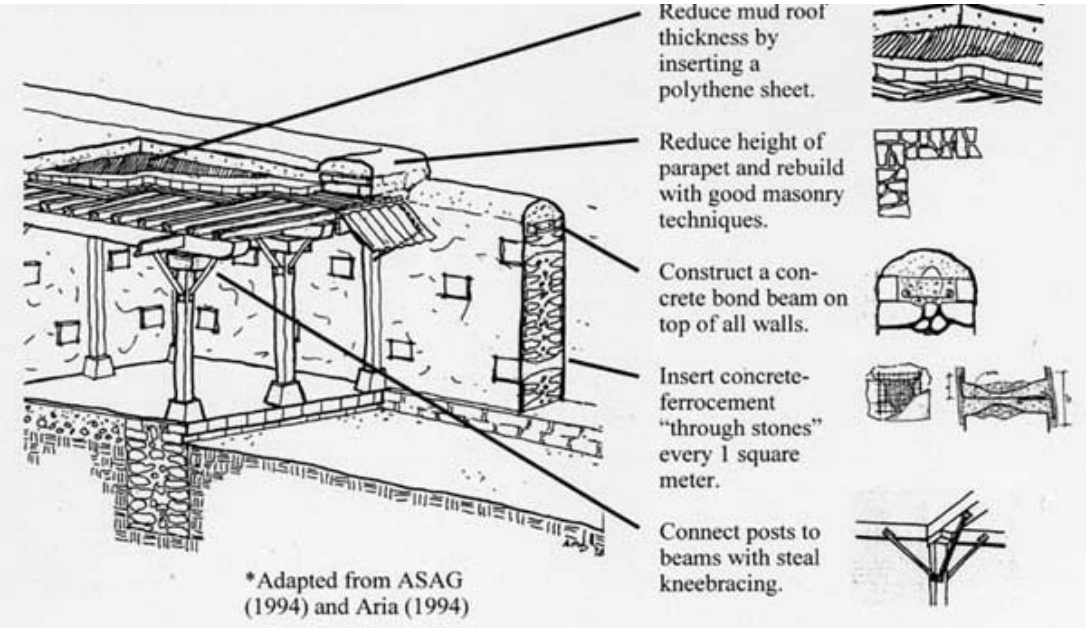

Figure 5: Typical retrofitting modifications to vernacular *wada* style housing developed by Dr. Aria (Roorkie University, UP) and Rajendra Desai (formerly of ASAG, now with CEDAP, Ahmedabad), (see ASAG 1994 and Aria 1994)

In their reports and participatory housing work at Holi and Limbala Dau villages, TARU and ASAG advocated two basic strategies: (i) to hire local masons, stone cutters and carpenters in the production of modified, earthquake-safe vernacular homes built mostly with local materials; and (ii) that the government and other housing developers base the spatial planning of new villages, and the design of houses, on vernacular forms (TARU, 1993; ASAG et al., 1994). As their initial report stated, such an approach would have required a "longer start-up time and greater investment in institution[al] development," *but it would have also insured "long term*

continuity and integration of technologies into the local idiom of building; lower relative costs; higher accountability and greater possibility of community participation" (TARU, 1993, p. iii).

Like those of many other well known architects and engineers involved in post disaster housing work, TARU's and ASAG's conclusions were not unusual (see Baker 1993, Menon and Bhaskar 1994, and Engel, forthcoming). Indeed, such "bottom up" approaches to rural development, especially housing technologies, are commonplace in India, where a plethora of NGOs work in the well established environmental housing movement—a movement that has roots in Gandhian ethics and that sees participation in housing as integral to the development of appropriate, environmentally safe and socially responsible technologies (Omvetdt, 1993).

Enablement and Neo-liberalism

The appropriate technology approach to disaster mitigation, of course, was not at all what the World Bank had in mind when it advocated for PRA policies. Rather, there was another undercurrent of policies that the World Bank and GoM tapped into in order to legitimize their relocation housing scheme: namely, enablement housing policies.

Enablement is a theory of development popularized in the 1970s which forms the basis of neo-liberal housing economics (Turner and Fichter, 1972; Harms, 1982). Adopted first in Latin America, and later embraced by the international community, enablement began in the form of modest "sites and services" housing projects, where government agencies relocated squatter communities onto plots of land with basic infrastructure elements, such as roads and sewers. In more recent years this method of poverty alleviation has evolved into a broad strategy of urban development, where the provision and maintenance of slum upgrading projects is turned over to NGOs, CBOs and private companies, and linked to larger macro-economic policies through the relaxation of government controls on housing markets (Pugh, 1995; Fernandes and Varley, 1998).

In Mumbai, the government agency that implemented these strategies was the Maharashtra Housing and Area Development Authority (MHADA), which adopted enablement policies in the 1980s as part of the World Bank's strategy to transform Mumbai's housing market (Pugh, 1989). After the earthquake, MHADA expanded its development efforts to include the disaster affected region by becoming the principal agency to design prototype concrete homes which could be mass produced by urban based contractors and financed by the government with World Bank loans.

Despite the obvious structural problems with the construction technologies used, MHADA did attempt to address social-cultural issues in the design of housing. At first, they designed a home that was typical of suburban development. Later, after discussions with self-help housing advocates, and various government agencies such as the Housing and Urban Development Corporation (HUDCO), they switched

to the so called "core house" concept—a type of housing where a small concrete room is mass produced by urban-based contractors and where the spatial design of the home allows for various pre-planned areas of house expansion. This methodology of design was a standard squatter housing approach used in the urban sector, and its adoption by MHADA after the earthquake allowed families to expand their initial house on their own, and recreate vernacular spatial layouts over time.

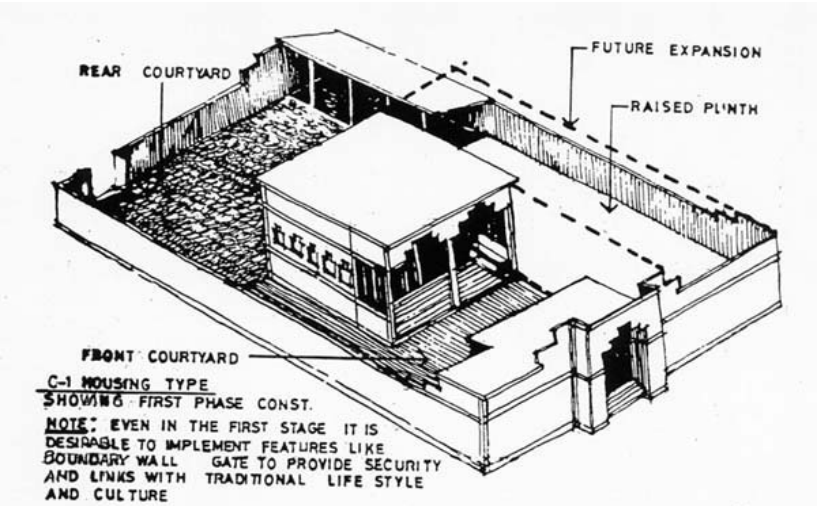

Figure 6: HUDCO's "core-house" design for Killari village. Drawing by HUDCO (1994)

Figure 7: Self-built compound wall house extension at the side of a "core house" at Babalsur Village, 2001

Similarly, in terms of new village planning, government planners also went though a learning process. At first, they commissioned district-level planners to design all the

new village plans in a matter of months—with little or no site visits and no public input—following outdated "gridiron" methods. About 20 of these designs were rushed through and built by private and voluntary donor organizations, with infrastructure financed by the World Bank. But later, after professional, community, World Bank and NGO opposition to the work, the GoM changed its strategy in the "official" World Bank projects. Through their collaboration with central government agencies, such as HUDCO, planning methods were adopted by MHADA allowing villagers to participate—like squatters in urban development projects—in a few design meetings with NGOs and housing professionals.

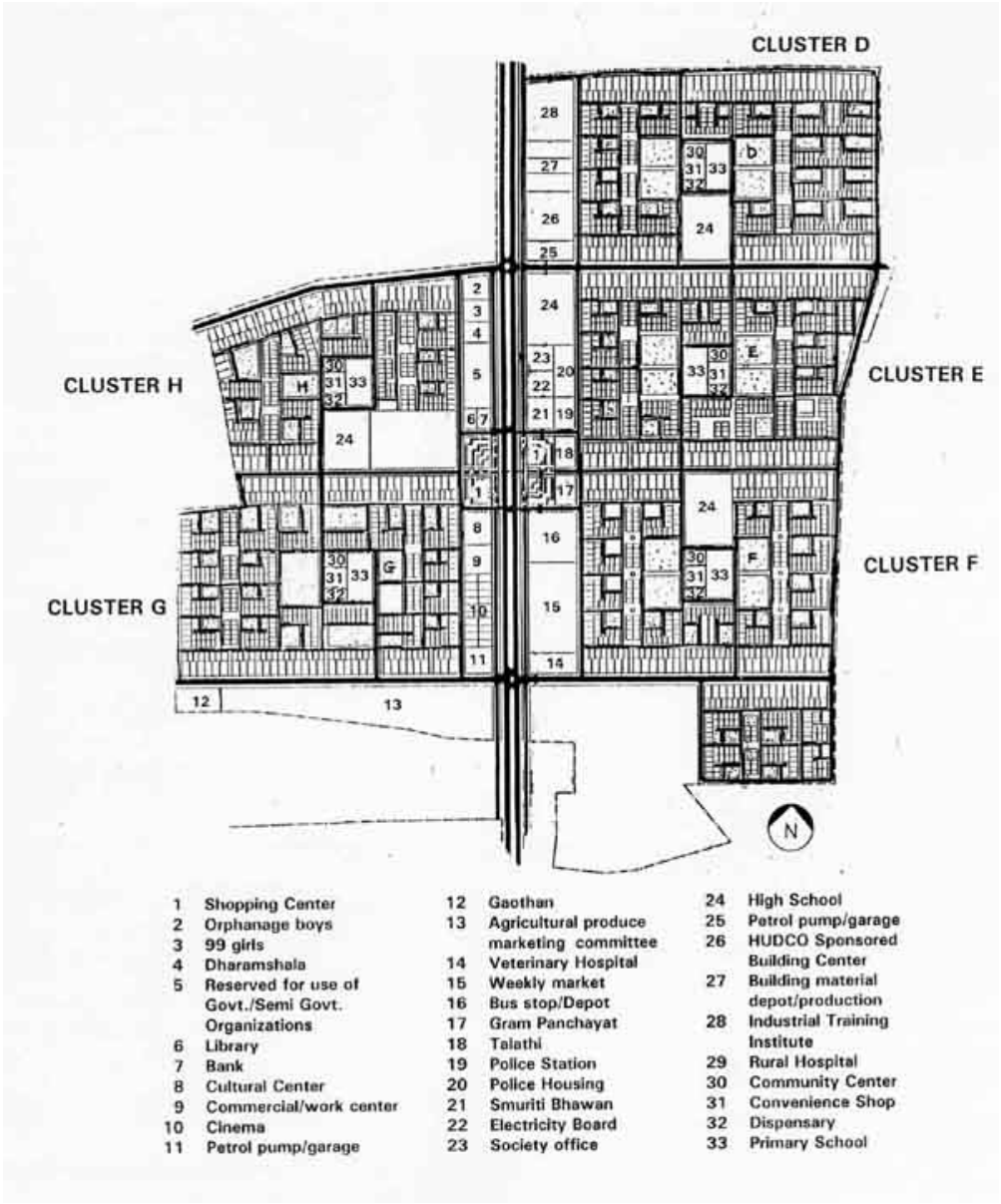

Figure 8: HUDCO's "cluster planning" design for Killari village

Figure 9: Participatory housing design session at Sastur Village with MHADA designers, Sastur villagers, and members of Society for Promotion of Area Resource Centers, 1994

For example, Society for the Promotion of Area Resource Centers (SPARC), a Mumbai (Bombay) based NGO, facilitated participatory housing meetings with Sastur villagers and MHADA officials. At these meetings, villagers were able to choose the location of schools, religious buildings, commercial facilities, etc., within a pattern of development referred to as "cluster planning"—a strategy in which new villages were divided into different areas each with its own roads, open space, public buildings, and so on. These clusters mirrored the spatial segregation of old villages where villagers lived in different areas, usually divided along caste or community lines. While the idea of maintaining these divisions after the earthquake was offensive to some government planners, it was a normal pattern of development that most villagers wanted to maintain due to the social-cultural, economic and environmental necessities of everyday life.

The Limits of Participation

At one level the GoM and World Bank should be lauded for some of their progressive policies which were also advocated in the central government's PRA report. A housing prototype was introduced that attempted to allow incremental house construction; and participatory planning methods were introduced that attempted to integrate community needs.

But at another level, one must recognize that these participatory policies were primarily related to spatial design issues and did not contribute to disaster mitigation. Rather than retrain artisans in earthquake-safe stone masonry techniques on real construction projects, only a few token seminars were done to educate artisans about building in earthquake zones with local materials. Moreover, since practically

all 52 relocated villages were constructed with concrete block foundations and walls, the overwhelming message to artisans and the local population was that stone masonry construction was no longer safe.

This ironic, conflicting outcome of World Bank policies should be deeply troubling to policy makers because: without the serious involvement of artisans and use of local building materials (which could have been easily recycled from old village sites), it was impossible to integrate earthquake safe building techniques into local building practices. Thus, after the disaster, it has not been a surprise to find villagers building new walls and house additions in the vernacular style with all the same structural inadequacies that they employed prior to the earthquake: including the lack of through stones and the use of round rather than cut stones.

Figure 10: A newly built stone wall at new Sirsal village that collapsed in 1996 after only 2 monsoon seasons. Photo courtesy of Rajendra Desai.

CONCLUSIONS

One can conclude that despite the participatory rhetoric of the relocation work, the GoM's and World Bank's enablement housing policies became the vehicle for post-disaster norms**:** the marginalization of local artisans and building material markets through the inappropriate use of housing technologies. Ironically, this has prevented artisans from reestablishing normal work patterns—the very problem that the World Bank sought to eliminate when it adopted PRA planning techniques in the 1980s and 1990s.

In traditional planning theory terms, on can also conclude that participatory housing mechanisms were used to integrate NGOs and CBOs into neo-liberal development practices and circumvent central government policies. This was evident in the language of participatory policies which were adopted only after NGOs and the Central government opposed the relocation work; this was evident in the practice of participatory housing which relied on institutional links to well established squatter housing mechanisms in Mumbai's urban sector; and this was evident in the spatial layout of participatory designs which adopted vernacular images of domestic space without the substance of artisan skills and local materials.

In conclusion, then, let us return to the description of Latur city. Beneath the well meaning work of humanitarian and government aid agencies that flocked to this sleepy town—behind their well meaning and, perhaps, romanticized efforts to preserve the traditional appearance of vernacular housing—lie the norms of modernism that were conspicuously re-inscribed into the built environment through enablement policies. The GoM's and World Bank's use of vernacular space, in short, became symbolic of a thinly disguised urbanization scheme that funneled millions of dollars into the hands of private contractors and material suppliers who made Latur city their home. Legitimating this focus of neo-liberal development was the well meaning work of structural engineers, architects, building and planning officials, World Bank consultants, some NGOs and others who are necessary actors in creating this crisis and modernity of housing disasters.

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