

Conference proceedings

Recommendations for a socio- ethical and sustainable approach to the industrial design

André Lucca

School of Doctorate Studies, University IUAV of Venice

aslucca@yahoo.com.br

**2nd Conference
on Economic
Degrowth
For Ecological Sustainability
and Social Equity**

**BARCELONA
26th-29th March 2010**



Abstract

The essence of industrial design is the planning of goods and services aimed at improving man's activities. Design materializes in the logic of mass production of these artefacts. The designer takes part in the decisions supporting production choices, that is technology, resources and product functionality.

Sustainability in industrial design has been interpreted in different ways. The choice of eco-friendly resources, the introduction of the concept of product life cycle and the eco-effective system innovation are the most implemented principles. Industrial design research has only recently started the debate about a possible role of the profession with respect to social equity. Even if eco-effective approach is used in advanced industrial societies, it proves not to be suitable for developing countries, as it increases the existing social imbalances. These countries are characterized by the symbiosis of areas with different levels of development. These symbiotic areas, firstly represented by urban and rural outskirts, suffer heavier social pressure because of the problems related to the lack of public utilities.

The research objective is to propose metadesigning instruments based on a critical theory of sustainable development, in order to steer industrial design operations aimed at promoting local autonomy, life quality improvement and political participation in the outlying communities in the south of the world. The word metadesign indicates the interdisciplinary designing activity whose purpose is to manage the data collecting and analysis process and to steer the project formalisation. This activity expresses, therefore, the meaning of theoretical reflection that leads to the designing stage, preparing its development process even before the idea is shaped into an object. 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 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 instruments 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 instruments 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.

Key words

Industrial design; alternative methods; local autonomy and sustainability; small communities

1 Sustainability in Industrial Design

The essence of industrial design is the planning of goods and services aimed at improving man's activities. Design materializes in the logic of mass production of these artefacts. The designer takes part in the decisions supporting production choices, that is technology, resources and product functionality.

The activities related to industrial design are undoubtedly part of economic growth and development processes. Although its sphere of action concerns "the planning of all the artefacts with which man, as a user, manually and perceptively interacts" (Bonsiepe, 1978: 69-70), industrial design is often seen only from the point of view of product's aesthetic content. Entrepreneurs thus use industrial design as a strategy of realization of new needs and planning means to create objects aimed at carrying out the mission of expanding consumer markets.

Confronted with the symptomatic development of social, environmental and institutional crisis, connected to the economic dynamics of industrial society, the answer of industrial design has been the gradual evolution from end-of-pipe approaches to preventing interventions. Concepts such as cleaner technologies, re-design and green products planning have been implemented in order to make up for the damages brought about by a profit-oriented planning approach. Sustainability in industrial design has been perceived in terms of product innovation and regarded as the developer of new well-being standards related to the increase in resource consumption.

Although in the last years many researches has pointed out dramatic changes in the profession trend (Manzini and Jégou, 2003; Vezzoli and Manzini, 2007), the vision of a sustainable industrial design generally proposes an approach aimed at the development of eco-effective methods and instruments. In such way, industrial design finds itself entrapped in growth paradoxes.

2 Becoming aware. Growth bonds and restrictions

Criticisms to sustainable development highlight growth bonds and social and biological restrictions (Latouche, 1993: 44; 2007:13-26). Similarly, studies related to oil peak underline our dependence on non-renewable energy sources, especially on fossil sources (Heinberg, 2004; Hopkins, 2009). Our settlements, productive models, traffic schedules and food safety have been planned in the perspective of unlimited economic growth and energy availability.

In this context emerges an urgent need for replanning our society. Reconsidering our ways of living, working, moving, producing and consuming. "The replanning should concern every kind of product and good, every object and all the production, consumption, recycling and reuse cycles, steering the research towards a new way of creating economy. This process requires our commitment so that a society of degrowth can spread and finally prevail", explains Alberto Castagnola (cited in Baffari, 2010).

Ezio Manzini acknowledges that the only way of anticipating the future is trying to plan it. Consequently, the industrial designer's role is "to highlight desirable, thinkable and possible futures in order to promote actions that allow these possible futures to come true". In other words, providing positive perspectives and at the same time the means to realize them (cited in Collina, 2005: 127-128).

3 Metadesign as a platform for redesign

Metadesign coincides with the project planning stage. It's when information is collected about desired aims, the means you can count on and the specific conditions of the context you have to operate into. This information is correlated and translated into a precise reference framework for the following designing

operations (Collina, 2005: 32-33).

Several alarming situations that affect our world result from designing decisions. About 80% of the impact that products, services and infrastructures around us have on environment is determined at a designing stage. The decisions taken at this stage give shape to the processes that determine the quality of the products we use, the materials and energies necessary to their production, the way we use them daily and their destination when we won't need them anymore (Thackara, 2008: 11).

Metadesign also becomes a sharing platform for different business figures belonging to different fields, including those that so far had been excluded from the designing process, such as the project's intended audience (Collina, 2005: 66).

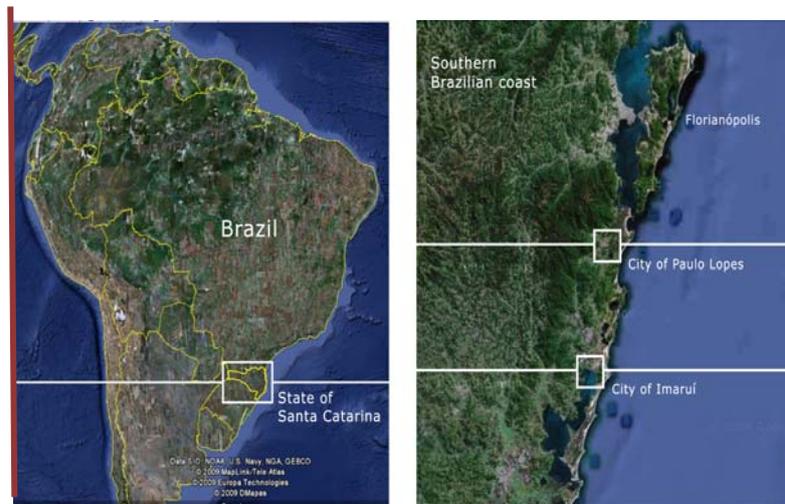
4 Research features and purposes

This 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 research objective is to propose metadesigning indications based on a critical theory of sustainable development, in order to steer industrial design operations aimed at promoting local autonomy, life quality improvement and political participation in the outlying communities in the south of the world.

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 (**Fig. 1**).

Fig. 1 Case study locations. City of Paulo Lopes and city of Imaruí, State of Santa Catarina, Brazil



These indications presented 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.

5 Metadesigning indications for a socio-ethical and sustainable approach

These 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 (**Fig. 2** and **Fig. 3**).

These indications refer to both existing foundations, proposing new interpretations, and new criteria that emerged from the needs observed. They lay the foundation for an approach that gives a useful outlook for the development, subsequently, of specific solutions to the above-mentioned problems, such as products, systems, services and infrastructures that can satisfy them (Fig. 4).

Fig. 2 Problems in the community of Santa Cruz, small community of descendants of former slaves, city of Paulo Lopes

Untreated water uptake and distribution. Water storage. Lack of Sanitation and Hygiene. The water is infected by coliform bacteria. Local children suffer from intestinal worms infections. In the federal government project “Casas para Todos”, the houses doesn't have a rainwater uptake and the sewage system was only partially installed.

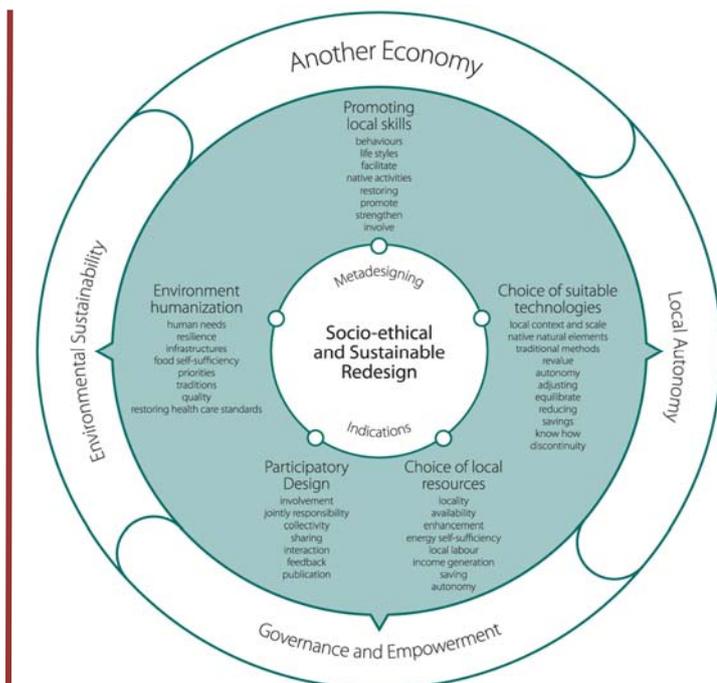


Fig. 3 Problems in the community of Sítio Novo, small community of fishermen, city of Imaruí

The community of Sítio Novo takes water from shallow wells. White Spot Syndrome Virus (viral infection of shrimp) has infected the lagoons since 2005. The local health center and the school of education are supplied with carboy mineral water. The buildings were built recently, without rainwater storage system. 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.



Fig. 4 Diagram of the metadesigning indications



5.1 Participatory Design

Design focuses on users and their needs. There is a shift from the direct involvement of specialists to the direct involvement of users. Users take part in the decision-making process becoming jointly responsible for the final product. Design becomes therefore an interactive process when the final result is achieved through subsequent adjustments steered by a continuous check of the final user's needs.

Within the context investigated, Participatory Design can offer the following advantages:

- promoting a community participation in local decision-making, political and strategic processes;
- giving voice to the subjects involved in the design problem;
- involving the communities in design decisions;
- introducing the product resulting from the design in the community resources;
- sharing views, strategies and tasks;
- allowing people to take part in the production of the things they need.

Within the context investigated, metadesigning indications of Participatory Design are:

- 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.

5.2 Choice of local resources

Design decisions must be steered towards the use of resources (material and energy resources) available in the area. The choice should favour the use of local and available resources, reducing the transfer of raw materials and promoting the use of local labour. This approach refers to the whole product-system, in other words must refer to the whole life cycle and to all related processes.

Within the context investigated, the choice of local resources can offer the following advantages:

- enhancing the materials existing in the area;
- promoting energy self-sufficiency;
- promoting sustainable exploitation of local biodiversity;
- promoting employment and integration of local labour;
- producing, keeping and allocating economic resources inside the area;
- reducing production, maintenance and improvement costs of products;

- promoting resilience and local autonomy.

For the context investigated, metadesigning indications for the choice of local resources are:

- 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 (Schneider, 2007: 123-131).

5.3 Choice of suitable technologies for local context and scale

The search for wider environmental compatibility frequently leads us to choose technologies that previously had good results in similar cases. However, when a technology is imported or adapted, the context where this technology operates in a sustainable way is not imported as well. That is, without taking into account local context and scale, foreign technologies lead to unsatisfactory and often self-destructive economic results. Sustainable techniques in harmony with a certain area are likely to be already in use or to have been used in the past. Technologies that use native natural elements and local traditional methods have lower costs and also support local economy without damaging environmental resources. To a certain extent, these technologies can be revalued and used in craft, semi-industrial and even industrial processes, still keeping the characteristics of sustainability. When technological import is inevitable, it should be avoided to introduce the purposes together with the means, that is, to turn the local culture into a copy of metropolitan cultures.

Within the context investigated, the choice of suitable technologies for local context and scale can offer the following advantages:

- adjusting design operations according to problem's extent;
- reducing costs;
- expanding products life and making design benefits longer-lasting;
- promoting local resources;
- generating income;
- avoiding obsolescence;
- improving local businesses;
- importing technologies in the form of know how
- promoting a transition to intrinsically sustainable technologies (technological discontinuity).

For the context investigated, metadesigning indications for the choice of suitable technologies for local context and scale are:

- 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.

5.4 Promoting local skills

Also in this case, the search for environmental compatibility leads us to adopt behaviour patterns that, at best, adapt to local life styles. At worst, they impose the use of foreign practices, damaging local habits and customs. Promoting local skills allows, on the contrary, to facilitate, through design decisions, native activities, including productive activities (related to agriculture, craft, industry and entrepreneurship) and cultural activities (related to art, sport, tourism and education) traditionally connected with the area.

Within the context investigated, promoting local skills can offer the following advantages:

- restoring, promoting and strengthening practices related to vernacular activities;
- restoring traditional techniques, methods, costumes and manufacturing;
- developing local knowledges and practices;
- promoting entrepreneurship and generating income;
- strengthening the connection between people and the area they live in;
- involving the community in design results;
- avoiding the domination of foreign stereotypes.

For the context investigated, metadesigning indications for the promotion of local skills are:

- 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.

5.5 Environment humanization

Humanizing the environment means to satisfy community and individual human needs through designing interventions aimed at modifying the environment. This refers to community resilience and to the building of the required infrastructures.

Within the context investigated, environment humanization can offer the following advantages:

- promoting food self-sufficiency;
- establishing design priorities regardless of market interests;
- reflecting local needs, possibilities and traditions in the environment and in the physical expression of artefacts;
- qualitatively modifying the area;
- restoring local health care standards.

For the context investigated, metadesigning indications for environment humanization are:

- 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.

6 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.

In conclusion, it is important to underline that a design approach based on degrowth opens the way to new professional implementations. In the past, designers carried out their tasks within the industrial and business fields, but today they also play the role of promoters of community designing and entrepreneurial capacities. Turning from an artefact designer for private customers into a planner of equipment aimed at building community autonomy and resilience.

References

- Bonsiepe, G., 1978. Diseño industrial, tecnología e dependencia. Mexico D.F., Editorial Edicol.
- Collina, Luisa, 2005. Design e Metaprogetto. Teorie, strumenti, pratiche. Milano, Edizioni POLI.design.
- Heinberg, Richard, 2004. La festa è finita. La scomparsa del petrolio, le nuove guerre, il futuro dell'energia. Roma, Fazi.
- Hopkins, R., 2009. Manuale pratico della transizione. Dalla dipendenza dal petrolio alla forza delle comunità locali. Bologna, Arianna Editrice.
- Latouche, S., 1993. Il pianeta dei naufraghi. Saggi sul doposviluppo. Torino, Bollati Boringhieri.
- Latouche, S., 2007. Per una società della decrescita, in: Bonaiuti, M. (edited by), Obiettivo decrescita. Bologna, EMI.
- Manzini, E., Jégou, F., 2003. Quotidiano sostenibile. Scenari di vita urbana. Milano, Edizioni Ambiente.
- Baffari, P., 2010. Immaginare la decrescita: sintesi e riflessioni, in: www.ariannaeditrice.it/articolo.php?id_articolo=30816, access 17/02/2010.
- Schneider, F., 2007. L'effetto rimbalzo. Per una critica dell'ottimismo tecnologico, in: Bonaiuti, M. (edited by), Obiettivo decrescita. Bologna, EMI.
- Thackara, J., 2008. In the bubble. Design per un futuro sostenibile. Torino, Umberto Allemandi & C.
- Vezzoli, C., Manzini, E., 2007. Design per la sostenibilità ambientale. Bologna, Zanichelli.



www.degrowth.eu