

Participatory Green thinking:

**Alternative solution for better
living conditions**

Research paper by Adi Hollander December 2014



“Here or nowhere is our Utopia.”
“Life process in the present.”
**“Regional surveys of things as they
are and as they change ... towards
things as they may be.”**

Patrick Geddes

ABSTRACT

This research is done to create an overview of different methodologies architects, designers, scientists, and artists are using when working with communities to create better living conditions. This includes thinking of housing conditions, education, employment, health, and solutions for waste, food, energy, and transportation, through creating community involvement and self-empowerment.

I was looking at cases where the initiators of a project play critical roles in solving a problem, through observation and discussion and involvement with the community. I was focusing only on projects that help the locals (the community) to learn about the specific process, and that at the end of the developing, leaves the locals with tools that empower them with knowledge to realize their human rights and their economical possibilities.

In my research, I was looking at projects realized and supported by the UN, NGO, Universities, and by Individuals. The different projects have different methodologies, but all were sincerely engaged with looking for creating possibilities of how to offer better solutions for places in need. The main difference I observed is that some universities focus more on the students' education, that they become sensitive and capable of working in places in need. Meanwhile, others focus more on the education of the community, so that by learning and working with the students, they will be better able to support themselves.

My interest in presenting the following works was based on my need to understand and explore different approaches, methodologies, and forms of engaging with ecological and urban development in rural and poor areas.

In the “Reclaiming Common Ground,” an essay by professor at the MIT *A.W. Spirn*, I found an inspiring thought that became one of my guiding tools in looking for cases to analyze: **“to waive the concern on environmental, social and aesthetic and to demonstrate how solutions can address multiply purposes rather than a single narrowly defined one.”**

The following were questions I wanted to observe:

- **How do we observe a problem as outsider?**
- **What does it mean to have an education and cultural exchange?**
- **How do we learn from the community what their needs are?**
- **How do we find a local solution?**
- **What is the methodology of working with the community?**
- **How do we create a mechanism that will function after the initiators leave?**
- **How can we be sure that our engagement will not create a larger vacuum in our absence?**

“Urban ecological experiments must accommodate the physical, cultural, economical, political and ecological complexities of urban system + HUMAN NEEDS”

Designed Experiments: New Approaches to Studying Urban Ecosystems Alexander Felson and Steward Pickett

Cases:

In the book *Beyond Shelter; Architecture and human dignity*, the editor Marie J. Aquilino, noted that it is important to give to the next generation of Architects and designers (I will add artists) tools to change the way we think about our professions. To rethink our response to risk, to change the self-interest and fantasy-like way of working and to confront the new generation with the real world, so that they will face social injustice and what does it mean community in needs. She promoted in her book the idea of how to work with communities, to learn from extreme conditions, and use it as a tool for new ways of thinking.

In her preface she asked, “ What does it mean to be safe?” And she answered that the safety lies behind shelter, in the freedom of being secure enough to relax and play, aspire and dream.

The following cases, in my opinion, teach and highlight this idea of safety, as well as the importance of universities courses—not only to follow sites and projects that wave money and international recognition, but that are simply shout for help.

The cases are: Universities:

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Solar Kitchen- Collaboration between Mexican squatter community and the BaSiC Initiative **Rooftop Rice Filed-** Marjetica Potrč – Participatory Projects together with students

Rebuilding Tsunami destroyed communities, an Action

planning workshop- Reinhard Goethert- SIGUS (Special Interest Group in Urban Settlement), MIT

Individual in collaboration with international organizations:

- **Bottle Seeding House-** 1+1>2 International Architecture JSC
- **Housing-** Collaboration between grassroots communities and Estrategia in Lima, Peru Individuals initiative:
- **Moser's lamp** - Alfredo Moser / Liter of light (Ilaç Diaz)
- **Solar heater-** José Alcino Alano

The Quality of urban life depends upon opportunities for education and employment, the availability of affordable housing and transportation, an environment that support and sustains human life, and urban landscape that nurtures the body, mind and spirit. (...) we must define multi-propose solutions to comprehensively defined

problems. We must seek common solution to social, economical, cultural and environmental problems.

Granite Garden, A. W. Spirn

Collaboration between Mexican squatter community and the BaSiC Initiative

About:

BaSiC Initiative began in 1986 as a program to assist poor indigenous farmers in central Mexico, who were being impacted both by urbanization and economic marginalization. For the first four years of its existence, the program offered design and planning services to these communities, emphasizing building the capacity of these communities to become self-sufficient.

In the late 1980s the program collaborated with architecture students from the University of Oregon. In 1993, the program moved to the University of Washington when Sergio Palleroni accepted a teaching position there. With Steve Badanes and David Riley, Sergio Palleroni officially founded BaSiC Initiative in 1995, enabling the program to become truly multidisciplinary and available to the entire University community.

Approach: “The educational initiative challenges students in the design field to collaborate with each other and with those in other disciplines, to arrive at design solutions to problems faced by communities in need.”

- Divided into a small group, each group focuses and takes the responsibility for the completion of a portion of the project.

- The group has a meeting and discussion every morning, to speak about process and ask for help when necessary.

- The community acts as both client and collaborator to ensure that the project addresses both immediate and long-term needs.

- Analyze the community.

- Learn of ecological impact.

- Use available materials.

- Create classes for the community about new technologies, nutrition, health, solar energy, water use, and contamination. **Case example: solar kitchen 2003-2010** During their observation and communication with the Squatter communities, the students noted that the community suffers from lack of basic physical infrastructure, which create areas with little clean water or paved roads, poor sewage system, and no local school or government system. The students decided to develop 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. **The Outcome:** A retrofit to an existing school incorporates solar cooking; solar hot water heating, grey-water filters to treat the dishwater, natural light as the main source of lighting,

rainwater catchment, and photovoltaic panels to allow the kitchen to go off the grid. The Solar Dish is built from bicycle parts, and small vanity mirrors create the parabolic mirror surface that concentrates the energy of the sun on a pot or stove in the kitchen.

Image taken from-

http://www.basicinitiative.org/programs/global_communities/Solar_Kitchen.htm

Future plans:

The community and local government plan to build more kitchens based on this prototype.

Observation:

The idea that each student focus on detail study and question it, in order to come together later and with the community to build one project that has hands in different fields and necessity, I found important. Their project become an answer to many needs, and the community, because they are part of creating it, can later use what they learned to run the place, and make new places like it, either homes or public spaces.





Marjetica Potrč – Participatory Projects together with students

“I am not talking about a new architectural structure; I am talking about social architecture, which for me is very important. We are interested in people”

About:

Her projects deal with issues of social space and contemporary architectural practices, sustainability, and new solutions for communities. Her practice is strongly informed by her interdisciplinary collaborations in research-based, on-site projects

At the Hamburg University she teach a class *Design for the Living World*, it is a research-based, cross-disciplinary course focused on participatory design projects in which students collaborate with local residents in the tradition of learning by doing. They research a particular environment (environmental challenges, the social and political situation) and develop projects that address local design challenges and seek sustainable solutions.

In order to give the students a chance to understand the site and the people who live there, their challenges and expectations, they travel to a site for two months. This also allows them to understand how to change their own perspectives and share knowledge and practices.

The result of that process is to construct something new in collaboration with the residents.

Approach:

- To listen and talk with the residents where you are working.
- To involve the community in the decision-making.
- To involve the community in the construction process.

- To co-create with the community a project that they can continue after you leave the site. **Case example: A rooftop Rice Field at Byuri School** The alternative school is located in Anyang, South Korea, one of Seoul's satellite cities. In their visit the students noticed that in the city of Anyang, it is common to grow your own food, even though it is not a practice, which is recognized by the city municipal planning authorities. They understood that the city is focused on supporting continuous development with almost no concern for ensuring a sustainable future. They wanted to create a space that will create a greater awareness about sustainable water use and the importance of relocalizing food systems to rebuild the city's self-sufficiency in food provision. The project is a part of citizens' efforts to persuade the municipality to provide free, organically grown food for all students in Anyang. Together with the

community, the students created a rice field over the roof, and a system that collect the rain water from the roof to a water tank, and from there watering the rice filed. The water tank is also used for flashing toilets that locate on the top floor of the building.

The Rice filed is cultivated by the school students and used for their meals at school.



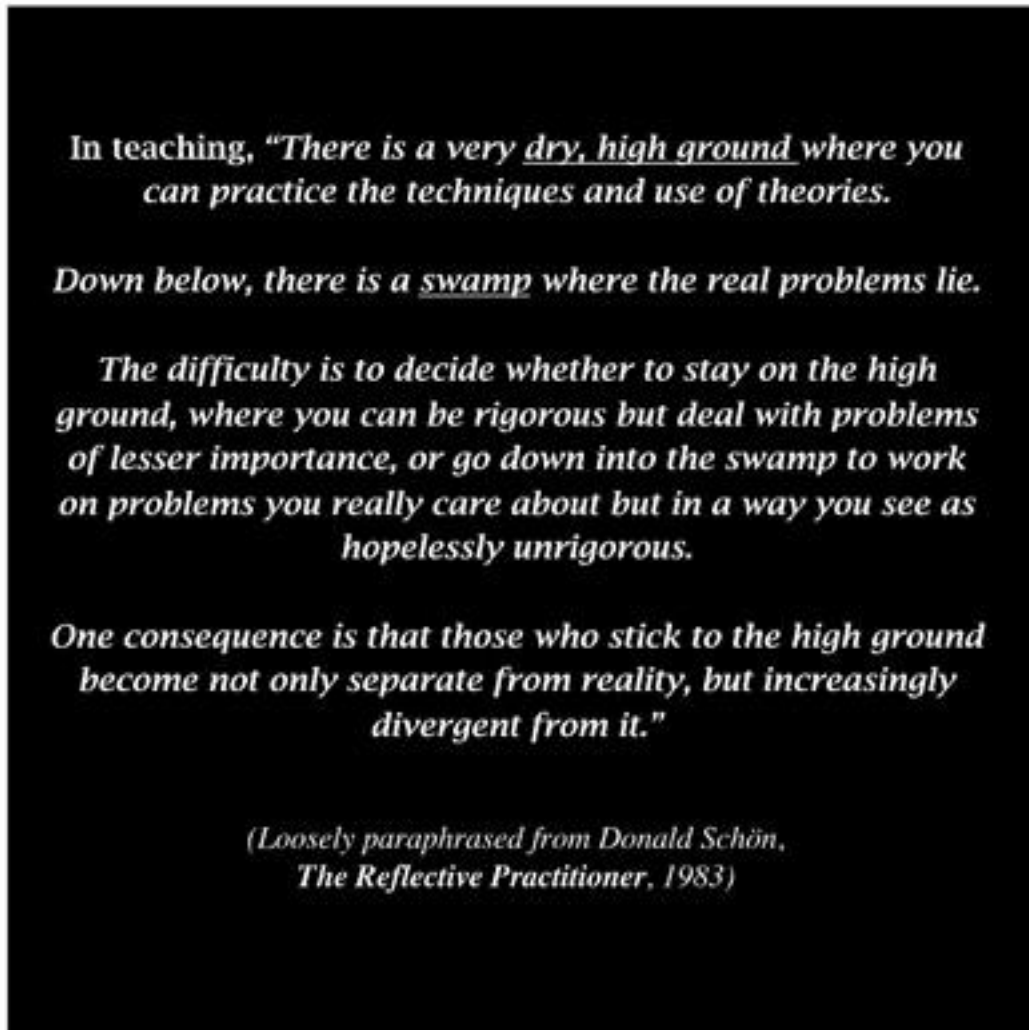
Image taken from <http://www.potrc.org/project2.htm>

Observation:

This process could only take place from listening and observing through time, what is essential for the community. What will improve their life. How can you use resources you have there, and save energy, water and money. The solution of a green roof beside the better use of rain water and production of food, have an important aspect of thinking about pollution.

The system they created there is simple and can be recreated on any roof, with different vegetation. This project, open possibility to the community to think about minimize the space they have and resolve needs they have.

Reinhard Goethert- SIGUS at the MIT



Donal Schon from the website of SIGUS

SIGUS (Special Interest Group in Urban Settlement) explores the new professionalism emerging for architects and planners, and concentrates on service, participation and non-traditional client groups. It was established in 1984. SIGUS grew out of the rethinking of method, practice, and teaching driven by the rapidly expanding informal sector in both developing and developed countries.

SIGUS collaborates with international practitioners,

professionals, and faculty in governments, research institutions, NGOs, professional firms, and other academic institutions. SIGUS is coordinated by Dr. Reinhard Goethert and supported by student assistants from the Department of Architecture and Department of Urban Studies and Planning.

Sigus intention is to link housing and community interests, as well as creating a focus on developing areas worldwide.

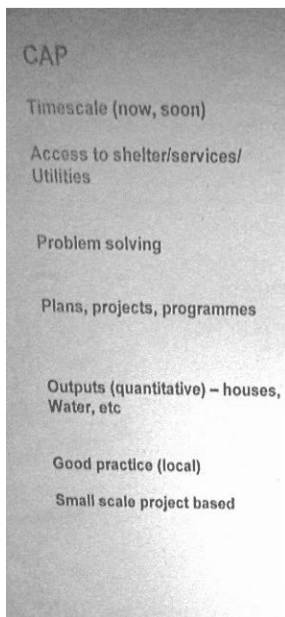
Dr. Goethert have been working for many years with professor Nabeel Hamdi, together they established CAP (Community Action Plan), which is an approach to working with communities in need. The key element of CAP is an active, intense community-based workshop, carried out over a period of 2 to 5 days, depending on the specific goals of the workshop. The output of the workshops is a development plan which includes a list of prioritized problems, strategies and options for dealing with the problems, and a rudimentary work program describing who, when and what is to be done. Integral to the method is the equal relation between the professional technical inputs and the community. The setup for the workshop requires a minimum of preparation, materials and training. Required is a motivated community and a confident moderator/facilitator/organizer who can take the lead in assuring that announcements are made, participants identified, a location selected, a few materials collected, and finally in running the workshop. Much of the preparation is done by the community. Moderators need not be highly skilled and can adapt the style and content

to suit their own temperament and the prevailing circumstances. Training of moderators/facilitators can be minimal, but is strongly advised to participate in an actual workshop in order that future moderators can capture the dynamics of the event as much as understand its procedures.

Participants at the workshop include a cross-section of community representatives, technical officers from the various departments (sanitation, water, housing, health, education, dependent on the nature of the municipality organization)

Approach:

Image taken from www.gshakya-exploration.blogspot.com/2011/03/nabe-el-hamdis-lecture-in-ntnu.html



- Workshops and short courses.
- Carry out research and outreach programs stressing participatory methods in promoting affordable and equitable housing.
- Traveling with the students to visit the site.
- Lectures and presentation by local professionals and institutions.
- Meeting with the community.
- Students' individual projects in research and development. Sigus approach in visiting the site is based

on their believes that the students should gather their information only through their experience at the site, and the involvement with the locals. They understanding is that the students must find a way in which they can offer possible solution for the communities needs in a way that the communities will be able to help themselves, to build and maintain by themselves with the support of the students and other organization.

The first and most important step while at the site is building a simple model of the community, and using this model for exploring issues. The participation of community starts with creating and adding their own house into the model, and allowing their children to be part of the process as well.

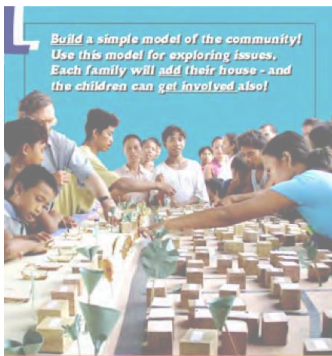


Image taken from- web.mit.edu/urbanupgrading/upgrading/issues-tools/tools/pdfs/FISHING-MANAGEMENT-SM.pdf

Case example: Rebuilding Tsunami destroyed communities

Between June and July of 2005, there were 3 pilot CAP project taking place in Banda Aceh and surrounding areas. The mission was to tackle the complex issues of rebuilding Tsunami destroyed communities. The goals were to develop a Tsunami-specific CAP approach, to establish and train a 'CAP Team' for the expansion of the workshops to other destroyed communities, and to initiate construction by linking to organization of rebuilding project, which focused on

reconstructing 10,000 houses. The community was considered the basic unit on which all development initiatives are keyed and which represents stability within the ever- changing political and strategic framework.

Images taken from- web.mit.edu/urbanupgrading/upgrading/issues-tools/tools/pdfs/TSUNAMI-SM.pdf

The workshops met in the few remaining public buildings in each village. Approximately 50-60 participants attended each of the workshops, with participations carefully selected to include representatives from all sectors, with special attention to women representatives.

The workshop was focused around small group work to explore options, with presentation and discussion with the full community to reach consensus on issues. A moderator guided the sessions, and the working groups were assisted by facilitators to provide additional resources and assist the discussion.

Charts filled out by the small groups were used extensively to capture ideas and to use as a transparent presentation reference.



Observation:

Once the workshop ended, there is a final ceremony. But this is not the end. The communities need to follow the list they created of urgent and less urgent plans. The funders need to keep their promise, and the CAP must come back to monitor the process and development of the communities.

Example of worksheet

Indicative time	Activity	Goals	Arrangements	Comments
11:00-12:00	PREPARE LIST OF PROBLEMS - Teams prepare chart and present to group (CHART 1)	List of problems and why and to whom. prepared in a chart form. one for each team	- Teams grouped around table - Spokesman selected by each team - Facilitator assists in grouping problem area	- Ask teams how they found out what the problems were - discuss what is not agreed and listed on the chart, and what criteria
12:00-1:00	AGREE ON PROBLEMS			

Getting organized as community, locate the problems and the needs, and understand what is urgent and need to be solved now, and what can be solved in time. Another important result of the workshop process is that it helps rebuild the confidence of a community, which remains once outside assistance is ended. A CAP workshop helps assert the control of the community, as a counterbalance to technocratic decisions and inputs.

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Collaboration between grassroots communities and Estrategia in Lima, Peru

About:

Estrategia is a non-governmental organization. They started a unique initiative in the community to train community residents, to promote self-construction of earthquake resistance housing at an affordable cost. The projects provide materials, equipment, and training.

How Peruvian women get empowered to obtain housing and land access rights, as well as create awareness of their human rights.

Estrategia mission is to create housing solution for the poor communities, through self building, with attention to gender equality, grassroots awareness of empowerment, understanding of their human right, and how to communicate with government and official local state authorities, and providing law proposals to live safely.

Estrategia foundation builds strategies and tools to implement in vulnerable communities in association with the local and state programs to prevent disasters and create safer communities. They also provides links to income-generating activities for the community (in the production of bricks, concrete domes, concrete beams) that are earthquake resistant, or 'anti- seismic,' & community training programs to show grassroots women how to construct Disaster Resistant Housing with these materials.

Approach:

- Training workshops related to the Hyogo Framework for Action (HFA) with participative and concerted participation of the locals. The grassroots women learn about how to use the tools and strategies to get resilient communities through a validated methodology.

- The training process consists of theory and practice. The local women participate in an active way, learning about the meaning of the HFA, resilience, vulnerability, hazards, risks etc. The climate change is also pointed out as an important issue to take in account when a disaster is produced. **Outcome:** This project

took place in poor, informally housed residents of Pachacutec in the Ventanilla district, of the Callao Region of Lima, Peru



Images taken from-
<http://proxied.changemakers.net/journal/300510/displaydis.cfm-ID=30>

The program of Estrategia is growing and developing all around Peru. By 2013 grassroots women from 13 districts from urban and rural communities were empowered to advocate for their demands from the authorities and form the National Women's Federation in land and housing access rights, free from domestic violence.

The training of the grassroots women in sensitizing and leadership, self-esteem, human rights focusing on land and housing access rights, and advocacy were important issues the grassroots women learnt. On urban legislation issues, the women learned about the legal Constitution and were trained in their respective districts.

Observation:

This program creates a change in traditional and religious norms, norms that force women to be weak and helpless. This program gives power, knowledge and education to women for safer life. Through practical study of building your own house, they get to understand their human rights, their right for equality, and possibility for income. This program influence many programs around the world, and received recognition and support of the UN.

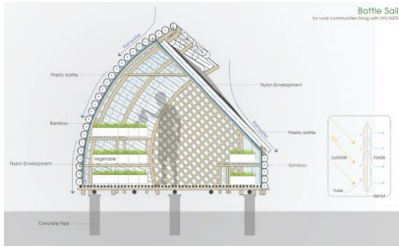
Bottle Seeding House- 1+1>2 International Architecture JSC

The project took place in Hai Phong, Vietnam. It was supported by COHED, a research and health center.

The Bottle house was made from bamboo material to form the skeleton, and from 3,000 plastic bottles that created the roof and the walls. The project is ongoing research, dissemination, and replication in order to practically serve the community.

Approach:

- Use local materials and recycling.
- The bottle house should be designed to respond to natural disasters, protecting seedlings.
- Positioned at the foot of the dyke, where it can be most sheltered from the wind.
- Serves about 10,000 tomato seedlings seeds per season,



Observation:

The project is interesting and as much as it is small, it touch so many aspects. It deals with plastic bottles, waste material that can be collected, with bamboo, traditional material that the local are familiar with, and they know how to work with it. It was done to support their local farming, and protect them from natural disaster, and allow the community to have a social space. The structure is simple, and affective. The structure can easily be replicated, and the local could use what they learned to remake more green houses for their own fileds or for other communities.

Project- Alfredo Moser's lamp / Liter of light (llac Diaz)

"It's a divine light. God gave the sun to everyone, and light is for everyone. Whoever wants it saves money. You can't get an electric shock from it, and it

doesn't cost a penny."

About:

Alfredo Moser

llac Diaz is a former student at MIT. He is the founder of the MyShelter Foundation in Manila and champion of the 'Liter of Light' program reusing plastic water bottles as a light source in slum shanties, as well as a construction system reusing plastic

water bottles. He developed this campaign at MIT. The lamp was first invented in 2002 by Alfredo Moser, following electricity blackout that shut down all people houses in his village in south Brazil. The lamp idea origin from the need of Moser and his neighbors to find a way to create alarm system in case of emergency.

“His boss at the time suggested getting a discarded plastic bottle, filling it with water and using it as a lens to focus the sun's rays on dry grass. That way, one could start a fire as a signal to rescuers. This idea stuck in Moser's head; he started playing around, filling up bottles, and making circles of refracted light.”

Image from www.bbc.com/news/magazine-23536914)

Approach:

The solar bottle bulb is a program that uses appropriate technologies for a grassroots green lighting program. The concept is that if the materials can be found easily in even the poorest neighbourhoods, can be built with simple carpentry skills, and can be sustained by teaching grassroots entrepreneurs how to continue the program through building and installing the solar bulb, then this facilitates expansion at a geometric rate throughout the country. It is further facilitated by putting all this information on the internet, Facebook, and teaching caravans throughout the country.

Outcome:

The household will be bathed in refractive light of 60 watts on a clear day, and the



water in the bottle refracts the light 360 degrees to all corners of a 40 square meter room for less than a US dollar in total plus labor.

Savings in electricity expenditure every month is at an average of USD 6 per month . The carbon footprint of manufacturing one incandescent bulb = 0.45 kg CO₂. Usage of a 50 watt light bulb running for 14 hours in daytime is still 0.77 kg per kwh, so 30 days is 16.17 kg a month or 200 kg a year.

So far, 15,000 solar bulbs have been manufactured by grassroots entrepreneurs through funds of local governments and private foundations. Expanded programs through events and volunteers will increase that number to 200,000 by year's end.

images taken from- www.ashden.org/international_2012

Observation:

The most important benefit of this project is the access to create it, the material which can be easily found and the information how to build it which is given via videos, workshops, and can be watch or downloaded from the internet. The second is the benefit of life quality, and the speed with which it is spread around. The building and installing can

turn into an income source through the use of the light, helping to save money and reduce pollution.



José Alcino Alano Solar heater made of disposable packaging (turning trash into hot water)

In Brazil, one of the five most densely populated countries in the world, the use of PET bottles and Tetrapak packing has quickly spread, with all the negative consequences for the environment. This situation has inspired José Alcino Alano, supporter of alternative energy sources, to design a remarkable sun boiler, made from discarded PET bottles and Tetra cartons.

Alano made the first one in 2002 to provide his family with hot water. As it worked perfectly, the sun boiler became a success.

Having received an Ecology award in 2004, the invention became well known in the region. With the help of the government, about 6,000 PET bottle boilers are now in use. The system is installed at schools, universities, government buildings, and houses. To this cause, at least 1.2 million PET bottles and 1.5. tetra cartons have been reused.

His design is free for the public. He created a manual that can be downloaded everywhere, including a simple explanation and visual demonstration of the process.

Statement and outcome:

“Besides saving energy and directly benefiting the environment, our project aims to awaken in people in general, the awareness that all these post-consumer packaging can be turned into something useful on the social side. The registration with the INPI (National Institute of Industrial Property) was required to ensure the social purpose and that God willing, together we deliver a better quality of life for many people, with a little more comfort. Our purpose is not to draw dividends in the marketing of it, but perhaps even to generate income and jobs for cooperatives of collectors, institutions, etc., with projects managed by people with good character and committed to the fraternal society. “

Observation:

This project deals with waste while thinking of a solar energy solution for heating water. It is important that the device can be easily built with materials that can be found around. But what caught my attention was the transparency and accessibility of the project to everyone. The plan is written in Portuguese, Spanish, and English, and can be download for free. The idea of sharing the plan of this project allowed it to spread in Brazil through recommendation of people, via the

internet, and by creating





workshops. This design can help many people who can not afford heating water, and it can also help to create a possibility of jobs and income for local communities through opportunities to build, install, and maintain the heaters.

“Linking designed experiments to communities and educating people about the role of experimentation in the urban landscape is a key strategy for encouraging community support.

Linking research to design can create a cultural identity for experimental, and thus encourage maintain.

Linking experiments with social activism provides a set of social pressures that blends science with community development”

Grove and Burch 1997

Conclusion:

In a lecture by Nabeel Hamdi, a student noted the following: “Only 5% of the built environment in the world is planned, the rest of the 95% is unplanned or informal. But we professionals, architects, engineers devote much of the time for that 5% and we neglect that 95%.”

In the first paragraph of the book *Beyond Shelter*, Marie J. Aquilino wrote “two hundred million people have been affected by natural disasters and hazards in the last decade. For every person who dies, some 3000 are left facing terrible risk. 98% of these victims are in the developing world, where billions of dollars in aid are absorbed by climatic and geologic crises.”

In the first paragraph of the book *Studio at Large* by Dergio Palleroni from BaSic initiative, he wrote “Architecture has so much unrealizrd potential; architects could solve substantial

social needs worldwide, addressing issues that seem beyond the impact of design or building, such as education, health, employment, self-empowerment, and cultural identity.”

The question is why? Why is it such a neglected area? Is it because we are educated to realize a fantasy, the new unseen thing? Is it because the universities follow money, and therefore prefer to collaborate and invest in projects that are dealing with the 5% professor Hamdi mentioned in his lecture?

The cases I followed were all different, from short-term projects to long-term projects, from building with the support of the community to supporting the community in building. From projects that were organized by universities, to projects that happened because of one person’s search for a solution.

I chose them because they worked, because they managed to create a change. And because each one of them traveled, or can travel, to other communities, and be recreated.

I chose them because when thinking about a community, each one of them thought beyond one problem’s solution. They dig in, through many layers. They observed and listened. They studied a place, a community, life, and needs. They understood the connection between housing, safety, economy, health, gender problems, water, hygiene, waste, and community engagement.

The critique I have is not addressing those projects. It is addressing the institutions that don’t see the importance of educating the new generation to work into this reality, our reality. I critique schools that allow these projects to be pushed to the side because they don’t bring money. I critique the system that wakes up only after a disaster, and even then forgets very quickly the change that can be created if they educate people to work with materials they have around—

minimalizing waste, with collaboration between different professions to find creative solution for immediate needs.

I salute those projects and their initiators, and thank them for a great inspiration.

Adi Hollander December 2014

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