

# Metadesigning indications for a socio-ethical and sustainable approach to the industrial design

## > Case Study

Locations: City of Paulo Lopes and City of Imarui, State of Santa Catarina, Brazil.



## > Photos descriptions

- (1), (2), (3), (4), (5) Untreated water uptake and distribution in the community of Santa Cruz.
- (5), Water storage.
- (6), (7) Lack of Sanitation and Hygiene. The water is infected by coliform bacteria.
- (8) Local children suffer from intestinal worms infections.
- (9) (10) In the federal government project "Casas para Todos", the houses doesn't have a rainwater uptake and the sewage system was only partially installed.
- (11), (12), (13), (14) The community of Sítio Novo takes water from shallow wells.
- (15) White Spot Syndrome Virus (viral infection of shrimp) has infected the lagoons since 2005.
- (16), (17) The local health center and the school of education are supplied with carboy mineral water. The building were built recently, without rainwater storage system.
- (18) Sand Water Filtration Systems: developed by the state government and built by local residents. The Sítio Novo's community can't consumer this filtered water because hydraulic transportation difficulties.

## > Community "Quilombolas" of Santa Cruz (small community of descendants of former slaves)



## > Community of Sítio Novo (small community of fishermen)



## Promoting local skills

- investigating, learning about and recording craft, agricultural, industrial, cultural skills (habits and costumes) traditionally existing in the area;
- developing exchange and cooperation networks of techniques, knowledges and means;
- favouring design operations that promote the use of traditional techniques, methods, costumes and manufacturing;
- choosing design operations that promote local culture;
- using Participatory Design as a strategy for a sustainable development of the area;
- planning collateral and parallel effects of the designing action in order to promote local skills;
- seeking social innovation, that is, developing alternatives to dominant standards of needs satisfaction.

## Environment humanization

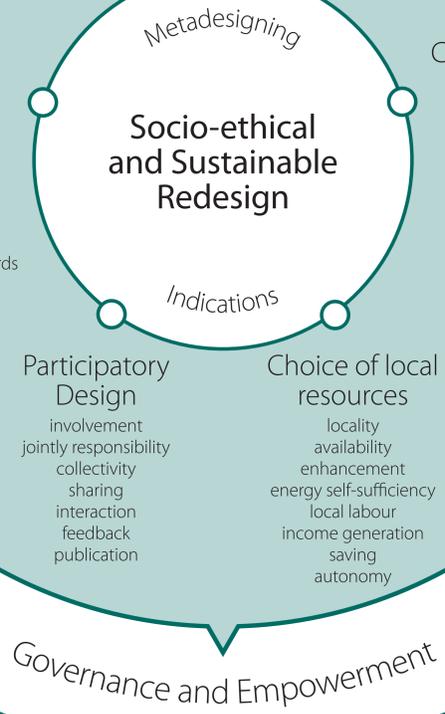
- satisfying human physiological needs and guaranteeing human somatic integrity;
- satisfying subjective needs in harmony with social needs;
- improving human environment by integrating products into cultural practices;
- improving use quality (safety, functionality, etc.) and increasing product use value;
- satisfying needs through community proposals;
- steering designing activities towards decolonization in all its expressions (economic, technological and cultural expressions);
- designing products, installations and systems connected with basic needs (health, house, food and clothing);
- designing materials for infrastructures that are suitable for local climatic conditions.

## Participatory Design

- showing the community the peculiarities of designing process (planning, implementation and operation);
- collecting opinions, thoughts, ideas, judges from the people, users, workers and other subjects who take part in the design context;
- letting people's desires, needs and expectations be part of design priorities;
- supporting local values in design variables, criteria and aims;
- developing feedback units in the community;
- publishing the advances, results and goals that have been achieved.

Environmental Sustainability

**Environment humanization**  
 human needs  
 resilience  
 infrastructures  
 food self-sufficiency  
 priorities  
 traditions  
 quality  
 restoring health care standards



**Another Economy**

**Promoting local skills**  
 behaviours  
 life styles  
 facilitate  
 native activities  
 restoring  
 promote  
 strengthen  
 involve

**Participatory Design**  
 involvement  
 jointly responsibility  
 collectivity  
 sharing  
 interaction  
 feedback  
 publication

**Choice of suitable technologies**  
 local context and scale  
 native natural elements  
 traditional methods  
 revalue  
 autonomy  
 adjusting  
 equilibrate  
 reducing  
 savings  
 know how  
 discontinuity

**Choice of local resources**  
 locality  
 availability  
 enhancement  
 energy self-sufficiency  
 local labour  
 income generation  
 saving  
 autonomy

## Choice of suitable technologies

- seeking, recording and delivering information about local technologies;
- choosing low-complexity processes;
- simplifying production processes, product maintenance and conservation;
- preferring natural aspects over artificial ones;
- using suitable technologies for local scale and production capacity;
- developing exchange and sharing networks of equipment (instruments, tools, machineries, devices, appliances, etc.), knowledges and methods;
- choosing technologies that develop, as a parallel result related to their use, the lowest rebound effect and, in the same way, starting trends that promote the damping effect.

Local Autonomy

## Choice of local resources

- selecting and developing products, processes and services using the labour, energy resources and raw materials available in the area;
- classifying local resources according to their possible use and their social-environmental impact;
- seeking, recording and delivering information about local resources;
- facilitating product maintenance, repair and reconfiguration;
- designing according to criteria based on resource saving rather than to labour saving;
- designing devices for the exploitation of alternative energy;
- choosing resources that develop, as a parallel result related to their exploitation, the lowest rebound effect, and, in the same way, starting trends that promote the damping effect.

Governance and Empowerment

## > Research purpose

The paper shows some metadesigning indications which are the first instruments arisen from the author's ongoing Ph.D research in Design Sciences, at the University IUAV in Venice. The indications presented are the result of the analysis of the problems that emerged from the case study.

Such problems refer to the lack of treated water, to pollution and salinization of available sources, to health problems due to the consumption of infected water, to the lack of sewage systems and to social marginalization of these communities deriving from their poverty and exclusion from local political life.

These indications promote the designing intervention by proposing activities to carry out in order to make the product or service reach the desired social-environmental aims. They refer to the governance and the empowerment, to the local autonomy and environmental sustainability of these communities.

## > Investigation Premises

The investigation has been defined as a qualitative theoretical-bibliographical research, with a case study for the problem analysis, hypothesis testing and experimentation of the proposed instruments. The case study refers to two outlying communities in the south of Brazil.

## > The current state of research

Research is currently analysing and adapting the instruments that allow to implement and reproduce these indications in designs aimed at satisfying the needs investigated. These instruments will give shape to a methodological approach corresponding to the limits of implementation of industrial design in the Brazilian context.

The above-mentioned instruments concern organization, data processing and design support measures. Such as, for instance, systems of data collection, analysis and evaluation (interviews, focus groups, surveys, questionnaires, field observation, etc.), orientation instruments for design decisions (heuristic evaluation, formal usability inspections, feature and consistency inspection, guideline checklists, skills evaluation sheets, creative concept techniques, etc.) and those dedicated, among others, to ergonomic and ethnographic research, costs analysis, product life cycle, environmental impact.

## > André Lucca

is graduated in Industrial Design (1999) at the Federal University of Santa Maria, RS (Brazil), obtained his master degree in Sciences Education (2006) with the thesis: *Brazilian Association for Design Education Outcome, Possibilities of a Theoretical Reference for Ecodesign Education* at the Regional University Unijuí, RS (Brazil). He's now a Ph.D student in Design Sciences at the University Iuav of Venice (Italy). Is currently developing research about alternative methods of industrial design to the local autonomy and sustainability of small communities.

For further information contact:  
 (andre.lucca@yahoo.it) or  
 (alucca@yahoo.com.br)