

# Creating ruptures in actual representations to support the design of sufficient and convivial way of lives

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## Summary

Society is front of a systemic crisis (resources scarcity, absence of citizen involvement, technological servitude). During the last years, a lot of initiatives, from different levels of society have emerged aspiring to more strongly sustainable ways of life. In this paper, we investigate how to support designers of alternative initiatives. We first argue the need to create ruptures in user behaviors when facing daily activities. In a second part, we propose and illustrate three activities supporting design for everyday simplicity : elicitation of user-system value contradictions, eco-ideation and design of learning and open environment.

**Key words** : strong sustainability, user behaviors, eco-ideation, learning and open environments

## 1. Introduction

### Context

Society is front of a systemic crisis (resources scarcity, absence of citizen involvement, technological servitude). Two major approaches are generally proposed:

The weak sustainability's objective is to maintain and expand the entire stock of resources. Among the possible solutions to achieve this, it advocates to develop alternative resources , renewable energy, to make more efficient use of existing resources or to seek technological solutions to problems such as pollution or decrease of these resources.

Strong sustainability, in turn, is aim to adapt to the Earth's resources rather than trying to maintain our current rate of consumption. Therefore, it based on a basis principle to redefine and adapt our consumption. It requires to completely revisit our lifestyle to be in line with a world of finite resources. This approach aims to demonstrate that the materialistic and consumerist approach of the company is in the wrong direction and therefore requires a radical change. Sufficiency consists in a proactive behaviors to reduce or adapt its consumption to environmental situations, involving means of increasing reflexivity on products and their use. Sufficient citizens are becoming aware of consumption impacts on natural ecosystems and want to learn how to better consume [Reichel, 2009], and live in a convivial ways [Illich, 2003].

### Diversity of initiatives

A lot of initiatives, from different levels of society have emerged in the recent year aspiring to more sustainable ways of life.

At the territory level, industrial ecosystems slowly tend toward sustainability by dint of normative, preventive or proactive approaches. As example, we can name corporate social responsibility (CSR) project, quality, environmental and health management, product regulations, eco-design, socially responsible investment (SRI), eco-labeling of products and process. Frugal, open source and complexity philosophy also pervade some companies bringing them to more agile practices, organic organizations and creative and autonomous people.

Original practices often emerged from individual or interest groups which experiment sustainable behaviors in local perimeters. New design spaces are emerging in response to people's needs for everyday creativity. Instead of designing solutions only for consuming, user experience design and co-design approach involve users differently and allow them to change their daily activities. (Sander, 2006) Thus, consumers become users, makers, co-creators, customizers, embezzlers creating collective gardens, self-help bike shops, alternative

currencies... Transition towns, slow movements, permaculture approach are citizen movements emerging from the wish to radically change behaviors.

Public policies, entrepreneurs, managers, ngO and citizens are all the designer of solutions toward a more convivial and low-carbon society.

In this paper, we investigate how to support designers of alternative ways of lives toward strong sustainability. We first argue the need to create ruptures in user behaviors when facing daily activities. In a second part, we propose three activities able to overcome such cognitive blockages: elicitation of user-system value contradiction, eco-ideation and design of cooperative, learning and open design environment. (*See figure1*)

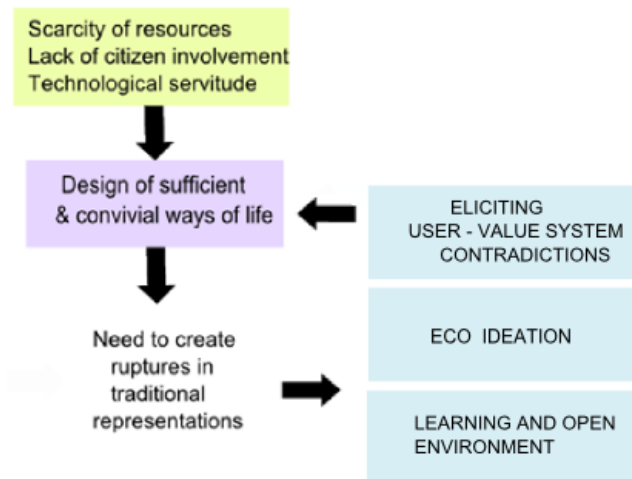


Figure 1 : Framework of the paper

## 2. User behaviors in daily activities : A need to create ruptures in traditional representations

### Eco-effectivity of daily activities

Our lives are composed of different type of daily activities (such as cooking, cleaning, doing laundry, using transportation, communicate) which can be realized in a lot of different manners more or less eco-efficient. Such activities need to be viewed as a process of interactions between systems and users : when cooking, user interact with a system containing aliments, tools (knives, casserol, stoves...) and natural elements (fire, water...) each part of the system consuming material, energy. System components and behaviors are evolving according to user preferences and habits, impacting differently on environment. [Abi Akle, 2013] shows that the effective environmental impact of an eco-labelled detergent solutions can be higher than a traditional one in case of bad use. Considering eco-efficiency in daily activities consist not only in reducing energy and material consumptions in all life-cycle of systems but also in optimizing them according to effective user behaviors.

### Complexity of user behaviours

Individuals are non-rational being, making decisions all the time. They spawn their own cognitive representations during their involvement in daily tasks. Their organization and optimization are always "local". It would obviously be desirable to consider things in all their essential and relational complexity, but at the same time, they are also obviously cognitively unable to embrace this complexity. More or less consciously, a person always requires fencing cognitive ambitions: realism, pragmatism, and limits of «feasibility» or cognitive boundaries driven by routines, rules, conventions, beliefs... [Lizarralde, 2012] Their ability to cope with their environment in performing such tasks is influenced by their system of values, habits and perceived and real constraints. Values are what drive how we behave in our everyday action [Domingo, 2013]. [Rokeach, 1973] defined values as an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence.

### Create ruptures in traditional representations

Facing to complexity, users manage their lives, “roadmaking” [Avenier, 1997], choosing the better choice in the framework of their cognitive representations. [Bussy, 2010] distinguish two types of strategies facing daily decisions : simplicity, is to do what is required by the situation, what is consistent and gives us some form of power over our lives, while easiness takes the most comfortable and direct path, that is an extension of the present state without questioning the fairness and societal impact generated by their actions.

Learning to adopt systematically simplicity strategy is not an easy task in reason of the omnipresence of cognitive dissonances and double binds present in user mind. Indeed, contradictions present in user value system could induce mental discomfort blocking the pathway to adopt adapted behaviors. [Wicklund, 2013]

In our research, we are looking for ways to make the pathway toward simplicity more accessible to designers of sufficient and convivial ways of lives. The following part of this paper present ongoing works consisting in developing a toolkit to design for simplicity. We believe that eliciting conflicts between user values, using ideation tools, and design learning and open environment are indispensable activities to tend toward more simplicity in its daily life.

### 3. Eliciting user value system in daily activity

Transitions toward strong sustainable way of lives transform user value system and way of managing daily decisions. Goings and coming are frequent between old and desire value systems. Contradictions could be more frequent and bad feelings more intense. From a psychological view, the acceptance and commitment theory suppose that it is only by accepting what we are that we are able to provide the necessary resources to act and manage our lives in the sense of values that we hold. Being aware of how we really act, stepping back and making the effort to be curious, to know alternative possibilities and take different viewpoints is first step for being pro-active in future changes. The following method aims to elicit user value systems in daily activity in order to better understand their preferences and behaviours, facilitating the identification of disruption necessity.

Inspired by Schneider’s dimensions of consumption and production capacity and Illich convivial tools, we synthesized 7 factors influencing daily decisions of users which are adopting sufficient thinking. (see table 1)

**Table 1: 7 factors influencing User Behaviors adopting Sufficient Thinking( UBaST)**

Influence factor	Description
<b>Time</b>	Time available & slow attitudes when doing its activity [Schneider, 2012][Honoré, 2010]
<b>Adaptability</b>	Importance of technological innovations and fashion cycle influing the activity and user social recognition [Gaudin, 1998]
<b>System and life-cycle thinking</b>	Capacity to go beyond result-oriented thinking and curiosity to learn about conditions in which products are designed and consequent of using it
<b>Empowerment</b>	Will of users to learn by doing things, to be more autonomous and cooperative [Illich, 2003]
<b>Product complexity</b>	Complexity of the utilized product (modularity, reparability, affordance) [Maycroft, 2004]
<b>Material resources</b>	Capacity of users to access to services and tools necessary to perform the activity
<b>Activism</b>	Involvement of users in defending their own convictions

The method, inspired by marketing, user-centred and soft system methodologies, is composed by 5 steps (see Table 2)

**Table 2: Eliciting value user system method process**

<b>Step 1</b>	<b>Choose a daily activity</b>
<b>Step 2</b>	List all possible systems to realize this activity
<b>Step 3</b>	Define global user profiles/segment for each system through the prism of UBaST. User profile can be constructed thanks to questionnaires, focus group, by collecting data or simply by collecting each participant impressions. The aim is to prioritize systems for each of the seven variables of the prism so as to design behaviors trends.
<b>Step 4</b>	Identification of contradictions for specific users & limits of actual systems.
<b>Step 5</b>	Diffusion and interaction with users

## Application: how do users behave face to bike maintenance?

Bike is a commonplace object [Maycroft, 2004] daily used to move from one point to another. Users often encounter some problems (air tube and tyre puncture, brake, seat post or suspension fork disturbances) which bring them to maintain or replace the bike. They can opt for five different systems.

- (1) “No maintenance” system: user decides to keep without using, throw away, resell or donate his bike and to buy a new one if needed.
- (2) « Maintenance service of a big company » system: user decides to bring his bike to a big company specialized in sport equipment. He pays for new components and labours and has to wait for 3 days for the delivery.
- (3) « Shared bicycle trailer shop » system: user does not own the bike. He uses a public bike system or rent a bike in trailer shop. In this case, he is not responsible for bike damages. The maintenance is ensured by an external repairer. Fees for maintenance are included in the initial deal.
- (4) “Do It Yourself” system: user decides to maintain himself the bike. He needs to have, buy and borrow a toolkit for maintenance & spare parts. The more complex the problem is, higher cognitive attention will be required. By choosing such system, user gains in autonomy.
- (5) “Self-help bicycle shop” system: user can choose to take part in a local organization aimed at encouraging the maintenance of bikes for all. Co-operators of the self-help bicycle shop retrieve and store second-hand bikes and maintenance toolkits, resell components at low prices. A free access to maintenance tools and a mutual aid is proposed for all co-operators. (see Figure 2)

User profiles were defined for each system (see Table 1 and Figure 2b). Thank to the graphic representation, several types of observations can be done:

- A comparison of the importance of variables for each segment: for instance, the “no maintenance” system seems to interest people born in an “I buy, I use, I throw away economy” [Bauman, 2008] who don’t have enough time, own sufficient material resources and a complex bike attracted by results and technological or esthetical improvements.
- An identification of possible alternatives according to specific user profile: If we consider people with few material resources, we imagine they will surely be constraints to choose (4) or (5) systems. If we imagine the same user with a bike too complex to be maintained, actually he has no solutions.

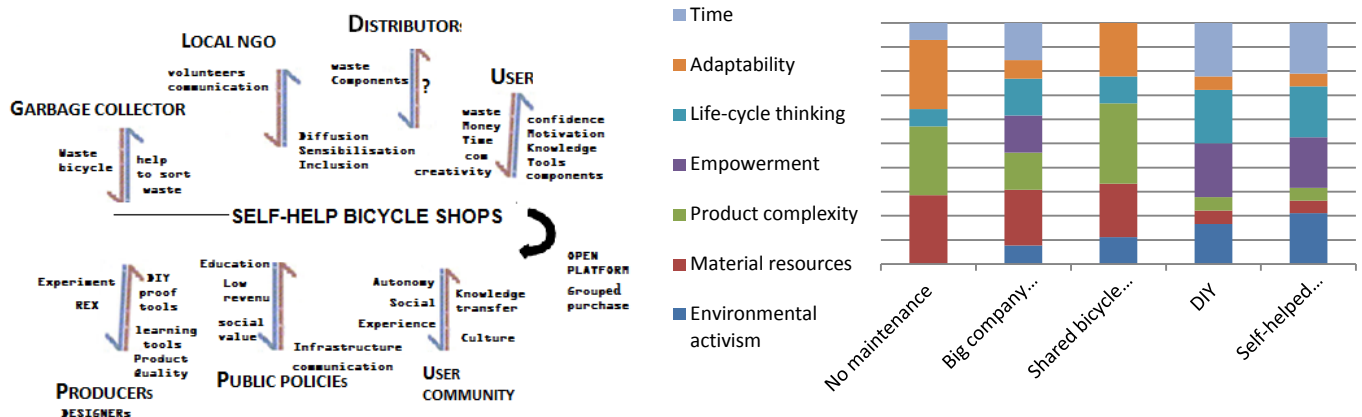


Figure 2 : (a) Actor-system interaction of self-help bicycle shops;  
(b) User profiles for each bike maintenance system

Such graphic representations need to be considered as “relevant to debate model” [Checkland,2000] : It can be read and manipulated by users, designers, industrials, public policies to better understand user behaviors vis à vis bike maintenance activity, to detect actual limits of each system and to imagine adaptive strategies to support user toward simplicity. For example, public policies can support research on bike modularity, develop self-helped bicycle shops in their cities while industrials can organize free training or online videos to explain how to optimize the maintenance of each type of bike...

## 4. Eco-Ideation

Thierry Thouvenot used to say “If desire is the engine of sustainable development, creativity is the fuel: it is creativity that will give the entrepreneur the impetus to imagine a product or service that will provide more (satisfaction of needs) with less (resources and labor).” Adopting sustainability requires to be creative and to imagine new ways of life.

However, in the current educational or institutional system, we are no longer used to think differently, and to imagine radical alternatives. Everybody has imagination, but imagination is more or less restrained depending on each individual. Users need to be encouraged in the emergence of new, more innovative and creative practices. Eco-ideation is a useful approach to create ruptures in traditional user representations. It consists in introducing sustainable principles in creative sessions. Eco-ideation must enhance the development of more desirable solutions and to go beyond current systems to propose radical thinking and new solutions. The success of the generation of ideas will therefore depend on the ability to open up new perspectives, find a new point of view, and therefore to put into perspective alternatives and new situations (Vidal, 2007).

Numerous tools, such as EcoASIT, have been developed to guide users in the generation of sustainable ideas [Tyl, 2011]. The objectives of these creativity tools are to destructure the problem and get used to explore new design spaces. Generally speaking, these tools provide a 3-step process:

- (1) They help designers to define an objective (reduction of consumption of natural resources, make a simple product, integration of minorities ...)
- (2) They provide input (such as verbal stimuli, provocative sentences, etc) to stimulate the group and to dismantle the problem.
- (3) They help designers to evaluate the ideas.

As an example, an eco-ideation tool was used to find new solutions to design bikes in a new sustainable (and simple) way. The objective of the session was to design a bike easy to repair, to adapt, to be customized, or that enhance the empowerment of users? Sentences using the three operators of Eco-Asit tools were used to help people during the session as for instance, “*how RELATING users AND suppliers can make an easy-to customized bike*”; “*how DELETE materials will provide new opportunities to bike maintenance*”. Finally ideas are evaluated and discussed. (See figure 3)

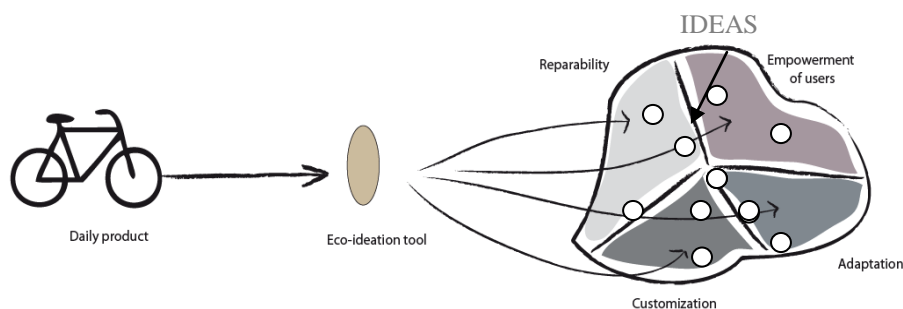


Figure 3: Eco-ideation process for designing sustainable bike

## 5. Cooperative, learning and open design environments

The social creation of alternatives should be as rewarding as it were, in their time, new technologies (Thackara, 2008). It is necessary, according to (Gaudin, 1998) to direct and channel innovation policy on socially and environmentally useful and desirable objectives, taking into account the objectives of general interest. For example, note that in the report on sustainable consumption, it is recommended to rely on identifying local initiatives, and "testing" viable solutions to deploy nationally (Centre for Strategic Analysis, 2011). [Ceschin, 2013] describe the key steps of such socio-technical experiments development : incubation of concepts, implementation of small scale, empowerment of a niche and scaling up. During all these steps, designers are influenced by their environments. Design environment is defined here as “all elements that surround designers, some of which contribute directly to meet their needs”. There is interdependency between designer propensity to change their habits and the environment in which they are growing. [Cucuzella, 2008] highlight that the precaution principle that entails the logic of strong sustainability involved the creation of not coercitive but **cooperative and learning design environments**. Enaction theory [Varela] considers collective learning as a complex phenomenon involving "networks of human or system brains" in inter-action in concrete and situated conditions.

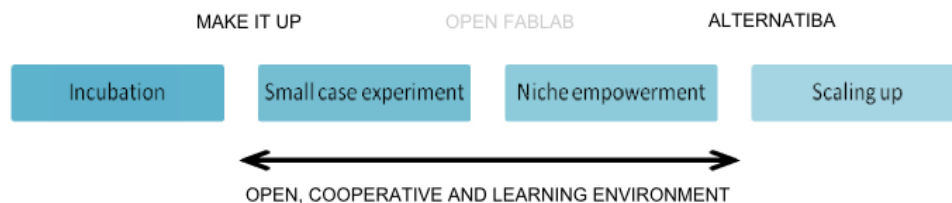
Considering network and organic model of collective learning, we consider the design of open labs as an original way to support the development of cooperative and learning environment. Open labs are ephemeral or constant, virtual or physical places aimed at supporting the emergence and maturation of initiatives. Most diffused labs are open innovation process, MIT model of fablabs, makerplaces [Bottolier,2012] and more recently “tiers lieu“ labs[Leonard, 2013].

Researchers actively participated in the design of the two projects seen as ephemeral open lab interfering in different parts of socio-technical experiment development. (See figure 4)

**MakeItUp**<sup>1</sup> is a festival of reprogramming obsolescence aimed to promote the emergence of new upcycling projects that create connected objects from waste and recovered materials and give them a second life. The process consist on a 3 days smart mobilization or SmartMob whose purpose is to allow talents to be revealed, fresh ideas to be prototyped, participants to work in a creative and friendly environment. It is based on a short time, a rhythmic process, multidisciplinary teams, coaches and facilitators and fast prototyping. Moreover, open source and free software philosophy guided the MakeItUp process: devices were fully documented and diffused on a website, CAO files are available and prototypes have used free and open microprocessors Arduino.

**Alternatiba**<sup>2</sup> is an event dedicated to diffuse concrete alternative societal models which currently exist and mobilize people before the next climate forum which is situated on Paris in 2015. The first Alternatiba was organized in Bayonne only a few days after the release of the 5th IPCC report. 12 000 people gathered in the city center, and occupied the streets for a day and could participate to conferences, exhibitions, stalls, workshops and demonstrations, but also to popular festival, festive meals, artistic wanderings, songs and dances, etc. Each district were invaded by alternatives in on of the specific areas: biological and peasant farming, relocation of the economy, land management, transport, energy economy, eco-habitat, the social conversion of finance and ecological production, responsible consumption, work-sharing and wealth, reduction and recycling of waste, preservation of common goods such as water, land and forests etc..

This event can be seen as an ephemere, physical and virtual open lab testing and scale-up socio experiments with a high capacity to motivate people in designing their lives toward strong sustainable way of lives.



**Figure 4: Development of socio-technical experiments**

As a feedback of these participative experience, we propose some precaution principles for the design of open lab in the early stage of socio-technical development :

- Sufficient and convivial values need to be diffused in lab places (website, communication files) so as to facilitate its integration by participants.
- Some challenges need to be organized to catalyst collective action
- People need to find interests in being in the place. They are free to participate and to disengage as they want.
- All knowledge and created products are shared in an open source philosophy.
- Means for internal exchanges group in gestation must be implemented, so as to prototyping capacity.

## 6. Conclusion

The paper has presented the result of ongoing works aimed at supporting the design for simplicity necessary to tend toward sufficient and convivial way of lives. Two contributions could be considered:

<sup>1</sup> [www.makeitup.fr](http://www.makeitup.fr)

<sup>2</sup> <http://alternatiba.eu/>

- A framework synthesizing 7 factors influencing User Behaviors when they adopt Sufficient Thinking (UBaST)
- The first version of a toolkit containing a description of three useful activities to create ruptures in traditional representations.

In futures works, we are looking for experimenting such methods and evaluating their influence on different actors of society.

## Acknowledgement

The authors wish to thank APESA<sup>3</sup> and BIZI<sup>4</sup> for their respective support.

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<sup>3</sup> [www.apesa.fr](http://www.apesa.fr)

<sup>4</sup> [www.bizimugi.eu](http://www.bizimugi.eu)