Poverty and Its Discontents: Environmental Impacts and the Possibilities for Action in Informal Settlements

SERGIO PALLERONI
Portland State University

PROLOGUE

There is a human crisis in the world that despite its urgency and vast scale of impact rarely finds itself in the headlines. Taking a backseat to the attention and investment that natural disasters garner, poverty and its associated phenomena of social, and political marginalization is a growing condition for the world's population worldwide. Interestingly it may also be the most important reason for the often staggering numbers of victims that natural disasters often claim. And yet despite our inattention to its victims, often obscured the world's focus on development and technology, poverty is on the rise everywhere, even in the supposedly booming countries of Asia. By UN estimates 2 out every 5 of the citizens of this world will have their lives, and futures, defined by poverty by 2025. And despite the tremendous focus of attention and resources invested on disaster relief, and our natural inclination as humans to reach to our fellow humans in times of disaster, a more successful approach to both crisismay be to focus on the condition of the poor, for it's the condition of the poor that not only condemns them to second class citizenship in this world but also to be the overwhelming victims of natural disasters.

This conclusion is backed by any close analysis of a natural disaster's grim statistics. Take Haiti as a case in point, the overwhelming human and physical infrastructure loss could have been avoided by building trades and industry educated to the challenges of building in earthquake zones as they were in Chile, a contemporary earthquake of much greater magnitude which claimed 1/1000 the victims of Haiti . But this kind of education, and more fundamentally, the economic resources to be able to make a more secure home is something most Haitians lack. Like much of the developing world, the vast majority of construction in Haiti is done piecemeal by the poor, as they marshal their limited resources over time to create a home. In expediency, and with no resources, or time to invest beyond the simple act of survival, the poor's lack of education and resources condemns them to always be the first and most affected victims of disasters. It is then, their tragedy brought to our attention by the medias exploitation of human tragedy, that we become aware of the poor, not recognizing them for the economic, and political conditions that made them poor, but as fellow human being inflicted by what we fear ourselves. And this brings out, particularly in us Americans, a sudden attention to people we would rather, and do, generally ignore.

Today no one doubts that an investment in education of the poor, creating the knowledge and opportunities to overcome their economic and social condition, is one of the most cost effective long term strategies by which to change their condition, and improve their capacity to recover from natural disasters . And indeed this viewpoint is at the heart of a growing movement of not for profits and NGO"s that for the last few decades have been working to increase the capacity, assets and social capital of marginalized communities in an effort to improve their condition and resilience. Resilience is an interesting concept, and one that has gained a growing following both in the environmental movement and in the development world. It often focuses on identifying assets physical, human and social in a community and strategically building upon them.

This is a developmental approach that once again brings the focus of development work to the condition of individuals and communities that are at risk rather the number of homes or infrastructure produced (the traditional metrics of development).

But education of communities in need can be minefield particularly when it involves clients and professionals from different economic, educational, and national backgrounds. As Paolo Freire reminded us in "Pedagogy of the Oppressed"[1], even a well intentioned effort to educate the poor can, if not properly constructed, reinforce the very power relationships that have historically defined the relationship between rich and poor and the developing world and first world countries, and are often at the root of the poverty of the very people we are trying to serve. Redefining the traditional power relationships of development work in ways that make the relationship more equal and reflective for both parties is Freire's response.

In architecture the problem of educating professionals to address the needs of a broader more diverse audience has been a growing issue. To address the needs of the poor or victims of disaster is growing concern but not currently properly addressed by more than a small, but growing, percentage of the academy. Unfortunately, many architecture programs continue to emphasize a pedagogical model which focuses on individual success rather than group collaboration, and abstract solutions to problems which are disconnected from "real life". (2) In 1996, the Carnegie Foundation for the Advancement of Teaching in the United States published a major study of architectural education[2] in which they cited recommendations and goals for future reform. They recognized that in order to succeed in this new environment students would need to be more connected to real life issues, better collaborators and communicators, and develop a philosophy of caring for and service to the community. Architecture schools have been slow to adopt the measures recommended by the commission, yet a strong trend in architectural education is beginning to emerge.

AN ACADEMIC PROGRAMS RESPONSE

Such an approach has been at the root of the BASIC Initiative, an international academic service learning program[3] that each year challenges students in the design fields to collaborate with each other, and with those in other disciplines, to arrive at design solutions to problems faced by communities in need. Evolving from a foreign study program in Mexico for architecture students that began in 1988, the programs of the BASIC Initiative have become increasingly multidisciplinary as a result of the challenges faced by client communities. The collaboration with other disciplines has introduced not only new forms of knowledge and methods of inquiry, but also pedagogical approaches that have impacted the nature of the BASIC Initiative design studios. Based on the pedagogical theories of Dutton (1996) and Freire (1973), the studio has taken the sustainable development and survival of marginalized communities worldwide as its challenge. This interdisciplinary program removes students from their own familiar culture to force issues such as these to the forefront of their minds. At the end of their residency working with their client communities, they will have helped to create, and build a building that belongs to the community. Along the way students also discover the potential of the group's collective knowledge.

The program integrates intellectual explorations and first-hand experience, giving it a richness and realism not often found in the traditional design studio. The schedule is demanding, and typically asks the students to commit an academic quarter to semester in the field living among the clients they will serve and collaborate in designing and building the needed facility. Students spend the year preceding the program investigating the physical and cultural characteristics of the client community, documenting the site and programmatic requirements, and engaging in group design charrettes. The schematic design and construction plans are produced in close collaboration with the community, marking the beginning of the period in the field of 'design/build'. Each student makes a commitment to spend six days a week working on site with everyone's day off staggered to assure a continues presence on site any day of the week community members have free to participate. Seminars, design and documentation fill at least five evenings per week.

The class divides into small groups, each group taking responsibility for the completion of a portion of the project. The teams convene each morning to discuss their progress and to ask for help when necessary. The process of consensus-building in the initial design charrette provides students with

a common basis from which to discuss and develop ideas. In this process, the community acts as both client and collaborator to insure that the project addresses both immediate and long-term needs. More specifically in the following chapter I explore the pedagogical structure of a typical BASIC Initiative program through the seminal experience gained in its first program, the Design/Build Mexico program, as it has attempted to engage (and negotiate between) the sometimes conflicting demands of academic education and social action in service of a fast growing squatter community (now city) in Central Mexico. The project, a kitchen which used solar energy as well as other resource conserving strategies to reduce cost and environmental impact, was the product of a growing collaboration which had began in the late 1980's with women's groups in Jiutepec/Tejalpa intent on improving the health and education of their children. The relationship began then with the construction of schools, but had evolved to include a generation of clinics, children's libraries (the first in a informal settlement in Mexico), and now was returning to address the issue of health and nutrition of the children in the schools through the food they would be served for lunch and dinner. The mothers also wanted a more active role in their children's education, despite the fact that their efforts had made the construction of the schools possible in country which increasingly ignores the condition of the very poor[4]. The women's groups who were our clients in this program to retrofit a series of schools with solar kitchens, were represented by Communidad AC[5], a not-for-profit organization that had formed as a byproduct of the collective efforts to build the first schools in Jiutepec/Tejalpa with the BASIC Initiative. This second of three solar kitchens prototypes we help build in the informal settlements of Jiutepec/Tejalpa in 2003-5, are today a regional program. The program, funded by the regional government of Morelos, with federal assistance founded on the prototypes we developed througha process of design investigation and economic analysis and post-occupancy studies of the ecological and social impact these first three prototypes. An analysis of the pedagogical principles that the experience in Mexico helped formulate follow the description of this project. Though in many ways this pedagogy, or approach to community based design were by the time of this program in 2002 already in place, it represents one of our most successful integrations of cultural, economic and environmental concerns, and in its broad and successful adoption throughout the region, an example of building a communities resilience and health though a community based design and building process. Today all five mayor program areas[6] of the BASIC Initiative share a common pedagogical approach arrived at in this pioneer program within BASIC Initiative.

BUILDING TO LEARN/LEARNING TO BUILD: 2002-5 Solar Kitchen Initiative: A COLLABORATION BETWEEN A MEXICAN SQUATTER COMMUNITY AND AMERICAN ARCHITECTURE STUDENTS

Squatter communities have significantly transformed the urban landscape of Mexico in the decades since the 1960s. They remain a very present reminder of the effects of globalization on this rapidly modernizing country. Some cities (such as those that border the great northern neighbor) have been so consumed by these settlements they are no longer distinguishable from them. Jiutepec, a squatter community built on the edge of CIVAC, a tax free industrial zone for international companies southeast of Cuernavaca in Central Mexico, is now more than a million and half strong and continues to grow at one of the fastest rates of any major urban area in North America. Though drawn there by the promise of living wage and education for their children the problems of communities like these are grave, though a growing condition for much of Mexicans and the poor globally. The lack of basic physical infrastructure creates areas with little clean water or paved roads, poor sewage systems, and no local schools or government systems.

Along with these physical transformations come massive shifts in the social fabric of this developing country. For every two migrant workers in the US, one woman is left behind with the family's children, in addition to those too poor, sick, or old to make the journey. These and other related circumstances can cause tremendous strain on the life of the community and its residents calling into question the ultimate physical and cultural sustainability of these communities. Despite the cultural fragmentation and pressure resulting from these current circumstances, longstanding community traditions of building remain the backbone of these squatter settlements. These traditions, along with an eagerness for community empowerment, are indispensable resources for positive future development.

fig.1 The solar kitchen perched itself on the pre-existing terraces to allow more room for the little play space that existed.

In 2003 we returned for the 18th project in the communities of Tejalpa-Jiutepec, two traditional villages that under the economic and social impacts of globalization on Mexico have grown twelve-fold in the decade of the 1990's from immigration of poor farmers no longer able to compete with the global economies of farming. The project, a solar kitchen, was a retrofit to the Jose Maria Morelos School, one of the many schools the informal communities that now make up Tejalpa and Jiutepec had built a decade earlier in the absence of government support or even acknowledgement of the condition of these communities that were supplying labor for the international inbond industries it was promoting outside Cuernavaca in the State of Morelos in Central Mexico. At the southernmost edge of the informal communities we have been working on since the late eighties, the school is built upon the agricultural terraces which the local indigenous people of the region had cultivated for the last four thousand years. In this hillside location, on leftover land, that is often the condition of many of the public works we have built in this growing informal community, the school had a lack of play space since the little flat ground that existed had been taken up by the buildings of the school. The space that remained on the hillside provided minimal play space for the schools 360-plus elementary school children.

fig.2 Before the building of the solar kitchen mothers prepared lunches for their children on the street

The previous year we had experimented with a design for a solar condensor stove and oven for the kitchen of another elementary school a kilometer away. The design of the earlier collector, based on German engineering by Solaird , had been adapted through a counterweight, much like a grandfather clock, to track the sun. Basically built from bicycle parts for the mechanism and small vanity mirrors for the parabolic mirror surface, the solar parabolic mirror concentrates the energy of the sun on a pot, or stove in the kitchen.

The device though complicated in appearance, is a simple and inexpensive way to harness the free energy of the sun to help reduce the cost of cooking meals for the children of this very poor community. Cooking meals for their own children is one of the ways that the mothers of the community had organized themselves to both supplement the diets of their children, and reduce costs.

That the schools, which are run by the federal government (even when the community often is forced to build its own schools in these communities) had agreed to allow the mothers on the school grounds to cook for their children had been a major policy

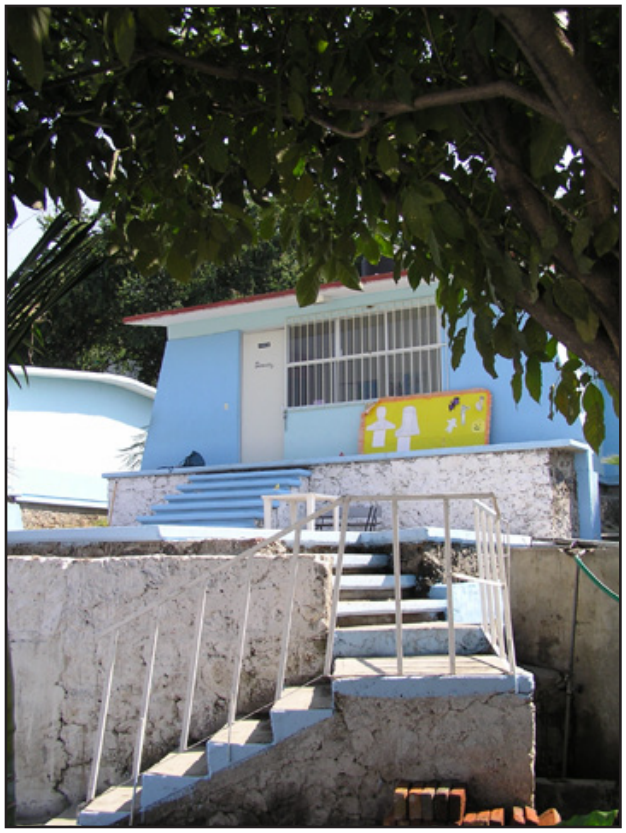

fig.3 The existing school constructed out of leftover land into the pre-existing agricultural terraces

victory for Comunidad AC, the not for profit organization we had been working with for almost two decades, the previous year. Now the challenge was to rethink the idea of the kitchen as an ecological response to the needs and conditions of the squatter community.

The students of the program took on the challenge of the solar kitchen as a means to rethink not only the energy requirements of a traditional kitchen but also its use of water, toilets, lighting, as well as an opportunity to impact nutrition and homebuilding in the community. In other words they re-formulated the challenge of the schools kitchen as a challenge to affect change in the homes of the parents whose children attended the school. The kitchens in many of these homes, in students analysis of the community, were often the source of a great deal of the ecological impact this rapidly growing and informal settlement with little infrastructure, was having on the environment. The design of the kitchen reflected these concerns with its incorporation of alternative, non-polluting (and economical) technologies like solar cooking, solar hot water heating, greywater filters to treat the dishwater, and natural light as the main source of lighting. The addition of an open dining pavilion allowed the students to also incorporate rainwater catchment and eventually PV panels to take the kitchen essentially off the grid.

The design of the project happened within ten days of arriving on site, after which the students submitted construction documents for a building permit-which was expedited to allow for as much time for construction as possible. The short time allowed for design in the BASIC Initiative Programs is intentional, since it allows the faculty of the program to focus the students attention on the site and the construction of the building where many of the construction details are better resolved. As the students become familiarized with the construction technologies used by the building trades in Mexico by learning them firsthand they become more capable to resolve the details in ways which best utilize the local resources.

fig.4 kitchen from covered outdoor dining pavilion uses local materials to create new responses to the environment

This happened in the solar kitchen in the development of extensive green walls which fed by the greywater provided necessary shading from the western sun on the buildings long façade. The screens used angle sections of steel, a material which is readily available and used in Mexico and can be easily re-utilized in later projects (thus making it a sustainable practice). Incorporation of found, and salvaged materials such as left-over tiles and broken dishes in the counters of the kitchen (the broken dishes brought some humor to the counters where the children are served) help the project become part of the local fabric in the eyes of the mothers and children.

In the case of the solar kitchen this proved particularly relevant in several ways. The solar parabolic array turned out to be more of a challenge than originally anticipated, and this allowed additional time to resolve other design elements with the students. In addition we initiated a series of weekend workshops which allowed the students the opportunity to conduct seminars with the community on the value and use of the new technologies. Classes on nutrition, health, solar energy, water use and contamination were offered, and at the end of the course a certificate was awarded by Comunidad and the Ministry of Education of the State of Morelos to those who attended.

Viewed in this light, squatter settlements have, it could be argued, a healthier connection to building than does most of the first world, where economic prosperity can encourage a disconnect between high architecture and basic issues of civic importance. Perhaps this is why the Mexican squatter community context is a fitting context to the discourse on reestablishing relevance in architectural education. In addition, in this context the programs of the BASIC Initiative, whether in Mexico or elsewhere, are able to engage in an architecture that is a direct response to the realities affecting much of the world's population, by employing a pedagogical structure that fosters both building skills and social skills such as communication and compassion. These experiences and skills equip students for a valuable professional practice that is connected and relevant to the world around them and capable of engaging the problems of the communities most in need, and help build their resilience.

fig.5 Kitchen, now more of a community center for this empoverished community stand as beacon

ENDNOTES

1 Paolo Friere, *Pedagogy of the Oppressed*, (New York: Continuum, 1970).

ii Thomas A. Dutton. *Critical Voice in Architectural Education* (New York: Bergin and Garvey, 1996).

2 Ernest L . Boyer and Lee D. Mitgang, *Building community: a new future for architecture education and practice: a special report*, (Princeton: Carnegie Foundation for the Advancement of Teaching, 1996), 135.

3 The Design/Build Mexico Program began at the University of Oregon in 1989, and broadened to become the BASIC Initiative with the adoption of the program by the University of Washington and eleven other universities worldwide in the 1990's.

4 For a more in depth discussion of the changing political and economic conditions of the very poor, see, my chapter with Monica Escobedo Fuentes, "El Programa de Vivienda Ecologica: Building the Capacity of Yaqui Women to Help Themselves," in Bryan Bell and Katy Wakeford's, eds., *Expanding Architecture*: *Design as Activism,* (New York: Metropolis Books, 2008).

5 See Communidad AC's website, comunidad.com for further organizational information.

6 The program areas today are: Design/Build Mexico Program; Global Studio (focuses on programs in which building infrastructure is based on micro-credit lending strategies-such as Yaqui housing programs, Build A Village/Save a Life, village building programs for homeless coffee-picking communities in Central America, and work with native communities in Tunisia, and South America); American Indian Housing Initiative (now directed by Penn-State University a founding BASIC Initiative member); Urban Communities Studios (focused on sustainability and economic strategies that improve the living conditions of the poor, elderly and children in cities-such as Sustainable Taiwan); Design/Build India Programs (focused on cultural preservation of native people and sustainability); and Disaster Relief Programs (Nicaragua, Haiti, Mexico City, New Orleans and the Gulf Coast).