

# Scenarios of sustainable ways of living

## Local and global visions: first results of an international program of design workshops

Ezio Manzini, INDACO, Politecnico di Milano

### Abstract

*In the transition towards a sustainable society, shared visions are needed to orient the political and economical debate and to conceive and promote sustainable solutions.*

*Scenarios and, specifically, the design-orienting scenarios (DOS), may play an important role in promoting the social generation of these shared ideas and, more specifically, in creating favourable conditions to conceive and develop sustainable solutions.*

*In this framework, scenario building becomes a new, specific and socially relevant design activity.*

*The paper discusses these themes presenting the results of some design workshops on “Scenarios of sustainable ways of living”, that recently have been held in several places (in Europe<sup>1</sup>, in China<sup>2</sup>, in Japan, Korea and Canada<sup>3</sup>).*

*The paper is organised in three parts: (1) the introduction of the design-orienting scenarios and of their potential role in the generation of sustainable ideas of wellbeing, (2) the discussion of the traditional and emerging ideas of wellbeing and of a general framework of new, sustainable ones, (3) the discussion of the workshops results.*

The lack of shared visions on how a sustainable wellbeing could be like is effecting negatively not only the most general debate on the political and economical moves to be done at the scale of the whole society, but also the technical discussion on how to promote *sustainable solutions* at the micro-scale of the daily choices that have to be done by people, to decide their own “strategy of life” or , for the companies, to compete in the market.

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<sup>1</sup> In the framework of “*SusHouse.Strategies towards the Sustainable Household*”: a research funded by the European Union’s Environment and Climate Research programme Theme 4: On Human Dimensions of Environmental Change (ENV4-CT97-0446). The research has been co-ordinated by the Delft University of Technology and has been concluded in the year 2000.

<sup>2</sup> In the framework of “*Hong Kong – Mainland China Network on Design for Sustainability*”: a research funded by the Hong Kong Polytechnic University. The research started in the year 2001 and it is developed in the framework of a joint-programme with CIRIS-Politecnico di Milano – Italy, and with the Hunan University in Changsha – China

<sup>3</sup> In the framework of “*A global network on design for sustainability*”: an on-going Program of activities promoted by the CIRIS-Politecnico di Milano.

Facing these issues, the following paper considers the potentiality of the use of *scenarios* and, specifically, the *design-orienting scenarios (DOS)* in the process of conception and development of sustainable solutions.

In its first part, it introduces the concept of scenario (*Ideas of wellbeing and scenario building: a social role for designers*), discussing its specific meaning when designers are concerned, the *design-orienting scenarios*, and the role of this specific family of scenarios in the implementation of complex innovative processes.

The second part of the paper (*Visions of the present, and beyond: from unsustainable to sustainable ideas of wellbeing*), presents the traditional and emerging ideas of wellbeing, their unsustainability, the rebound effect and a model to interpret why the ongoing efforts to reduce the overall consumption are not getting positive results. On this basis, a vision of possible sustainable wellbeing is outlined.

The third part of the paper (*Sustainable ways of living: scenarios of everyday life in Europe and in China. Research results*), presents the results of two series of design *workshops on scenarios of "sustainable ways of living"*, that have been recently held in Europe and in China.

## **1. Ideas of wellbeing and scenario building: a social role for designers**

The transition towards sustainability will effect every dimension of the socio-technical system in which we live (the physical one, as material and energy flows, the economic and institutional one, as the relationships between social actors, the ethical, aesthetic and cultural ones, as the value criteria and the quality judgements) and it will touch all the scales of time and space at which it works (from the short time and the micro-scale of the single product or service, to long time and the macro-scale of the global socio-technical system) (Weterings, Opschoor, 1992, Weaver, et al, 2000)

The result is that not only it is impossible to foresee how and at what pace this transition will take place, but it is even very difficult simply "to see the present", i.e. to recognise how it works today and in which way and where "the new" is appearing (Manzini, 1999).

This kind of blindness is not so strange: given to its complexity, the transition towards sustainability will be very far from being a linear evolution. On the contrary, it will be a complex *social learning process*: a sequence of events and experiences thanks to which, progressively, amid mistakes and contradictions – as always it happens in any learning process - human beings will learn to live in a sustainable way.

### **1.1 Visions of sustainable future**

The concept of wellbeing is the most basic set of visions and ideas that legitimate socially and ethically the same existence of the production and consumption system. Implicitly or explicitly, this theme is one of the major issues under discussion. But, as clearly appears looking around us, this discussion is very, very difficult. And, again, even though, in principle, nobody denies the necessity of adopting sustainable life-styles, no one has any idea of what they should be like (Manzini 1999a)

Clearly nobody, at the moment, has the answer to the question on how wellbeing should be developed in order to generate (environmentally, socially and economically) sustainable life-styles because it is still too soon. The answer will emerge during the coming decades, and, as we have said, it will be the result of a long, complex –and probably contradictory – social learning process. But precisely because this has to be a long learning process, some hypotheses and possibilities have to be discussed and verified right now.

In this framework, scenarios, and specifically the ones that have been defined as design-orienting scenarios (Manzini, Jègou, 2000), may play the role of catalyst of actors and triggers of new ideas and solutions.

### **1.2 Policy-orienting scenarios (POS) and design-orienting scenarios (DOS)**

The most traditional scenarios have been developed in the framework of the Future Studies (Masini, 1993) and are finalised to evaluate the macro-trends evolution and impact, and to discuss the related political and/or economical decisions to be taken. These scenarios, that usually deal with the macro-scale of the socio-technical systems and present a variety of possible futures, have been widely used in relation to the environmental issue and to orient the consequent environmental policies.

Here we will not consider this typology of scenarios, which we can refer to with the expression Policy-Orienting Scenarios (POS). Vice versa, our interest will be focused on a more recent family of scenarios that have been defined "Design Orienting Scenario" (DOS) to stress that, rather than to facilitate political decisions, they are conceived as tools to be used in the design processes (Manzini, Jègou, 2000).

In its most common interpretation the word scenario is considered as synonymous with *vision*: the vision of a hypothetical future. But the scenarios that we are referring to here are more than this kind of visions. In particular, for what regard the DOS, they have to propose a *variety of comparable visions* that have to be clearly *motivated* and enriched with some visible and (potentially) feasible *proposals*. And, finally, they have to be *assessed*. In other words: they have to be visions based on considerations that the "scenario builder" may share with, and eventually build with, the potential "scenario users", proposing them as an integral part of the scenario itself.

### 1.3 The design-orienting scenarios structure

It's not the aims of this paper to present the design-orienting scenario approach and methodology in depth. But to use them in our discussion, we have to briefly introduce some of their specificity, for what concerns their *structure* and their *characteristics*. Regarding their structure, design-Orienting scenarios are articulated in three components:

- *Vision*: it is the most specific component of the scenario. It answers to the basic question: "how the world will be like if ...?". It gives a image of a whole context of life and shows how it could appear if certain behaviours would take place and certain proposals (in our case some products and services) would be implemented.
- *Proposal*: it is the component that, giving concrete form to a vision, transforms that vision in a real scenario. It answers to the question "what has to be done to implement that vision?". It presents some visible and comprehensible set of products and services that have to be coherent with the general vision and, at the same time, that have to be – in principle- feasible.
- *Motivation*: it is the component that gives the meaning and legitimisation to the scenario existence. It answers to the question: "why this scenario is relevant ...?". It is the most rational and technical component of the scenario building process and it is composed by general and specific goals (and by their final assessments).

### 1.4 The design-orienting scenarios characteristics

For what regard the design-orienting scenario characteristics, they are:

- *Plurality*: they identify alternative solutions and/or contexts in order to assess their economic, social and environmental implications.
- *Feasibility/acceptability* : they are based on some existing technological and/or socio-economical opportunities.
- *Micro-scale* : they refer to the scale of the *contexts of life*, i.e. to a physical and socio-cultural space in which actions (performed by individuals or groups of individuals) take place.
- *Visual expression* : they presented visual images of coherent contexts and proposals, with the aim of giving synthetic and concrete suggestions of how they could be like.

- *Participation* : they facilitate the convergence of different actors on a common vision that has to act as catalyst in the network building and in the partnership generation processes

## 2. Visions of the present, and beyond: from unsustainable to sustainable ideas of wellbeing

To develop scenarios of sustainable wellbeing, the first step to take is to enable people (individuals inside and outside the companies, communities and profit and non-profit organisations) to escape from the powerful images produced and socialised in the past and in more recent time, that are now totally inadequate to face the new challenges (Manzini, 2001a, 2001b)

### 2.1 The product-based wellbeing

At the beginning of the industrial era the combined development of science and technology brought to human beings possibilities never seen before: the possibility of *materialising* complex services in the form of products (a laundry service which materialises in washing machines, the service of playing music which becomes a radio or a record player) and the possibility of *democratising access to them*, producing them in increasing quantities at decreasing prices.

This unprecedented possibility brought with it an extraordinary spread of a particular form of wellbeing. A wellbeing that was recognised precisely in the possibility of individually possessing, showing off and consuming the products. And, moving towards more recent times, and more affluent societies, the possibility of choosing between different options and devising, in this way, a personalised set of products.

In the framework of this vision, which we can define as the vision of *product-based wellbeing*, the emerging idea is that life choices tend to be considered as choices among marketable goods and that, as a consequence, freedom of choosing is coincident with the freedom of buying (metaphorically, the contexts that best express this vision are the big *shopping malls*: places where there is the widest choice and, if we have the money to do so, the greatest opportunity to buy whatever we prefer).

The problem of this vision of wellbeing is that (as in the last two or three decades we have been forced to discover) it is intrinsically environmentally and socially unsustainable. And this for several interrelated reasons that in these years have been widely discussed.

### 2.2 Rebound effect

Facing this discovery of the environmental problems related to the diffusion of the product-based wellbeing, the environment has come onto the agenda of both politics and the economy, many products have been transformed and the environmental efficiency of each has, in general, been greatly enhanced.

In other words, considering, one by one, the various artefacts introduced in the overall socio-technical system, it might seem that the technical production system has evolved and is evolving in the right direction, that it is progressively becoming more environmentally friendly. Unfortunately this is not the case.

If we move from a consideration of the environmental quality of each single product to a consideration of the system as a whole, we realise that the situation has in no way improved, rather the overall consumption of environmental resources continues to increase. In fact, in the framework of the product-based ideas of wellbeing, and of the product-based economy behind it, these interconnected phenomena tend to happen:

- Downsized, leaner products tend to become throwaway goods and, for this reason, to proliferate.
- Friendly interfaces make simpler to do previously difficult or tedious activities, and so these activities too tend to proliferate (for instance, it has never been so easy to print documents as it has been since

computers came into existence, and consequently for every document produced we print innumerable versions)

- Good communication systems permit to connect people without moving them, but it has never been so necessary to move as it is now (telematic connection is fine but every so often it is necessary to meet each other face to face!).

The great, and in many ways tragic, discovery of this period is just this: the boomerang or *rebound effect* - by which actions expected to have environmentally positive effects, in fact bring insignificant, if not actually negative results. And technological improvements, meant to improve the products and services eco-efficiency, for reasons that are rooted in the complexity of the overall socio-technical system, seems “naturally” to become new opportunities for consumption, i.e. increases in the system unsustainability. The same kind of phenomena, unfortunately, is happening today with the emerging access-based wellbeing.

### 2.3 The access-based well-being

Considering the dominant ideas of wellbeing, in the last decade, something started to change, at least as far as mature industrial societies were concerned. This change, that has to be related to the on-going shift towards an economy based on services and knowledge, can be summarised in the slogans “from the material product to the intangible” (IPTS, 1999a), “from consumption to experience” (Pine, Gimore 1999) and “from possession to access” (Rifkin, 2000). All this seems good: in principle, access to services and experiences which satisfy intangible needs appears to be a promising concept, an idea on which to built some form of sustainable lifestyle. Unfortunately, as we will see, reality shows a completely different picture. In the framework of this new economy the central position of the material product in the definition of wellbeing becomes obsolete: wellbeing no longer appears linked to the acquisition of a “basket” of material products, but rather to the availability of access to a series of services, experiences and intangible products. More specifically: in a society saturated with material goods, to focus on the immaterial seems more interesting. And, at the same time, when life-styles are characterised by speed and flexibility, the ownership of material products appears too heavy and rigid a solution, something that increases the inertia of the system (which, on the contrary, is intended to be as light and flexible as possible) (Rifkin, 2000, Bennet, 2000)

In fact, in coherence with this vision, which we may define as the vision of *access-based wellbeing*, quality of life is related to the quantity and quality of services and experiences which it is possible to have access to. And, consequently, the idea of freedom tends to be coincident with that of *freedom of access* (metaphorically, the contexts that best illustrate this vision are *theme parks*: places where, at your pleasure, you can choose your thrills among many, and where everything has been carefully thought out to offer you an “exciting experience” – if you have the money to buy the tickets).

### 2.4 The rebound effect, in the “age of access”

The problem with this emerging vision of wellbeing is that, even though it breaks the direct link between wellbeing and consumption of environmental resources, practically, while developing in the present cultural and economical context, it may become even more unsustainable than product-based one (IPTS 1999b, Manzini 2001). And this for several interconnected reasons:

- The new “intangible needs” tend to be added, and not to substitute, the old “material ones”.
- The speed and flexibility of new life-styles imply the same speed and flexibility in access to services which, for this same reason, proliferate.
- Services and experiences, per se, may be immaterial, but their delivery may be highly material intensive.

In conclusion, the access-based idea of wellbeing, applied in the way in which it is taking place now, brings insignificant, if not actually negative results. The question that we cannot escape is: why does it happen?

Why, whatever we do, the final result turns out to be a further increase in the consumption of our environment?

If the reasons for the environmental and social un-sustainability of the product-based wellbeing have been very widely discussed far less discussed has been the issue related to the sustainability or unsustainability of the access-based wellbeing.

In the following paragraphs some hypotheses will be formulated. These hypotheses will be the basic framework of the scenarios of sustainable wellbeing that we want to build.

## **2.5 The crisis of *common goods***

Our first hypothesis of work is related to the existence of a strong relationship between rebound effect and the crisis of the common goods, and in particular, of the local common goods.

The expression local *common goods*, that is the pillar on which this first hypothesis is built, stands for “goods” that belong to everybody and nobody in particular. And that - until they remain “common” - cannot be reduced to marketable products and cannot therefore be bought or sold.

Examples of common goods range from basic physical resources, such as air and water, to social resources like a neighbourhood community or the civic sense of its citizens, up to more complex resources such as the landscape or an urban public space or a “sense of security” in a town.

It is clear that these common goods constitute a fundamental part in the construction of a human habitat, i.e. in the definition of the quality of the physical and social contexts in which human beings live, and in which products themselves take on meaning.

Nevertheless, in the models of wellbeing which have been dominant in industrial societies up to now the central position held by individually acquirable goods (whether products or, more recently, services) has caused, as a highly tangible side effect, an underestimation of the role which common goods assume in the actual definition of a state of wellbeing. The consequences have been the complementary phenomena of:

- *Desertification*: the neglect and, consequently, the degeneration of the common goods, considering them as insignificant or considering their deterioration as inevitable (assuming it as a sort of penalty to pay to progress and to the quest for wellbeing).
- *Marketisation*: the transformation in market goods of some components of the traditional human habitat that previously had been common goods (i.e. often assuming that their privatisation would be the way to avoid their deterioration – see the present world-wide debate on water management).

## **2.6 The disappearance of the *contemplative time***

The second hypothesis of work is related to the relationship between rebound effect and the crisis of the contemplative time.

The expression *contemplative time*, that is the pillar on which this second hypothesis is built, stands for a time that is used “to do nothing” and, nevertheless, is not empty, nor meaningless.

Examples of contemplative time range, of course, from looking to a sunset to making some spiritual exercises. But we may assume that there is a bit of contemplative time also in doing something (walking, eating, talking with people,...) at a slower pace.

Traditionally, the contemplative time has been an important part of the life and it had been considered as a privilege (as a matter of fact, poor people hadn't had a lot of possibilities for contemplating) (Offe, Heinze, 1997). Now things are changed and the contemplative time is disappearing for both the wealthy and the poor. This disappearance is caused by two complementary phenomena concerning our use of time:

- *Saturation*: the tendency to saturate every moment with something to do, and, more and more frequently, to stuff it with several things to do at the same time.
- *Acceleration*: the tendency to do everything at a faster pace to have the possibility (or the illusion) to do more.

## 2.7 Proliferation of *remedial* goods

If we consider the past century, we can empirically observe how the spread of goods and services for private use and consumption has run parallel to the common goods deterioration and to the disappearance of the contemplative time.

Facing this observation, our third hypothesis of work may be articulated in this way:

- There is a *relationship* between the diffusion of market goods (if ever more sophisticated and efficient) and the crisis in common goods and contemplative time, and in all that they bring as their specific, cost free, contribution to the definition of “a state of wellbeing”.
- There is a second *relationship* between the crisis in common goods and contemplative time, and the proliferation of new *remedial goods*, i.e. products and services that try to make acceptable a context of life that, per se, is heavily deteriorated.
- The growth in consumption of remedial goods, in turn, brings to more consumption, and to a further crisis of both common goods and contemplative time. And so on in a negative auto-reinforcing cycle.

The concept of *remedial goods* is obviously the central issue in this hypothesis. The common character of the remedial goods is that their use or consumption is not improving the quality of life or opening new possibilities for the user (as it could be the case for a new washing machine for a person that, until then, had washed by hand). What they do is simply to (try to) restore a degree of acceptability to a context of life that has been degraded.

The meaning of this definition immediately appears if we consider the crisis of some basic common goods: we buy “bottled distilled water” because natural, local water is polluted, we move to faraway “tourist paradises”, because the beauty nearby has been destroyed, we buy electronic and telematic domestic security systems, because neighbours no longer discretely, and at no cost, keep an eye on the house, and so on.

Even if it may be less evident, the same concept of remedial goods may be used in dealing with the disappearance of the contemplative time: we buy and we consume a growing number of products and services “to stuff the time”, to kill the sense of void left by our incapability to enjoy contemplative time or, simply, to do something at a slower pace. In this case, i.e. considering the relation between goods and the disappearance of contemplative time, it is not easy to establish with a sharp precision, which goods are the remedial ones and which are not. But we could easily say that a lot of them, from TV, to mobile phones, to junk food, have inside a strong remedial component.

## 2.8 Sustainability and contexts of life

In conclusion of this part, we can assume that un-sustainability, at the local scale, is a process of deterioration of the contexts of life, caused by the crisis of the common goods and the disappearance of the contemplative time.

The expression *context of life*, here, denotes a physical and social environment (the habitat of person) and a set of possibilities (the possibilities, for this same person, to make his choices). For what regards its quality, it is given by the way in which different systems (natural and artificial, physical and socio-cultural, market goods and common goods) match together (Manzini, 2001c).

As a matter of fact, in the present socio-economic system, we are witnessing the double process of crisis of the common goods and disappearance of contemplative time and of the saturation of the time and space with remedial and “entertaining” goods and services.

This double phenomenon is particularly dangerous because, as we have seen, the different drivers reinforce each other in a negative circular process: more consumption, more context degradation, more consumption (of remedial goods).

If these hypotheses are correct, it comes that every idea of wellbeing, to be sustainable (or at least, to have some probability to be sustainable) has to consider the overall qualities of the *contexts of life*. More precisely: it has to be based on the access to a variety of products and services, but also, or even more, on the quality and quantity of the available *common goods* and *contemplative time*.

## 2.9 Context-based wellbeing and regenerative solutions

In this conceptual framework, we can start outlining our scenarios of sustainable wellbeing indicating their motivations, i.e. their goals and their criteria.

*Goal:* we have to conceive scenarios of wellbeing in which the overall quality of the context of life has to be considered, in which the physical and social common goods are regenerated and where contemplative time has its place.

*Criteria:* we have to conceive scenarios, and the proposals that give them a concrete form, that have to be consistent with two major criteria:

- *Low material-energy intensity:* this is the most traditional set of criteria for sustainability, and it remains the fundamental one (Shmidt-Bleek, 1993, Fussler, James, 1996, Brezet, Hemel, 1997): whatever solution could be proposed, it has to be highly eco-efficient (keeping count of the overall life-cycle of the related artefacts).
- *High regenerative potential:* it is the set of criteria for sustainability that comes from our previous considerations and hypotheses of work and integrating the different but converging proposals of some innovative thinkers on the concept of regenerative economy (Hawken, 1994, Pauli, 1997, Sthael, 1999) : whatever solution could be proposed, it has to act as positive agent in the regeneration of the contexts qualities.

On these bases, we can start to imagine the most general outline of the scenarios of sustainable wellbeing that we would like to build:

A sustainable wellbeing has to be related to the qualities of the contexts of life and has to be based on solutions that have to be *at the same time* lean *and* regenerative (i.e. with low material-energy intensity *and* with high regenerative potential)

## 3. Sustainable ways of living: scenarios of everyday life in Europe and in China. Research results

In this final part the paper presents two examples of scenario building. In particular, it refers to two groups of workshops, that have been held in Europe and in China, to generate scenarios of sustainable ways of living:

- The *European workshops* have been organised in the framework of the research *SusHouse.Strategies towards the Sustainable Household* (Vergracht, Green, 2001, Manzini, Jegou, 2000)<sup>4</sup> and have been held in four countries (Italy, Germany, Great Britain, the Netherlands and Hungary). These workshops have been specifically oriented to the development of household scenarios.

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<sup>4</sup> *SusHouse.Strategies towards the Sustainable Household*, a research funded by the European Union's Environment and Climate Research programme Theme 4: On Human Dimensions of Environmental Change (ENV4-CT97-0446). The research has been co-ordinated by the Delft University of Technology and has been concluded in the year 2000.

- The *Chinese workshops* have been organised in the framework of the research “*Hong Kong – Mainland China Network on Design for Sustainability* (Manzini, 2001d, Manzini, Leong, 2001)<sup>5</sup> and have been held in four different universities in China (Changsha, Guangzhou, Beijing and HK). They have been specifically oriented to the development of scenarios on residential services.

These two experiences, which may not be discussed in depth in this paper, present some strong similarities both on the methodological side and on the output side.

### 3.1 Design orienting scenarios: two comparable experiences

In both the European and the Chinese cases the workshop methodology has been very near to the one proposed in the paragraphs on design-orienting scenarios (DOS) and may be summarised in the following steps:

*Motivation:* the general and specific goals are given and the design workshop brief is presented. In our case they have been: “sustainable households functions”, in the European workshops, and “new residential services for sustainable ways of living”, in the Chinese ones.

*General vision:* the framework of the vision and the basic criteria of sustainability are given. In our case they have been: “low material-energy intensity” and “high regenerative potential”, with a particular emphasis of enhancing the local, social and cultural resources, in the Chinese workshops.

*Proposals:* an exercise of creative concept generation brings to a variety of *wild concepts*. These concepts are selected and clustered. The result is a set of *promising proposals* that are developed and visualised.

*Emerging scenarios:* the promising proposal are analysed, discussed and clustered on the basis of their most relevant characters. These new clusters of proposals permits to outline a set of specific visions that are, at the same time, coherent with the general one and with the cluster of promising proposals, i.e., given our definition of scenarios, they are an early form of scenario, the *emerging scenarios*.

*Assessment:* the emerging scenarios are discussed and assessed. In our cases, the European workshops outputs have been assessed utilising a set of simplified methodologies that have been originally developed inside the SusHouse research itself (Young, 2000, Bras-Klapwijk, 2000), while the Chinese workshops – at the moment – have been only qualitatively assessed (confronting them with the initial motivations and the general criteria of sustainability).

*Promising scenario:* the assessment of the emerging scenarios permits to select and to consolidate a limited set of *promising scenarios*.

We define these scenarios as “promising” (and not simply “sustainable”) because, in their development, it is impossible to assess them in a complete way, i.e. keeping in count of all the criteria for sustainability. Nevertheless, in a dynamic vision of the learning process that these scenarios will facilitate, they appear, for reasons that have to be motivated case by case, promising and capable to trigger new ideas and new behaviour

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<sup>5</sup> *Hong Kong – Mainland China Network on Design for Sustainability*, a research funded by the Hong Kong Polytechnic University. The research, concluded in October 2001, has been developed in the framework of a joint-programme with CIRIS-Politecnico di Milano – Italy, and with the Hunan University in Changsha – China.

One of the research output has been the promotion of a “Chinese Network on Design for Sustainability”: a network of design schools finalised to the diffusion of design for sustainability in China.

These promising scenarios, that are the result of our scenario building exercise, are discussed and described focusing on their most characterising aspects.

### 3.2 Visions and proposals: three major scenarios

The discussion and comparison of these two groups of design workshops are now in progress. Nevertheless, some very early consideration may be presented.

In both the European and Chinese workshops results, some common characterising aspects has emerged. In particular:

- The attitudes towards “care” (the care of what has to be done to get a result in a sustainable way) and toward the “user empowerment” (the way in which technology helps users in taking care of the process).
- The attitudes towards the “social relationships” (the kind of relationships that has to exist to get that result) and towards the “community empowering potential” of the implied technological and organisational systems (the way in which these systems facilitate the development of collective actions).

Assuming these two characters as “organising concepts”, the output of the two groups of design workshops have generated three major categories *promising scenarios*<sup>6</sup>:

**“DIY+”** *Enabling-individual solutions*. In this scenario people individually take an active part in the solution employing *enabling tools*, i.e. technological systems that permit them to use at best their personal resources (and to get the result in an environmentally and socially positive way).

In this scenario, the *intelligence of the system* is given by its capability to integrate and enhance the intelligence of each single user.

Image of reference: a *do-it-yourself world*, in which individual people – empowered by technological devices - are actively involved in finding out their solutions and in regenerating their contexts of life.

**THANK YOU !** *Relieving-collective solutions*. In this scenario people have access to a variety of *eco-efficient relieving services*, i.e. services that deliver solutions with the least user’s effort and with the best environmental performances (thanks to their optimised dimension).

In this scenario, the intelligence of the system is mainly embedded in the technological and organisational system that delivers the solution.

Image of reference: a *green-hotel world*, in which individual people adopt some eco-efficient and socially responsible services to be relieved of some daily duties.

**ME&US.** *Enabling-collective solutions*. In this scenario people take an active part in the solution having access to a *socialised, and socialising, enabling system*, i.e. participating to social activities that permit to use at the best their individual and collective resources (and to get their results in an environmentally and socially positive way).

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<sup>6</sup> The *inertial scenario* is: **“NO CARE”**: *relieving-individual solutions*. This is the inertial scenario because it is the one that would take place if nothing happen. This scenario is NOT a promising scenario because it doesn’t correspond to the general motivations and the criteria of sustainability (it is completely based on the hope of a “miracle” technology that should be able, per se, to solve every problem).

In this scenario, the *intelligence of the system* is embedded both in the technological and organisational systems and in the intelligence of the users (considered as individuals and as social groups).  
Image of reference: a *co-housing world*, in which individual life is blended with some forms of social organisations that permits, at the same time, to socialise and to share some resource-consuming systems and to positively operate for the regeneration of the social contexts of life.

### 3.3 Global and local visions

The three outlined scenarios propose three global visions: ideas of wellbeing that have emerged in both the Chinese and European workshops and that may be defined as “promising” because, in different way, they express a positive tension: the search for ways of living based on solutions that may be, at the same time, low-resources intensive and with a good degree of regenerative potential. These visions, as we have said, are “global”. But, looking more carefully inside the two groups of workshops, something else, some other images, emerge: visions, or better components of visions, that appear as the surfacing of some deeper cultural layers.

It is not easy to outline this local specificity (this part of our research is still in progress). Nevertheless, if we consider many of the expressions that during the workshops, both in Europe and in China, have been implied (as for instance: *community vs. individuality* and *local roots vs global links*), we may observe interesting differences in their use. These differences of meaning are (obviously) not surprising, given the distance between the European and the Chinese traditions. The difficulty is to recognise them and to give them a role in the making of the future proposals. And here we have the real challenge for the scenario building: to put in light these differences, to make them become the fertile background for the development of original, localised, sustainable solutions. Sustainable solutions in which the necessity to answer to the new emerging global demands is blended with the capacity to recognise the local ones, even when they appear in brand new forms.

## Bibliography

Ayres R.U., Simonis, U.E. (1994) *Industrial metabolism*, United Nations University Press, Tokyo.

Bras-Klapwijk, R. (2000) *Environmental Assessment of Scenarios*, Final Report, SusHouse Project, Faculty of Technology, Policy and Management, Delft University of Technology, Netherlands.

Brezet, H.; Hemel, C. van, *Ecodesign (1997) A promising approach to sustainable production and consumption*, UNEP, Paris. CEC (1998) *Status Report: Towards a Sustainable Information Society*, DG XIII

Erlhoff, M., Mager, B., Manzini, E., edited by, (1997) *Deinstleistung braucht Design*, Luchterhand Verlag Wirtschaft, Berlin

- Fussler, C. and James, P. (1996) *Driving Eco Innovation: A Breakthrough Discipline for Innovation and Sustainability*, Pitman Publishing, London, UK.
- Hawken, P. (1994) *The Ecology of Commerce*, Phoenix, London, 1994.
- Hockerts, K. (1998) *Eco-Efficient Service Innovation: Increasing Business-Ecological Efficiency of Products and Services*, in: *Greener Marketing: A Global Perspective on Greener Marketing Practice*, Ed. M. Charter, Sheffield, UK: Greenleaf publishing, pp. 95-108.
- Kahn, H., Wiener, A. (1967) *Toward the Year 2000: A Framework for Speculation*, Macmillan, New York.
- IPTS (1999 a), *Futures Project. Demographic and Social Panel Report*, N° Series 02, IPTS, Seville.
- IPTS (1999 b), *Futures Project, Information and Communication Technology and the Information Society Panel Report*, N° Series 03, IPTS, Seville
- IPTS (1999 c), *Futures Project, Natural Resources and the Environment Panel Report*, N° Series 05, IPTS, Seville.
- IPTS (1999) *Social and Demographic Trends Panel*, Draft Report, IPTS, Seville
- Jansen, J.L.A., CLTM (1993) *Toward a sustainable Oikos. En Route with Technology!*, (doc.), 23 aprile 1993
- Jégou, F., Maschi, S. (2001) *Scenario Building*, the HiCS Project, working paper, Milano (to be published)
- Jovane, F. (1994) *The impact of new manufacturing paradigms on society and working conditions*, European IT Conference, Brussels.
- Manzini, E. (1997 a) *Designing Sustainability. Leapfrog: anticipations of a possible future*, in *Domus* N° 789, January 1997
- Manzini, E. (1997 b) *Leapfrog strategies*, in Van Hinte, E. (edited by), *Eternally Yours*, OIO Publishers, Rotterdam.
- Manzini, E. (1999) *Strategic Design for Sustainability: Towards a New Mix of Products and Services*, Ecodesign '99, Tokyo, Japan, February.
- Manzini, E. (2001a) *Design Systems. Scenario building and solution providing in the network society*, paper presented to the ICSID 2001 Conference, Seoul, October 2001 (to be published)
- Manzini, E. (2001b) *Ideas of wellbeing. Beyond the rebound effect*, paper presented to the Sustainable Services & Systems: Transition towards Sustainability, Amsterdam, October 2001 (paper to be published)
- Manzini, E. (2001c) *Glossary for Solution Oriented Partnerships*, the HiCS Project, working paper, Milano (to be published)
- Manzini, E. (2001d) *A Chinese Network for Design for Sustainability*, brochure and website, Hong Kong
- Manzini, E., Jégou, F. (2000), *The construction of Design-Orienting Scenarios*, Final Report, SusHouse Project, Faculty of Technology, Policy and Management, Delft University of Technology, Netherlands.
- Manzini, E., Leong, B. D. (2001) *Strategic dDesign and design for Sustainability. A general overview and some consideration ion the Chinese context*, paper presented to the Tsinghua 2001 China International design Forum, Beijing, June 2001 (paper to be published)
- Manzini E., Vezzoli C.(1997) *Environmental sustainability and product-service design strategies*, paper for the international expert brainstorming seminar New Horizons in Cleaner Production, UNEP, Lund
- Manzini E., Vezzoli C. (1998) *Lo sviluppo di prodotti sostenibili* (The development of sustainable products), Maggioli editore, Rimini.

- Manzini E., Vezzoli C. Clark, G. (2001) *Product-service Systems: Using an Existing Concept as a New Approach to Sustainability*, The Journal of Design Research, 2001.
- Manzini, E., Susani, M. (1995) *The Solid Side*, V+K Publishing, The Netherlands.
- Manzini, E., Vugliano, S. (2000) *Il locale del globale. La localizzazione evoluta come scenario progettuale*, in Pluriverso, 1/2000.
- Masini, B. E. (1993) *Why Futures Studies*, Grey Seal, London
- Matthews, E., Hammond, A. (1999) *Critical Consumption Trends and Implications*, World Resources Institute.
- Offe, C., Heinze, R.G. (1997) *Economia senza mercato*, Editori Riuniti, Roma.
- Pauli, G. (1995) *Industrial Clusters of the Twenty-First Century*, in Capra, F., Pauli, G., *Steering Business Toward Sustainability*, United Nations University Press, Tokyo, 1995
- Pauli, G. (1997) *Breakthroughs - What Business Can Offer Society* (trad.it. *Svolte epocali*, Baldini&Castoldi, Milano, 1997).
- Pine, J.b., Gimore, J.B. (1999) *The Experience Economy. Work is Theatre and Every Business a Stage*, Hoarward Business School Press< Boston, Massachussetts
- Rifkin, J. (2000) *The Age of Access*, Punam, New York
- Schmidt-Bleek, F. (1993) *MIPS Re-visited*, Fresenius Environmental Bulletin, vol.2, n°8, Birkhauser Verlag, Basel, August 1993
- Stahel, R. W. (1997) *The Functional Economy: Cultural Change and Organizational Change*, in: Richards, D.J., *The Industrial Green Game*, National Academic Press, Washington
- Stahel, W. (1999) *From Products to Services or Selling Performance instead of Goods*, Ecodesign '99: 1st International Symposium on Environmentally Conscious Design & Inverse Manufacture, IEEE Computer Society, Japan.
- Vergragt, P. and Jansen, L.J.A. (1993) *Sustainable Technology Development: The Making of a Long-Term Oriented Technology Programme*. Project Appraisal 8, 3, pp. 134-140.
- Vergragt, P. (1999) *Leap-Frogging to Sustainable Households*. Paper for 8th Greening of Industry Conference, Ways of Knowing. Ways of Acting, Chapel Hill, USA
- Vergragt, P., Green, K. (2001) *The SusHouse Methodology. Design Orienting Scenarios for Sustainable Solutions*, The Journal of Design Research, 2001.
- von Weizsacker, E., U., Lovins, A., Lovins, H., *Factor Vier*, Dromer-Knauer, Munchen, 1995
- Weaver, P., Jansen, L., Van Grootveld, G., Van Spiegel, E. and Vergragt, P. (2000) *Sustainable Technology Development*, Greenleaf Publishing, Ltd, ISBN 1874719098
- Weterings, R.A.P.M. and Opschoor, J.B. (1992) *The Environmental Capacity as a Challenge to Technology Development*. RMNO: Rijswijk.
- Young, W. (2000) *Economic Analysis of Scenarios, Final Report*, SusHouse Project, Faculty of Technology, Policy and Management, Delft University of Technology, Netherlands.