How much vegetation and how can we look after it?

How can we move around the city?

How can we prepare food?

EZIO MANZINI
FRANÇOIS JÉGOU

How can we produce energy and how will we use it?

How can we work and study?

sustainable everyday

SCENARIOS OF URBAN LIFE

How can we take care of our houses and things?

Edizioni Ambiente

LA TRIENNALE DI MILANO

sustainable everyday

SCENARIOS OF URBAN LIFE

LA TRIENNALE DI MILANO

LA TRIENNALE DI MILANO VENTESIMA ESPOSIZIONE INTERNAZIONALE 2001-2004

XXT La Memoria e il Futuro

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United Nations
Environment
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EZIO MANZINI
FRANÇOIS JÉGOU

sustainable everyday

SCENARIOS OF URBAN LIFE

Edizioni Ambiente

THE VOLUME

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Included in this volume is the collected outcome of a series of design workshops that took place within the ***International Network on Design for Sustainability****, co-ordinated by Ezio Manzini. The following schools took part:*

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FONDAZIONE
LA TRIENNALE DI MILANO

LA TRIENNALE DI MILANO

The exhibition and this volume
are dedicated to our friend
Augusto Morello.
We have often argued together.
We have always made peace,
bringing home some new idea.
The last of these gave rise
to Sustainable Everyday

E.M., F.J.

This book is (also) the catalogue for an exhibition: an important exhibition promoted, organised and produced by La Triennale di Milano as part of the XX International Exposition on 'Memory and the Future'. The book and exhibition present a concise vision of what we are able to think and do today around the question of sustainability in our everyday lives. It also goes deeper into the design issues associated with promoting sustainable ways of living and generating promising solutions on which to base them.

By giving a visual dimension to what everyday life might be like in a sustainable city this initiative contributes to increasing awareness of contemporary issues – in particular how behaviour, demand for products and services, product systems and the development of solutions can work together. So it is consistent with what is and always has been the sphere of interest and action of La Triennale. That is, the promotion of design, architecture and multimedia communication not only as disciplines in themselves, but also as means to helping us understand the physical and cultural context in which we live: how it is changing and, hopefully, how it might yet change. In so doing it seeks to embrace the great cultural and critical tradition of Italian design and architecture.

But this is not all: the book and exhibition are also part of a wider cultural programme which aims to promote international experience in the field of design for sustainability. The exhibition especially, devised to be easily repeatable and updateable, is in itself an information and communication channel for this ambitious project. This objective sees La Triennale, together with the institutions that have in various ways contributed to the venture, committed to a programme that is both local, emerging from an Italian and European project approach, and global, in that it favours the development of cosmopolitan ideas and proposals.

Davide Rampello
Chairman of La Triennale

The United Nations Environment Programme (UNEP) welcomes the scenarios presented in this volume as they propose systems that reflect the idea of 'responsible prosperity'. This is well-being for all, based on different consumption patterns and behaviour.

Design is often identified with the aesthetics of an object, although a product is essentially a means to meet the functional needs of a user. Increasingly, however, designers are offering more than beautiful and functional objects. This research demonstrates imagined but practical options for a shift from products to systems, exploring alternative, less resource-intensive portals, leading to 'experiences' rather than consumption.

Development has resulted in a higher life expectancy, and greater wealth in many countries and with that, some would argue, a higher quality of life. However, these benefits have reached a tiny proportion of the world's population, stressing the earth far beyond its carrying capacity and leading to growing poverty and social problems.

For this reason, the lifestyle of wealthy consumers need to be adapted to enable them to reduce their excessive use of earth's natural resources. The shift from products to sustainable services systems is a promising new approach to achieve such a shift without having to convince people to 'consume less' or compromise their sense of well-being.

Based on a thorough analysis of what consumption means for different people, current consumption and production patterns need to be critically analysed, and alternatives developed with due regard to all three dimensions of sustainability: economic, ecological and social. This is not something that can be done by one societal group or one group of countries alone. Architects, designers, city planners, retailers, businesses, and consumer groups from all regions and countries need to sit together and prompt each other to think 'outside the box'. Creativity, together with laws and guidelines, price incentives, multi-stakeholder and multicultural dialogues will eventually lead us to a better world for all. 'One size fits all' solutions do not exist; different people, different values, different experiences, all need unique solutions. This, the book and the exhibition richly demonstrate.

Bas de Leeuw
Coordinator Sustainable Consumption
United Nations Environment Programme,
Division of Technology, Industry and Economics

The project approach and the future of sustainability. The Design Faculty of Milan Polytechnic is pleased to take part in promoting this exhibition. The event is representative of the important contribution that a project approach can make towards building future conditions for environmental and social sustainability. Milan has long been a place where design is the object of heated cultural debate between different schools of thought, great designers, and members of the business world. It used to be the seat of a cultural 'aristocracy' which made a crucial contribution to the growth and strengthening of Italian design that was so important to the economic and creative development of our country. However, those times have gone, leaving us at the threshold of an age in which design has become a diffuse phenomenon, with room for a plurality of actors, experiences and positions. It is important that Milan should host this change and give voice to it. A sign of this is that important international institutions have gathered around this event, with the involvement of the Design Faculty of the Polytechnic being a demonstration of its desire to bring to the world of training and research a new opening towards spheres of innovative design.

In this exhibition, the idea that the project approach may be an expression of a collective desire to shape the reality in which we live, is clearly evident. Apart from the intrinsic value of the projects and scenarios explored in the exhibition, a critical reflection on the possible role of design in worldwide issues such as sustainability is important. Design brings purposes together, and if it does not shape the ultimate solution to a problem, it is able to shape the relationships that give rise to a collective solution.

Alberto Seassaro
Dean, Politecnico di Milano, Facoltà del Design

Contributors

Sustainable Everyday *is the result of a combined effort by Ezio Manzini and François Jégou, with the collaboration of a group of colleagues and friends who in different ways and at different times have helped to develop the programme and produce the material necessary for the realisation of this book and associated exhibition.*

The book was compiled jointly by both authors, though the text was mainly written by the first and the realisation and presentation of the scenarios was undertaken by the second.

Annamaria Formentini, in collaboration with the international associates, carried out the case research and compiled the parts of chapter 3 where they are presented.

The names of other members of the workgroup and Scientific Committee, who contributed to the text, appear with their writing.

The final compilation of the story-boards for some of the projects was the responsibility of: Anna Meroni (workshop in Brazil); Daniela Selloni (projects "Aruotalibera", "Babylon" and "Micromondo" produced by the workshop in the Politecnico di Milano); Antonella Torriglia (workshops in Korea and the USA).

CONTENTS

Introduction

Ezio Manzini, François Jégou

In your hand you are holding a catalogue, a book and (part of) a programme of initiatives on the theme of design for sustainability. As a *catalogue*, it refers to the exhibition of the same name sponsored by the Triennale di Milano and held in Milan in the autumn of 2003. As a *book*, it is an editorial instrument with a life of its own, independent of the exhibition. As a *programme* it is linked to a series of design research initiatives which form the immediate background to the exhibition and the book itself.

In a few decades the greater part of the world's population will be living in an urban environment. Many of these new metropolises have not yet been built, or are under construction. The way these cities materialise and the modes of living that develop within them will determine the degree to which future society will be sustainable or unsustainable. Although we cannot but be concerned when confronted with how things are developing today, we must believe that they can change and that the evolution towards this immense worldwide megalopolis can be steered towards sustainability, leading to a multiplicity of cities where the inhabitants can live well, promoting a new social quality while leaving a light footprint on the environment. Here we refer to this multiplicity of cities with the all-embracing 'Sustainable City'.

The notion that this change can happen is certainly optimistic. So optimistic that, given the state of the things as we write this, it may seem totally surreal or naïve. We are well aware of this. However, for anyone who wishes to face this great unfolding in a positive, forward looking spirit, it is a necessary hypothesis whatever its chances of success. Indeed, we cannot act in a forward looking way if we are unable to imagine a state in which we could potentially live in a different and more attractive way than now.

» *Sustainable Everyday* is an initiative that accepts the risk of making suggestions and consequently of seeming naïve. That said, we do not wish to seem, and are not being, unrealistic – the steps towards the sustainable city that we put forward here are undoubtedly difficult (how could they not be, given the complexity of the problems we must collectively face), but they are practicable. In particular, the scenarios and proposals presented here are to be taken as 'promising', that is, reasonably well oriented towards sustainability, and just as reasonably feasible (at least as regards particular groups of possible users).

The world seen and enacted by those who live there

The theme of the sustainable city, and of its possible prefiguration, may be tackled usefully by adopting different points of view and working methodologies. In our case we have taken *the daily dimension of our existence* as our point of reference. This has two complementary meanings for us: firstly, 'the world seen by those who live in it' and secondly, as a socio-technical system which can be operated on by means of 'strategies of bottom-up intervention', starting from the local environment[1].

We should emphasise that by referring to the everyday we do not imply a dimensional scale.

[1] The viewpoint and methodology adopted are complementary to others that refer to an overall vision of a city, the planner's point of view, and to the prevalently 'top-down' methodology that these may adopt.

The world seen by those who live there, in the age of global communication networks, has no precise geographical limits. The everyday we are talking about can be defined as a subject's context of action. In other words everything that limits or opens up opportunities in his daily life, and which stretches as far as he is able to reach through his own options and actions.

As Laura Balbo writes, 'everyday is notƐ the ambit of the "familiar" in the sense of routine, of what we take for granted, of the unimportant. It is rather the space-time dimension of each social actor who conceives, articulates and realises strategies, adding inventive moments to adaptive moments. This is what our life projects are, to a large extent, made of ' (Balbo, *Friendly*, Anabasi, 1993, p. 16). We can add that, for various reasons, in contemporary everyday life the inventive dimension tends to prevail over the adaptive. This is not because there is a widespread creative desire, but because people's living contexts change so quickly that breaking with routine, and consequently having to invent new ways of being and doing, becomes necessary for each of us.

When we view things from the sustainability perspective, this need to reinvent the everyday increases enormously and the most elementary functions of daily experience appear as questions that are not easy to answer. What might life be like in a sustainable society?

» *Sustainable Everyday* attempts to answer this question by delineating possible scenarios and practicable alternatives. They are answers that, as you will see, refer to living strategies and forms of social innovation that are emerging from the capacity many people have to think and act inventively in their own everyday – imagining something that is not there, and finding a way to make it materialise.

Diffuse design capacity

The capacity to imagine something that does not exist and the strategy for achieving it is the essence of every forward looking attitude towards reality. Assuming this attitude and putting it into practice is neither obvious nor simple. A more or less resigned acceptance of the status quo, an escape into dreams and impossible utopias and, not least, the fatigue inherent in defining and enacting action strategies make this forward looking 'design' capacity a rare resource, to be cultivated. A social resource that looks even more precious when faced with the enormity of the problems we face and the change that needs to take place. Indeed it would appear to be the only social resource indispensable to activating any non-catastrophic transition towards sustainability.

This special resource, so needed today, is not only to be found among planning specialists (designers, engineers, architects and urban planners), it is to be looked for among all the actors involved in the building of a city: from those who decide territorial policy, to people immersed in the 'normality' of their everyday lives. Constructing the future and, especially today, the transition towards sustainability, is a social process in which everyone has a role, with varying powers and responsibilities.

In our opinion this last observation makes our initial optimistic vision, which underlies our entire proposition, less naïve. Design activity that leads to sustainability is not a one-sided, unitary project based on a single way of seeing things. Instead, it is a complex social learning process, a vast intertwining of initiatives in which we proceed through partial successes, errors and unforeseen effects, learning by experience. This *learning process* is also the

result of the diffuse design activity we deal with here. The greater and better oriented this capacity, the more effective the process will be, and the quicker and less painful the move towards sustainability.

» The idea that diffuse forward looking design aptitudes should be cultivated and encouraged is one of the important underlying themes of this book and the exhibition, and the research on which they are both based. In particular, the initial hypothesis is that we can and must operate on this basis (also) with the tools of design. For this reason, the role of design is not only to produce artefacts, but also to facilitate the development and orientation of diffuse design capacity and of contexts that favour its application.

Life projects and living contexts

The transition towards sustainability, in its everyday dimension, can be described as follows: in a short period billions of people must redefine their life projects. Although differing greatly, the new directions they can and will want to take must have a common vector – one which should take us, in all our diversity, towards a sustainable future.

This passage is crucial and maybe deserves clarification. Let's take a step back in history. The transition from pre-industrial rural societies to urban, industrial societies (as happened in Europe centuries ago, and is still happening elsewhere today) can be described using the concepts just introduced. That is, great numbers of agricultural workers redefined their way of life in a relatively short time and set up new life projects in various ways, but all with certain aspects in common whose traits represent the essence of urban modernity as we have come to know it. Unfortunately, we know now that these common aspects also have ominous implications, and are carrying us towards social and environmental catastrophe.

When today we talk about a transition towards sustainability, and especially about its everyday dimension, we are talking about a similar phenomenon, both in nature and size. Only this time, having learnt from experience, the resulting common vector should carry us in a promising direction – towards some form of sustainability.

In adopting this interpretation model, we find that behind large transformations there is individual choice. However, this is obviously not free choice in a vacuum. It is choice situated in a context. It is the quality of this context that decides the range of possibility – what can be done and thought. In particular, and this is the aspect that interests us most here, what can be designed is the result of a subjective elaboration of ideas and images produced socially.

Inside this conceptual and operational framework the role of design looks potentially very significant. This is because designers not only produce artefacts but also life scenarios and ideas of well-being. In this way they contribute to enlarging the socially produced 'catalogue of images' that people look to when defining their own personal life project.
ogetto di vita.

» *Sustainable Everyday* seeks to contribute to this catalogue of images by offering scenarios and tools for scenario building in order to facilitate the capacity of each individual to bring different possible futures into focus, choosing between them and taking the necessary steps to move in the chosen direction.

Social planning and shared visions

In defining the everyday dimension of experience we said that it could be seen as a system in which it is possible to carry out strategies of 'bottom-up' intervention. We would add that it is also a basis for cultivating widespread forms of social innovation and for the emergence of new product and service systems.

So, operating on the everyday implies starting by observing people in their contexts, noting their questions and behavioural inventions. It means considering options chosen by companies and the policies of public authorities on a 'micro' scale. Finally, as regards project discipline it means referring principally to the action field of design (specifically strategic design, service design and communication design).

It should be added that the lack of a shared vision as to what a sustainable city might be like does not mean we believe that in the vast body of global society there are no ideas that can already be widely shared. On the contrary, it is exactly from these ideas and the practical experiences and research they have generated that this book arises and, like its programme, it seeks to valorise them. The problem is that they are, in general, barely visible and their wider implications not easily comprehended.

The task of design is to help make these ideas more visible and foster a process of social planning where designers, with the specific tools of their trade, can act as facilitators.

» *Sustainable Everyday* is a co-planning initiative which aims to promote a wider process of social planning: we started off by observing promising cases of social innovation, which were then collated. Design workshops were set up on the basis of this material to draw out new ideas. Scenarios were outlined and tested in group discussion. This book and exhibition publicly present the results achieved so far, as a stimulus to social conversation about the future.

Possible futures

The only clear thing about the future is that it will entail a profound break with the ways of doing and being we are used to. Everything else about this vast phenomenon – how, when and what it implies – is completely vague and will depend on a combination of many factors. First and foremost is the behaviour of the various actors.

In the light of this statement, it may seem contradictory to suggest generating images of the future. But it is not, rather it all depends on what we mean by 'images of the future' – if we meant 'visions of what will be', our aim would be totally impossible. If, however, we mean visions of what might be, then the intention is not only realistic, but also exactly what is now needed.

Let us explain ourselves better. The future is undoubtedly open and unpredictable, but the present contains the premises for any possible future: however tomorrow unfolds, it will be built on what is produced today. It follows that to imagine the future is to look at the present to see signs of what could happen: signs of a 'possible future'. On the other hand, the complexity of the present sends us a mass of conflicting signals, indicating various possible futures. So, imagining the future means selecting and giving coherence to one or other set of signals (that in turn indicate dynamics in action) and defining an image of a world (or part of it) as it would be, if one of the possible futures were realised. In this conceptual framework, recognising the signals in the present that allow us to outline various futures, identify those

that seem most favourable and increase their chances of success, is what we can define as 'designing the future', or rather, the social construction of the future.

'Scenario building' means bringing the signals into focus and making clear their implications, thereby facilitating a choice that allows us to work towards the most desirable looking possible future with a greater probability of success.

» *Sustainable Everyday* talks about the future, but it is not a book on the future. It is a book for the future: an instrument to (try to) orient the future. It does not show things 'never seen before' (because they belong to a would-be future), it rather presents signs in the present that, with good reason, look promising. From this basis we have charted emerging ideas and possible scenarios. In other words, instruments by which to encourage social conversation about the ways, means and timing of the transition towards sustainability. In addition Sustainable Everyday talks about the future using the tools of design: a design that, in this case, does not prefigure tomorrow but participates in its construction.

A research programme and a schools network

The design research projects and experiences that constitute the wide cultural background to Sustainable Everyday are numerous. Some were led by different researchers and designers in different places, but by now they form a sort of acquired knowledge common to all, whether professional or not, who deal with these issues. Others were carried out directly by the authors and by those who have collaborated in the construction of the book itself in other ways. All of this has occurred principally within the ambit of the Facoltà del Design and of the Dipartimento INDACO, Politecnico di Milano, in strict collaboration with other European universities, with research centres, with the UNEP (United Nations Environmental Programme) and, as regards the exhibition born of it, with the Triennale di Milano.

In particular, research projects funded by the European Union form the conceptual and instrumental base for Sustainable Everyday[2].

The research programme that more specifically generated the 'raw materials' for Sustainable Everyday was set up by INDACO, in collaboration firstly with the Hong Kong Polytechnic University[3] and then with other design schools throughout the world[4] . It was a research project based on a series of workshops with the same theme and structure, held in fifteen schools in ten different countries: China, Korea, Japan, Canada, the USA, Brazil, India, France, Finland and Italy. The first and principle result of the programme is a collection of promising solutions: 72 proposals to deal with daily functions. This collection is in itself a catalogue of interesting and hopefully stimulating possibilities. However, its potential value goes beyond this. Since the programme involved a large number of sensitive, aware young people, its results delineate today's thinking around the issue of cities and sustainable everyday life. In addition, given its development on an international scale, it enables us to compare different responses and consider how different cultural backgrounds might influence our thoughts on this theme. In conclusion, the results of the workshops present a state-of-the-art world picture on the forms sustainable life may take.

We must also underline the role of design schools in this initiative. Their composition, the skills they develop and their relationship to society at large all contribute to giving them an important role in the transition towards a sustainable society. They are the places where emerging demands and promising social innovations can be identified and highlighted. They can act as

[2] *SusHouse Strategies towards the Sustainable Household,* a research project funded by the European Union's Environment and Climate Research programme Theme 4: On Human Dimensions of Environmental Change (ENV4-CT97-0446). The research was co-ordinated by the Delft University of Technology and was completed in 2000.

HICS (Highly Customerised Solutions), co-financed by the European Commission, within the Growth Programme of the European 5th Framework Programme. The research, co-ordinated by Politecnico di Milano, started April 2001 and will end in March 2004.

MEPSS (Product Service Systems Methodology), co-financed by the European Commission, within the Growth Programme of the European 5th Framework Programme. The research is co-ordinated by PricewaterhouseCoopers N.V. It started November 2001 and will end October 2004.

[3] *Hong Kong - Mainland China Network on Design for Sustainability*: a research project funded by the Hong Kong Polytechnic University. It started in 2001 and was developed in the framework of a joint-programme with CIRIS-Politecnico di Milano (Italy), and with Hunan University in Changsha (China).

antennae for the changes in progress and as catalysers for new ones – all from the sustainability perspective.

[4] *A global network on design for sustainability* is an ongoing programme of activities promoted by the INDACO, Politecnico di Milano.

An interactive, repeatable exhibition

The exhibition *Sustainable Everyday* – commissioned and promoted by the Triennale di Milano – is, in its role as an instrument for communicating and spreading ideas, a fundamental part of the more general programme introduced here.

It gives a panoramic view of the proposals and scenarios for everyday life as they emerged from the international design research project. The first section (*Laboratories*) contains a set of design ideas and real examples, oriented towards solving specific problems in a sustainable way. The second section (*Scenarios*) delineates contexts, lifestyles and potentially sustainable proposals elaborated from the more promising solutions in the previous section. This section is intended to be an 'interactive platform' allowing visitors to make their own choices, express opinions and make suggestions regarding the ideas presented.

The exhibition itself is a *sustainable display system*: a complex, communicative artefact of *low resource intensity*, that is, a light exhibition in that almost everything exhibited is on digital back-up, with *high regenerative potential* in that it is intended to use and value local social and cultural resources. In particular, the exhibition staging has been mounted using 'catalogued' existing artefacts as far as possible, which are also re-usable or available locally in the various places where it will hopefully be set up.

Consistent with the issues it tackles and the display options chosen, the exhibition is repeatable – it can be moved and adapted to other localities, and it is updateable, being able to incorporate new information and proposals as other activities in later stages of the international programme and school network take place.

Cosmopolitan ideas, mutual influence, leapfrogging

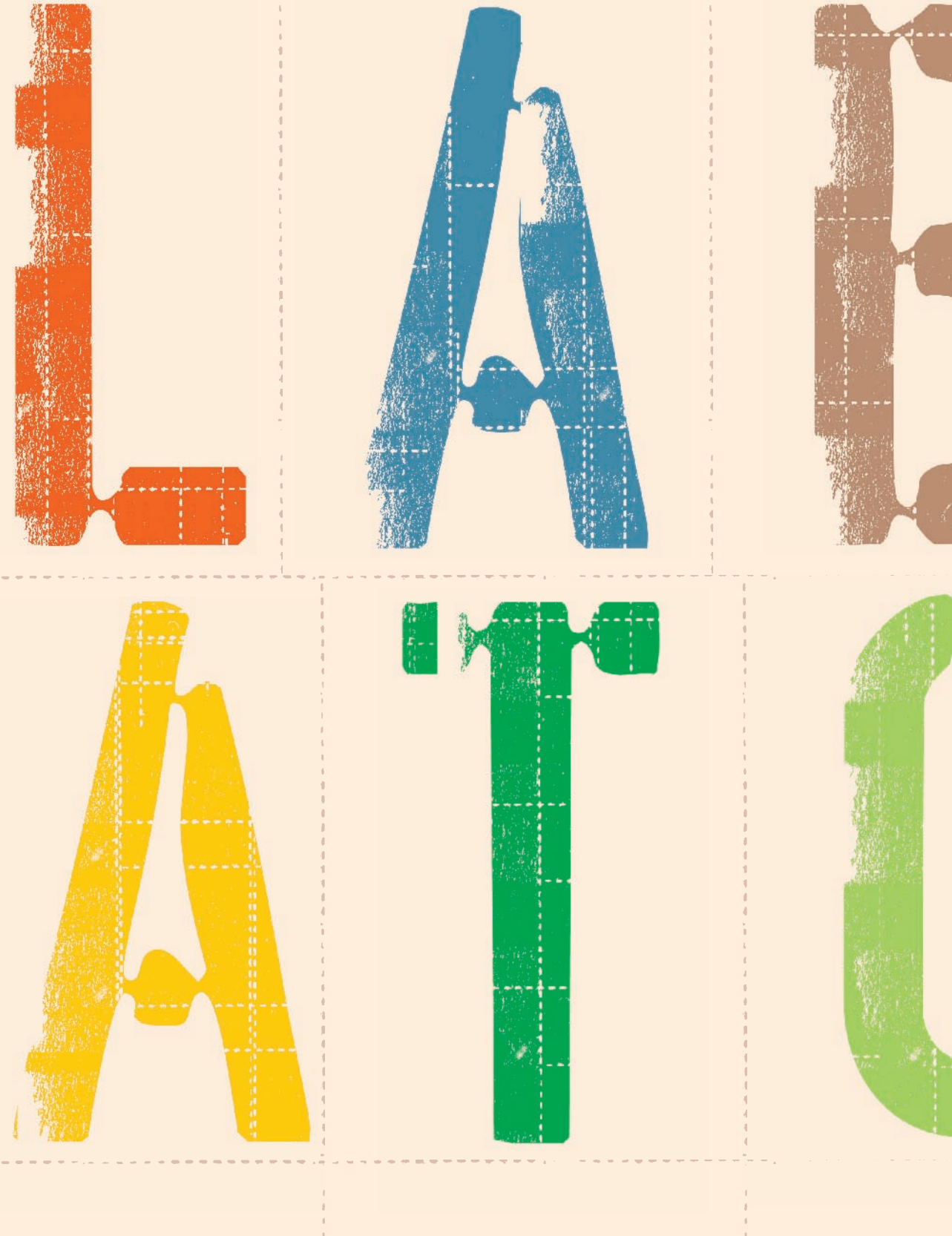
A final consideration should be given to the global-local nature of *Sustainable Everyday*, its cultural background and its results. The research and experience reported in this book owe much to Europe and its special approach to the issue of sustainability. This is not only because it is to European research that the authors of the book and the exhibition mostly refer, but also because there is a European point of view on sustainability and, especially, a European approach to intervention in and on product and service systems and therefore in and on the everyday life of individuals.

However, this 'local' approach has encountered ideas and projects on a world level. From this debate a series of proposals have emerged, which to all intents and purposes can be called cosmopolitan. They are design ideas from different places that have been collected and edited as a unit, and presented on a global scale, with two ideas in mind. Firstly, that individuals could use them 'in their own way' according to their own cultural background. Secondly, that this could lead to mutual enrichment between people and communities in different contexts.

It is sometimes said that sustainability, and design, which should encourage it, are for the rich, or more to the point, for the mature industrial countries if the northern hemisphere. With *Sustainable Everyday* we would like to challenge this assumption – the solutions and scenarios proposed could be adapted and adopted in contexts which are not industrialised, or only partly so. This is because many of the promising solutions presented here could also be

realised in the young, dynamic contexts of the southern hemisphere. Indeed, they may not only be more easily realised in these countries than in the cities of the rich mature North, but it may even be that by using pre-industrial, cultural and behavioural aspects creatively, and integrating them with light technology and new organisational skills, the South may generate new and original ways to deal with sustainability that have the energy to evolve into new cosmopolitan ideas.

In conclusion, this is the great challenge we face: the possibility that the mutual influence of North and South, which today is mainly negative, may turn into a rich dynamic mutual regeneration, allowing affluent, mature societies to redirect themselves while the younger and poorest of today jump a stage, putting into action what we call leapfrog strategies, moving directly from their present reality to the most advanced models of society, production and city life. In other words, to forms of society, production and city life that are very different but, in their own way, all sustainable.




Laboratories

The near future:
the worldwide metropolis

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Of all forms of development and ideas of well-being that we can imagine, the only one we can simply no longer afford to pursue is that so far adopted by the more industrialised countries; the very one which less industrialised nations have been taking as a reference model, explicitly or implicitly. That is, a development model and an idea of well-being based on a very clear hypothesis: to be better off we must consume more.

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Today we know that this direct relationship between well-being and consumption is not always true and, above all, we know that the well-being it promises is not sustainable. In other words it cannot be extended equally to all the inhabitants of this planet.

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Consequently, new models of development and new ideas of well-being must emerge over the next few years and, beginning with the richer societies, we must all learn to live better while consuming less.

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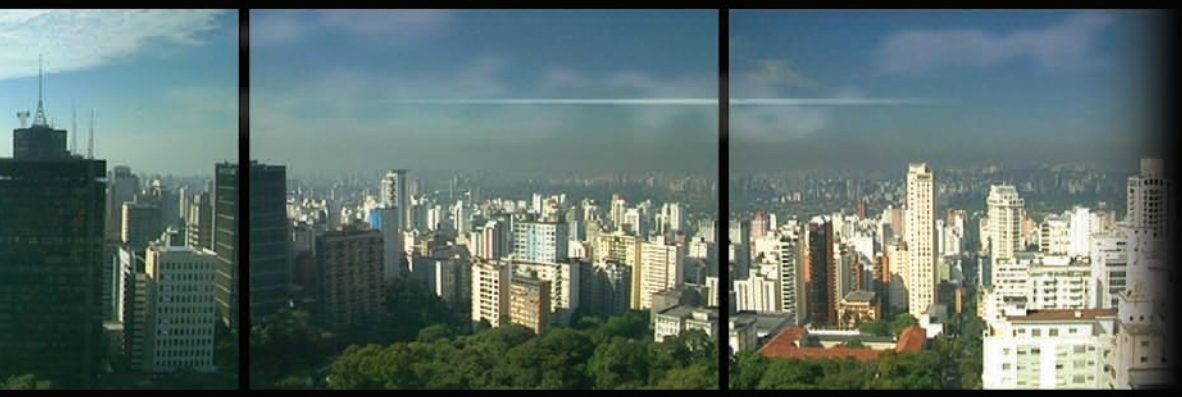

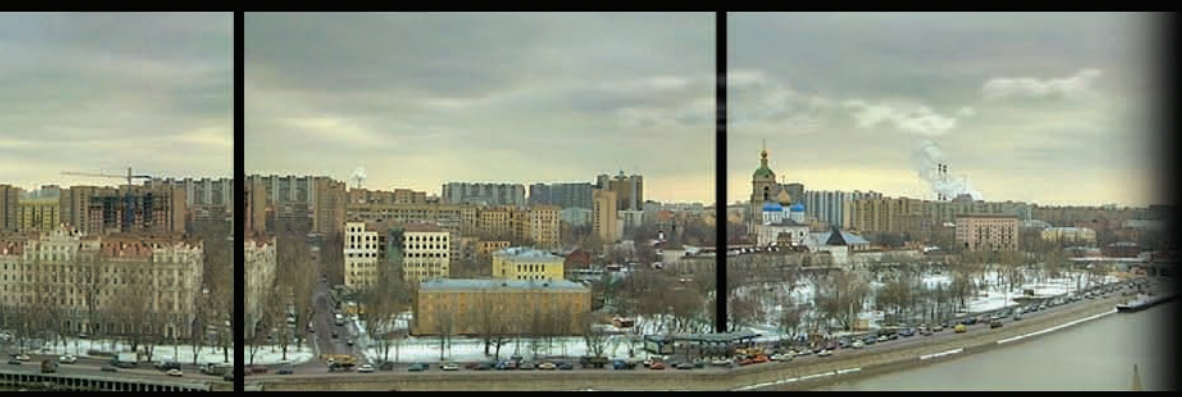

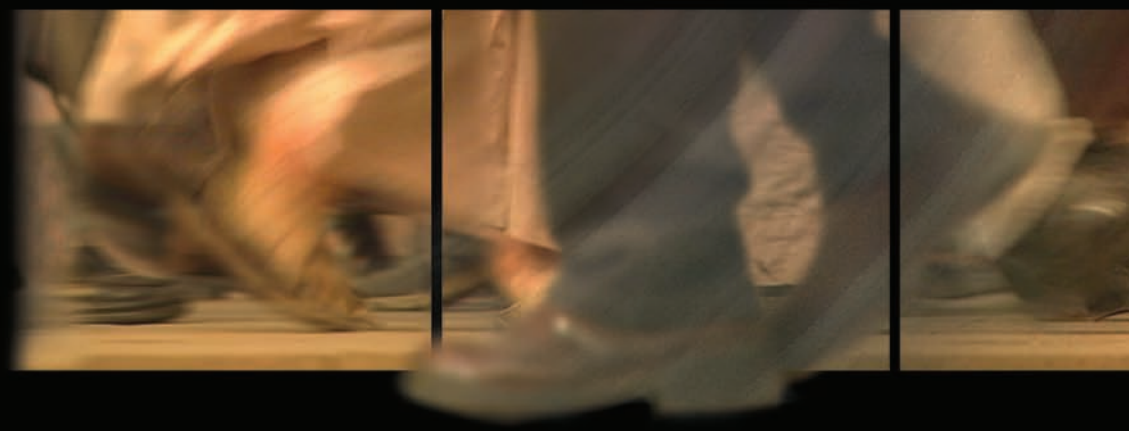


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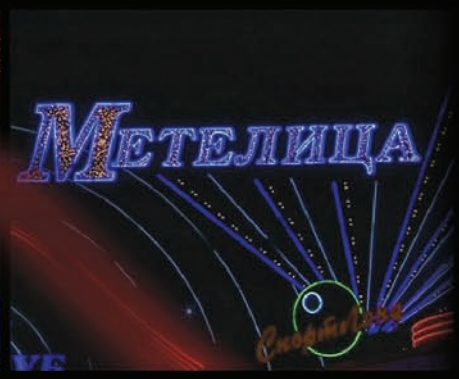
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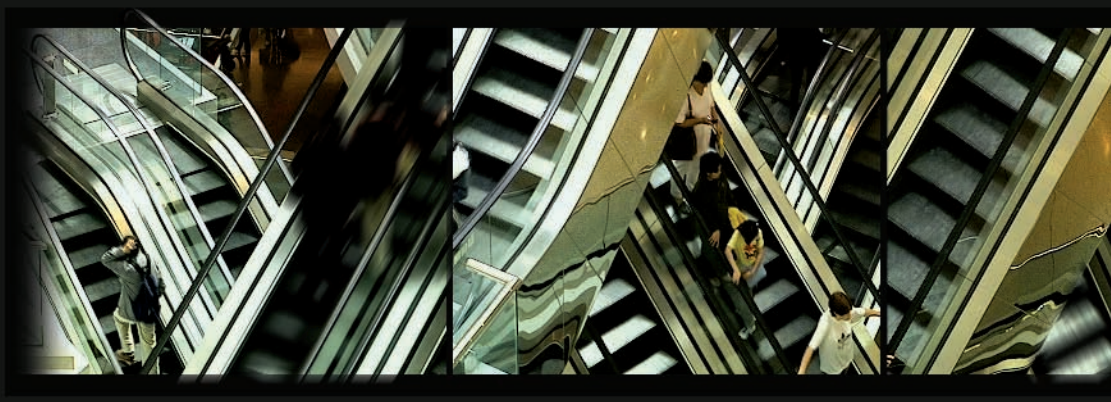

In this and in previous pages , images from the video installation "Sequenze di metropoli" by Studio Azzurro.

» **Unsustainability: the emergence of limits** Our planet is a limited system. For many years we forgot this but now such amnesia is no longer possible. Too many converging signals prevent us ignoring the most obvious fact: in a limited system nothing can grow forever. Therefore, in a limited system, a society like ours, where economic and social well-being are measured in terms of material growth, is *intrinsically unsustainable*.

» **Sustainability: towards a regenerative society** From a society where the normal condition is growth in production and consumption, we must move towards a society able to develop while both reducing them and restoring quality to the physical and social environment. This must be a regenerative society and economy, where the creativity and enterprise of its members, its technological potential, and the organisational capability of business can all become agents of sustainability capable of improving the quality of our world.

» **Transition: a social learning process** The transition towards sustainability will be a social learning process which, given the nature and dimension of the change that must take place, will need to be both widespread and well articulated. Along with the errors and contradictions that happen in any learning process, we must gradually learn to live (hopefully, well) in large numbers on our small planet. The journey will certainly be long, the destination unclear and the road difficult if not treacherous. But we must set off, and do so immediately.

» **Context: the worldwide metropolis** The main arena of our transition towards sustainability will be cities, or rather, the great conurbations that are springing up worldwide and which, over the next few decades, will reach their maximum extent. At that point, daily life for the majority of the world's population will be metropolitan. Whatever this might come to mean, the move towards sustainability and the future of the planet itself will come into play within the context of this worldwide metropolis.

» **Daily life: sustainable life styles** The worldwide metropolis will be the result of numerous events, of conscious choices and chance occurrences, happening on the most varied space and time scales. New life styles, new ideas of well-being, new forms of everyday life will emerge inside this complex, dynamic organism. The transition towards sustainability will also, and maybe above all, come about from here: from how and to what extent these forms of everyday life will manage to find new directions in which to steer their quest for well-being.

Sustainable solutions: criteria and guidelines

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Our everyday life is based on a series of solutions: networks of people, products and infrastructures which allow, or should allow us to obtain results and which enable, or should enable us to do what we wish to do and be what we wish to be. Nowadays we know that a large part of the solutions we look to, and therefore the lifestyles deriving from them, are unsustainable. We also know that all this cannot continue.

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Sustainable everyday life must be based on a new series of solutions; on sustainable solutions where the results we wish to achieve, and the networks of people, products and things by which to achieve them, are redefined at the same time. They must be solutions which enable us to live better consuming less and regenerating the physical and social contexts in which we live.

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SUSTAINABILITY AND PROJECT TOOLS

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The conception and development of sustainable solutions (or even simply their recognition, when and where they appear spontaneously) requires an appropriate set of conceptual and operative tools, some of which will be presented in this chapter. They are the result of various lines of research and a multiplicity of design and design application experiences conducted in both Europe and the rest of the world, with the specific characteristic of being 'directed towards the project'. To be more explicit: they were focused and consolidated within the framework of a precise cultural background – that of *industrial design* – intended to support design activity. However, these tools may also be useful to anybody who takes a positive and therefore forward-looking view of the future of everyday life. As we say, "we are all designers of our own lives – and so of our own future".

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The chapter begins by summarising some aspects of environmental sustainability, with special reference to its implications for everyday life (taken as the basis on which individuals stake out their action strategies) and for the concept of *well-being* (taken as a potential reference point and justification for everyday choices). The concepts of *solution, sustainable solution*, and *promising solution* are introduced and *criteria* and *guidelines* identified with which to orientate the design process.

Sustainability and sustainable systems

Although the debate on issues relating to sustainability is still completely open, the introduction of the concept of sustainable development has already led to an important result: namely, the certainty that of all conceivable forms of development the only one which can definitely no longer be put forward is the very one which has, until now, been implemented in industrialised countries (and that has so far, explicitly or implicitly, constituted the reference model for countries not yet industrialised).

The fact that the limits of our planet have become evident is a deep and powerful transforming factor. To become aware of this one must not only look at what is usually considered as 'environmental problems'. In reality the amount of attention paid to environmental issues depends on external factors, such as the space dedicated to it by the media (such as some new problem emerging or some serious catastrophe occurring) and on the competition between this and other issues weighing on public consciousness. For this reason, if there is an economic or political crisis in progress there is no talk of the environment – other issues seeming of more immediate concern.
However the problem continues to exist and grow even when it does not explicitly appear in the order of business. This is both because environmental deterioration goes on even when we don't talk about it, and because limits come to light in other forms: market saturation (limited demand), unemployment (limited job opportunities), the proliferation of regional wars for the control of limited natural resources, emigration and consequent racial problems (demographic and social limits), difficulty in imagining the future (because an awareness of limits prevents the future being seen as anything but a continuation of the past, as the further proposal of a development model based on growing material consumption).
The theme of limits, then, cannot simply be related to the 'environment question' in the way it has been treated in the past – as a set of problems which we try to solve separately. If we consider the whole cultural and operational system of industrial society to date, we are faced with a huge question: what does 'development' actually mean? More explicitly, what form of development does not jeopardise the well-being, or the very lives, of future generations on our planet? So it is in this sense that the theme of limits overlaps *sustainable development* and *sustainable societies* based on it (☛ BOX *Sustainable development*). In order to justify this statement we need to outline certain aspects of environmental sustainability, as most recent studies have characterised it.

The size of the change

The expression 'environmental sustainability' refers to the system conditions in which, at a worldwide and a regional level, human activities do not overstress the ecosystem. In other words do not stress it to the point where irreversible degeneration phenomena set in. (☛ BOX *Environmental and social sustainability*).
A system of production, use and consumption which meets the demands of society for products and services without disturbing natural cycles and without impoverishing natural capital, must first of all drastically reduce the use of environmental resources. It must be fundamentally based on renewable resources, while optimising the use of those which are non-renewable (including air, water and land) and avoiding the accumulation of rubbish and waste.
At this point it is necessary to quantify the expression 'reduce drastically': how big is the necessary reduction?
Obviously this cannot be answered simply. The impact on the environment of human activity generated by resource consumption depends on three fundamental variables: the population,

the demand for well-being and the eco-efficiency of the technological 'metabolism', that is, the efficiency with which the production system is able to transform environmental resources into social well-being (and here we see how, even when facing environmental questions in technical-environmental terms alone, we meet unavoidable problems of a social, economic and political nature).

Using these as a starting point, taking into consideration predicted increases in population and assuming, as is only fair, an increase in demand for well-being in hitherto underdeveloped countries, a dramatic fact emerges: with the current metabolism of a mature industrial society as our reference point, sustainability can only be reached by increasing eco-efficiency by at least a factor of 10.

In other words, only those systems of production and consumption which use 90% fewer environmental resources per unit of service provided than in a currently mature industrial society, can be considered sustainable (☛ BOX *Factor 10*).

- **Systemic discontinuity**

  This is an approximate estimation but is nevertheless a valid indication of the dimensions of the change which must take place. It gives rise to a picture of the society we must live in, and if possible live well, using only 10% of the resources currently used in industrial societies.

Sustainable development

1. The expression sustainable development was introduced for the first time in a World Commission for Environment and Development document, Our Common Future drawn up by the commission coordinated by Gro Harlem Brundtland.

From then on, it was used more and more widely until it became the cornerstone of a key conference on the issue (UNCED – United Nations Conference on Environment and Development), held in Rio de Janeiro in 1992.

What made this conference and the documents drawn up there so important is that for the first time what had long been clear to some, but was certainly not on any international political agenda, enterprise programme or even in the thoughts of most of the citizens of this planet, was officially stated at the highest levels – that development as it had been hitherto understood was objectively impracticable.

2. In other words, with the introduction of the term sustainable development it was officially declared that the promise of well-being based on the continuity of the development pattern of the richer countries (said to be 'developed') and on the emulation of this by those less rich (said to be 'underdeveloped', or more optimistically 'developing'), could never be maintained because the model ran completely counter to the resilience limits of the ecosystem, and was rapidly consuming natural capital.

The foolish use of renewable resources (overexploitation of some, such as fishing resources, and underemployment of others, such as solar energy); an equally foolish use of non-renewable ones (with rapidly diminishing reserves, at least for some, and a corresponding accumulation of waste); the emission of a growing number of new, potentially harmful, synthetic substances into the environment, substances unknown to nature and consequently no longer possible to re-naturalize – just to quote some of the already well-evident problems – all showed unequivocally that the road we were racing down, with the prospect of an almost redoubled population within the following few decades, would on no account lead to the development everybody dreamed of.

On the other hand, the new concept of sustainable development gave no indication of what a new model of development should be like. It stated only that the model previously put forward (which, in a nutshell, said 'Do as we westerners have done') was not practicable. Another had to be found which was consistent with certain basic principles, the physical and ethical principles of sustainability, a very vague definition which has left space for a thousand interpretations, but which has nevertheless been enough to change the course of history.

It is clear that the production and consumption system of this sustainable society will be profoundly different from what we have known to date. So different that no partial modification, no step-up innovation in the technology already in use, no *redesign* operation of what is already in existence can take us there.
As a result, by quantifying the size of the increase in eco-efficiency which must be achieved, we have reached a qualitative consideration: sustainable development requires us all – the most industrialised societies as much as those more recently industrialised or those not yet industrialised – to focus on and realise development ideas which are so different to what has hitherto predominated that we cannot imagine them without questioning the entire economic and socio-cultural complex on which existing production, use and consumption are based.
What must take place, and in practice is already beginning to take place, is a *systemic discontinuity*: a form of change where, on completion, the system in question (in our case the complex socio-technical system on which industrial societies are based) will be different, structurally different from what we have known.

- **The actors and their roles**

So, environmental sustainability requires a discontinuity: from a society where the normal healthy condition was one of growth in production and material consumption, to one capable of

Environmental and social sustainability

Environmental sustainability: the systemic conditions by which human activities, at a worldwide and regional level, do not disturb the natural cycles they are based on beyond the resilience limits of the ecosystem these cycles constitute, nor, at the same time impoverish the natural capital to be inherited by future generations.

1. Our society, and consequently our lives and those of future generations, depends on the long term functioning of that jumble of ecosystems which for simplicity's sake we call nature; on their various qualities (mainly biophysical, but not only) and on their productive capacity (their capacity to produce food, raw materials and energy).
In this problematical framework, research into environmental sustainability must refer to two fundamental concepts: resilience and natural capital.

» The resilience of an ecosystem is its capacity to tolerate disturbance without irreversibly losing its equilibrium. This concept, when extended to the whole planet, introduces the idea that the natural system which human activity is based on has limits of resilience beyond which irreversible deterioration phenomena will kick in.
» Natural capital is the non-renewable resources and the environment's systemic capacity to produce renewable ones, taken as a whole. However, the term also refers to genetic richness – the variety of living species on the planet.

2. To these fundamental precepts based mainly on physical considerations, we must add another of a social and ethical nature, *social sustainability*.
Social sustainability refers to the systemic conditions by which, at a worldwide and regional level, human activities do not contradict principles of fairness and responsibility towards the future, as far as the present distribution and future availability of 'environmental space' is concerned. The concept of environmental space and the principles of fairness and responsibility towards the future can be defined as:
» Environmental space is the territorial expanse needed to maintain the socio-technical system based on that space, in a sustainable way. That is, it indicates how much 'environment' a person, city or nation needs to live, produce and consume without triggering irreversible deterioration phenomena.
» The principle of fairness states that every person has the right to the same environmental space.
» The principle of responsibility towards the future states that we must guarantee to future generations at least the same quantity and quality of environmental resources as we have today.

developing by reducing them, improving the quality of the overall environment. It is difficult to foresee how this can happen. However, this discontinuity will certainly take place and we must expect a long period of transition.

Faced with this necessity a contradictory picture emerges: on the one hand, the gravity of environmental problems is by now universally recognised and measures are beginning to be taken. On the other hand, considering the magnitude of the transformation needed, all such measures are still inadequate, and in reality consumption of environmental resources and the level of deterioration of the planet are still, on balance, increasing. The problem is that what has been done so far has not really challenged currently dominant economic and social paradigms. Consequently the underlying political and social economy keeps directing the system away from sustainability.

Until this is reversed, in other words until discontinuity is recognised as inevitable so that the transition can be dealt with, the pressure of environmental problems will continue to find other outlets, uncontrolled and uncontrollable, such as social tension and confrontation, wars, economic crises. Indeed, thinking and promoting discontinuity is not only a question of environmental policy, but also the only way to imagine a future which is, as far as possible, pacific, tolerant and democratic.

How this is all to come about is difficult to foresee today. However it is certain that this discontinuity will touch all aspects of the system: the physical (material and energy flows), but also the economic and institutional (the relationship between social actors), and the ethical, aesthetic and cultural (the values and quality judgements which lend social legitimacy). It is also certain that it will affect various scales of time (what can be done in the short term and what will require a long time) and space (from the 'micro-scale', single product and service, to the 'macro-scale', global socio-technical systems).

Factor 10

Factor 10: we can consider as sustainable only those production and consumption systems which employ at least 90% fewer environmental resources per unit of service rendered than currently employed in mature industrial societies

1. The impact of human activities on the environment depends on three fundamental variables, linked together by a relationship that can be summed up as a formula:

Environmental impact = Population + demand for well-being + socio-technical system eco-efficiency

Where:

» The population is the number of people drawing on a given ecosystem.

» The demand for well-being corresponds to the expectations, in terms of products, services and common assets, that people express in a given social context and require to consider satisfactory the quality of their living context and the access potential it offers.

» Socio-technical system eco-efficiency is an indicator of the efficiency of the production system's metabolism. In other words, how it transforms environmental resources into the required well-being .

2. Taking into account the forecast increase in population and assuming an understandable growth in demand for well-being from currently more disadvantaged countries, it appears that conditions for sustainability can only be achieved by increasing technical system eco-efficiency by at least a 'factor 10'. That is, by at least 10 times . This is an approximate estimate but nonetheless indicates the degree of change needed. It presents a picture of a society where it will be necessary to live (hopefully well), using 10% of the resources employed today in an industrialised society. It is clear that the production and consumption system of this sustainable society will be profoundly different to what we have known. So different that no partial modification, no incremental innovation in the technology currently in use, no re-design operation can lead us there.

On the other hand, although the transition will be long, it has already begun. So from now on it is a question of steering or managing it while seeking to minimise risks and increase opportunities. To this end, one of the fundamental questions to be addressed concerns the quality of expected and perceived well-being, since the ideas of well-being a society puts forward constitute a formidable impetus to action. Ideas which operate as social attractors are able to stimulate and direct action both on the demand and the supply side of products and services. In order to minimise risks and increase opportunities intrinsic to the transition to sustainability, we must consider and profoundly change currently predominant ideas in this field.

Towards a new idea of well-being

The idea of well-being is a social construct: it takes shape over time according to various factors. The idea of well-being dominant today in the west and widely diffused throughout the world, was born with the industrial revolution. It has changed with the evolution of society and now appears as an articulate set of visions, expectations and assessment criteria which undergo continuous adaptation, but with a persistent common characteristic: that of linking expected and perceived well-being with the availability of a growing quantity of products and services.

Today we know that this idea of well-being leads to an intrinsically unsustainable consumption of environmental resources. We know that because of this, given the limits of our planet, this way of thinking and consequently behaving must change. In fact, we can see today that in many ways this change is already happening and that other ideas of well-being are emerging. The timing and the way in which this transformation will come about are still completely open. Faced with this, our common problem is to enable change to take place in the least dramatic way possible. Our common design aspiration is, or should be, to foster conditions which allow this to come about by choice and not necessity. In other words, through attraction to new opportunities and ideas of well-being, rather than in response to catastrophic events. In order to discuss whether and how this optimistic prospect has a chance of materialising, let's take a step back and remind ourselves why the idea of well-being now predominant has been so successful and why it is currently in difficulty.

Product-based well-being

As industrial society unfolded, the combined development of science and technology offered a growing number of people a hitherto unknown possibility: having at their fingertips products which were the *materialisation* of complex services – machines which carried out, at low cost, service functions that were previously accessible only to the privileged few, from having clothes washed in the laundry to having music played by a chamber orchestra during dinner.

In addition, by making such products available in rising quantities at falling prices, the application of increasingly efficient industrial systems *democratised access*, outlining a vision of the future in terms of an indefinite growth in well-being or, to be more specific, in the well-being that these products could bring.

The original strength of the idea of well-being produced by the industrial society lies exactly here, in this promise of democratisation of access to products which reduce fatigue, leave more free time and extend the opportunities for individual choice – in short, which increase individual freedom.

- **Broken promises**

The crisis in product-based well-being starts with a very concrete (and in its implications devastating) question: the promise of individual freedom and the democracy of consumption it is based on has not been kept and, more significantly, we are discovering that it cannot be kept, now or in future.

On the one hand, the contribution of new generations of products to individual freedom seems increasingly debatable as products tend to become a burden and their added value, in terms of end performance, verges on zero. As a result, the impact on quality of life and on perceived increase in freedom – caused by the acquisition of a washing machine in a house where there was none before, is very different from the impact of the latest mobile phone which replaces a previous generation model. All this is important but open to debate in the sense that we can discuss the meaning we each give to different products, including the technological gadgets we are offered today. However, what is considerably less debatable is the failure of the second promise, that of the spread of product-based well-being. This promise, even in terms of quantity, has not been fulfilled, and nor can it be.

- **Impossible promises**

To be concise: product-based well-being on a worldwide scale is an intrinsically unsustainable pattern. More precisely: it is intrinsically unsustainable for a small, densely populated planet that is highly interconnected and in which we wish to respect certain elementary principles of fairness.

In fact if all the inhabitants of the planet really sought this type of well-being (as is their divine right, since this is what others do and what is daily promised to them), there would be a huge catastrophe. An ecological catastrophe if they were to succeed, since the planet would be unable to support 6-8 billion people approaching western levels of consumption. Or a social catastrophe if they did not, with 6-8 billion people aspiring to the same standards, which only a few could reach.

A highly interconnected and globalised society could not long tolerate 20% or less of the population enjoying this promised well-being, while the remaining 80% were forced to look on with no real chance of taking part.

Another possibility, halfway between the first two, also exists: a world in a state of both environmental and social crisis, where the number of 'high impact' consumers increases alongside the number of those excluded – currently the most probable prospect.

- **Weak but promising signals**

The unfortunate fact that this explosive mixture of two dramatic trends is quite likely does not mean that it is our destiny. This is the inertial scenario, the state we could reach if the main trends underway are not modified. However, in a complex society the main trends are not the only ones. Just as dominant ideas such as the concept of well-being outlined above, are not the only ones in the social debate. Contemporary society in its complexity generates numerous, different and often conflicting ideas. Among these we can identify behaviour, questions, lifestyles and forms of innovation which look promising from the sustainability point of view: movements in the right direction.

Obviously nobody can predict the future for these weak but promising signals. However, as designers, we cannot but give them our backing and do everything possible to improve their chances of getting stronger and becoming widespread ideas and practices.

Fair Wealth: Eight Shifts towards a Light Economy

Wolfgang Sachs, *Wuppertal Institut*

Nanograms to Megatons

During the last quarter century, environmental policy focussed largely on cleaning and protecting air, water, and soil. It intended to put up a protective shield between nature and industry. Regulatory action and filter technologies were applied at the end of pipe; pollution abatement and waste treatment aimed at controlling emissions at the tail end of production.

This policy has come to an end. For a clean economy is not necessarily a sustainable economy. Even an economy that is clean could cheerfully continue eroding soils, cutting down forests, degrading biodiversity, and heating up the atmosphere. What really matters is as much the sheer volume of material input, as pollutants in the output. Instead of chasing nanograms of harmful substances emitted at the tail end, we have to look at the megatons of nature put in at the front end of production. Sustainability means making our system of wealth creation less dependent on resource use. It implies dematerialising the economy. A lean rather than just a clean economy is the implicit grail of sustainability.

Ecology to Justice

The amount of natural resources available for a country – its environmental space – is limited not just by ecological constraints, but by considerations of justice as well. In a finite world, the claim of the 20% well-to-do on 80% of the world's resources seals the unhappy fate of the majority of people on the planet. Ecology cannot be separated from equity, nor equity from ecology.

Consider the greenhouse effect. Oceans and terrestrial biomass are capable of absorbing 13-14 billion tons of carbon dioxide each year. If, however, all countries followed the

German example, the world would release 67 billion tons in the atmosphere. In other words, mankind would need five planets to have sufficient sinks for CO_2 – but we only have one. Conventional economic wealth is intrinsically oligarchic; it can be democratised across the globe only at the price of ecological disruption. The automobile society, chemical agriculture, and meat-based nutrition are cases in point.

Sustainability therefore implies creating forms of wealth which are capable of justice. This means building economies which weigh much less heavily on the planet and on the majority of people. How much less? One rule of thumb is 'Factor 10': industrial economies reducing their overall throughput of energy and materials by a factor of ten (that is, 80-90% less) within 50 years.

Linear to Cyclical Production

Our production systems still operate on the hidden assumption that nature is infinitely abundant. This assumption, from the early 19th century onwards, has been largely responsible for the direction of technological progress: concen-

trating on how to produce more using ever fewer people. However, with planetary limits emerging, the direction of technological progress is bound to change. It will be geared towards boosting the productivity of resources rather than the productivity of labour. As a consequence, managerial excellence will include the ability to design production systems which create value with ever less input of fossil-based resources.
Examples abound. There are usually two points of entry: product design and process technology. In both cases the ground rules are the same: reduce resource input and close the cycles. On the product design side, greater material efficiency can be ensured, for instance (as in the case of Procter & Gamble), by shifting to much lower volumes of detergent, with equal washing power. And better design can mean waste is recyclable, as is the case with the biodegradable credit card sponsored by Greenpeace UK. On the process side, shifts in technology (e.g. from oil to solar) are essential. A post-fossil economy is in the making, in which material flows, reduced in scale and different in quality, cease to be grossly at odds with natural systems.

Hardware to Services
Business caters to the demands of consumers by offering products for ownership. The focus on ownership, however, impedes system-wide responsibility in the company for the entire life-cycle of its products. It encourages more throughput rather than optimal management of resource stocks. Shifting the entrepreneurial focus from the sale of goods to the sale of services through leasing or renting would make the full use of goods, including maintenance and recycling, profitable.
For example, Rank Xerox Corp. has moved from selling products to selling functions. Photocopy machines are not sold but leased, and the customer pays for the amount of copies required. Such an arrangement changes the strategic interest of the company.
The firm now profits from managing its assets carefully through repair services, upgrading or re-manufacturing. In an environmental service economy money does not flow in order to add as many goods as possible to the world, but to provide a particular service to customers through the temporary use of a piece of hardware. As producers turn into providers, and consumers into users, the eco-efficient design, management and disposal of material assets becomes part of the economic logic.

Taxing Labour to Taxing Resources
If natural resources are undervalued in relation to labour, there is the tendency to substitute the cheaper element for the more expensive one. This tendency has stimulated labour-saving technical progress over decades, leading to the overconsumption of natural resources and eliminating jobs in the process. Shifting the tax base from labour to natural resources could begin to rectify this imbalance. The introduction of a general tax on energy – and eventually also on materials – along with a reduction of direct and indirect levies on labour – would bring down the demand for natural resources and increase the demand for labour.

High to Slower Speeds
'Faster', 'further' – as well as 'more' – can be considered the main themes of

fossil-powered progress. Indeed, the assumption that higher speeds are always better than lower ones has prevailed to the present day. However, speed does not come without a price. The mobilisation of space and time requires the mobilisation of nature. Fuels and vehicles, roads and runways, electricity and electronic equipment, call for a gigantic flow of energy and materials. Gains in fuel efficiency will never negate the basic law which governs the physics of speed: to beat friction and air resistance requires disproportionately large amounts of energy.
It is therefore unlikely that a society which always moves in the fast lane can ever be environmentally sustainable. Transport systems, at least cars and trains, could be deliberately designed with lower top speeds. Without a selective down-grading of fossil-powered machines it is difficult to imagine a "Factor 10" economy. Furthermore, electronic transmission at the speed of light is on balance more likely to increase the demand for traffic than to replace it. The online society could easily turn into a traffic nightmare. Controlled speeds may turn out to be a prerequisite for a sustainable information society.

Long to Medium Distances
As distance is the flip-side of speed, the availability of fossil fuels for transport and electric impulses for transmission has immensely increased the geographical range of economic activities. However, economic integration needs more and more transport. A simple German carton of yoghurt travels around 9,000 km before it reaches the consumer, taking into account all its component parts and ingredients. But long-distance transport costs energy and materials.
It will therefore be important to recognise scale as an ecological issue. The economy should be conceived as evolving in several spaces – regional, continental, international – which are only partially connected to each other. For ecological and community health, strategies for regional sourcing and marketing are particularly important for products like food. Moreover, solar power, which relies on the widespread but diffuse resource of sunlight, is best developed when many operators harvest small amounts of energy, transforming and consuming them close together.
A similar logic holds for biomass-centered technologies. Plant matter is widely available and heavy in weight; it is best obtained and processed in a decentralised fashion. A restorative economy will have to be, in part, a regionalised economy.

Well-Having to Well-Being
In an affluent society, the notion that satisfaction increases with the quantity of goods becomes shaky because goods steal time. They must be chosen, bought, set up, used, experienced, maintained, tidied away, dusted, repaired, stored, and disposed of. The number of possibilities – goods, services, events – has exploded in affluent societies, but the day, in its conservative way, continues to have only 24 hours; stress therefore pervades everyday life. Scarcity of time is the nemesis of affluence.

Well-being has two dimensions: the material and the non-material. Anyone who buys food and prepares dinner has the material satisfaction of filling his or her stomach and the non-material satisfaction of having cooked a particular dish or enjoyed good company. Non-material satisfaction, however, re-

quires deliberate attention for use and enjoyment. Having too many things makes time for non-material pleasure shrink; an overabundance of options can easily diminish full satisfaction. In other words, material and non-material satisfaction cannot be maximised simultaneously; whoever wants to optimise his overall satisfaction must limit his quantitative aspirations. Frugality is therefore an essential ingredient of well-being. Henry D. Thoreau spoke wisely when he said, “A man is rich in proportion to the number of things he can afford to let be”.

A social learning process

The transition towards sustainability will be a social learning process in which human beings will gradually find out (by trial and error, as in any learning process) how to live well consuming (much) less while regenerating the quality of the environment, that is, both the global ecosystem and the local context in which they happen to live.

This sentence, which summarises several decades of experience – and errors – around the issue of 'well-being, consumption and sustainability' contains despite its apparent simplicity a number of important strategic implications.
First of all, it states the need to consume far fewer environmental resources and to regenerate the physical and social environment. However, it also states that this change must come about due to positive choice rather than disastrous events or authoritarian imposition, if it is not to prove a social catastrophe. In other words, it must result from a transformation perceived by those who live it as an improvement in living conditions (both individual and collective).
It is also clear, even though it does not explicitly say so, that there is no guarantee that a drastic reduction in consumption will be perceived as an improvement in quality of life by individuals and communities, given the present day framework of cultural and behavioural reference. It is evident that this will need, above all, a thorough redefinition of the way in which each individual or group sees quality of life and, ultimately, the idea of well-being.
In conclusion, it should have been apparent right from the start of our decades-long learning process that product-based well-being was out of the question as a point of reference. Therefore, our approach has been to try to challenge and move beyond this basic idea.

Well-being, products, and resource consumption

The first step is to improve our understanding of the problems we face. Product-based well-being can be described as a double correlation. By definition, this concept means *more well-being = more products*. And at the same time, operating with current technical and production systems, *more products = more consumption* of natural resources. From this double correlation it follows that the increase in well-being, to which everybody rightly aspires, is directly linked to the consumption of natural resources. In a limited world with a growing number of inhabitants, this is clearly and inevitably unsustainable.
In the first half of the last century, in an economic and cultural context where the concept of limits seemed to have been forgotten, this direct link between growth in well-being and growth in the consumption of natural resources was not seen as a real problem. In recent decades this has been changing and we have begun to understand (or rather, been forced to understand) that this link brings with it various problems, not only environmental but also social, political and, ultimately, economic. Consequently the environmental issue was put on individual, political and economic agendas.
The first effect of this 'discovery of the environmental problem' was to make us face the double correlation described above, focussing activities on the second part (the link between products and consumption of environmental resources) while taking the first for granted (the link between well-being and product availability).
Thus, all efforts have been focused on the technical potential to break the bond between

products and consumption of resources, that is, decoupling growth in the former from growth in the latter by increasing the environmental efficiency of products (so-called *product eco-efficiency*). In short: make more products with lower resource consumption.

- **The proliferation of light products**

  This process has had partial success: many products have been redesigned, their eco-efficiency greatly improved and, on the whole, each single industrial product has become 'lighter' (in the sense that its individual environmental burden or *ecological footprint* has been reduced).
  Unfortunately, however, statistics tell us that total aggregate consumption of environmental resources has continued to grow. This is because, while the environmental burden of each product has diminished, their number has increased disproportionately. Consequently overall consumption of resources has risen.
  This contradiction between expectations and results is one of the disconcerting aspects facing us in the learning process, which together have been termed the *boomerang* (or *rebound*) effect: the phenomenon by which, in the intricate interweaving of events, choices meant to be positive for the environment have in fact generated new problems (☛ BOX *Boomerang effect*).
  Be that as it may, the outcome is that the relative dematerialisation of products has not brought with it any reduction in overall consumption. The expected decoupling of products

Rebound effect

Rebound effect: this is a phenomenon by which choices which had been considered positive for the environment have in fact generated new problems once put into practice.

1. The rebound effect is the great, and in many ways tragic, discovery of the last few decades of experience in the planning and development of eco-efficient products and services. It is the phenomenon by which choices which had been considered positive for the environment have generated new problems once put into practice. In fact, every technological improvement introduced with the intention of increasing the eco-efficiency of products and services, for reasons rooted in the complexity of the socio-technological system as a whole, seems to transform itself 'naturally' into new opportunities for consumption and consequently increase the unsustainability of the systems into which they are introduced.
In the recent past, when considering the reduced individual environmental burden of various artefacts, taken one by one, it did seem that the overall production and consumption system was evolving in the right direction, towards sustainability. However, broadening observation from single products to the system as a whole, it became clear this was not the case. When products become light, small, efficient and cheap they tend to change their status and proliferate, encouraging wider and faster forms of consumption, drawn into fashion cycles (as happened with watches) or into the instant world of throwaway goods (as in the case of cameras).

2. Similarly we have seen that the development of electronic systems and magnetic and optical memories (and their friendly interfaces), making previously difficult and boring activities easy, has tended to popularise them and also in this case caused them to proliferate. In so doing these too have enormously increased the consumption of resources. For example, the 'push and print' syndrome is well known – with the availability of computers, printers and word processors, it has become so easy to update and print texts that every document is printed in umpteen versions, causing an exponential growth in paper consumption.
The rebound effect is the result of a jumble of economic, social, cultural and technological matters which encroach on all spheres of social and individual life. The fact that nobody foresaw it is due principally to a dominant mindset among observers that led them to overlook the systemic nature of the phenomena observed and, above all, its complexity. In other words, not to consider the unexpectedness (and the potentially contradictory nature) of the socio-cultural phenomena which every technological innovation brings with it.

and consumption, taken as a whole, has not occurred and in spite of everything the system is still heading towards real crisis.

Breaking the link between well-being and products

The first thing to learn from the discovery of the boomerang effect is that we must learn from experience itself. In this case, while reminding us again of the complexity of the systems we face, experience tells us that we must work on the connection between well-being and product.

Remembering the double correlation we started with, it seems obvious that concentrating solely on the second one: 'more products = more consumption of environmental resources', will not lead in the right direction.

To be more precise, we have learnt that this type of intervention is important but not sufficient: single products can be lightened, but their quantity may still rise disproportionately. Therefore we must now concentrate on the first correlation, 'more products = more well-being', and find a way to break it.

Context based well-being

The great design issue that society as a whole must face is this: how can we move towards a society where expectations of well-being are separated from the acquisition of new artefacts? How can we enable people to live well consuming (much) less while regenerating the quality of our habitat?

In order to answer this we must imagine a cultural and production system where a reduction in consumption is (more than) compensated by an increase in other forms of quality: the intangible qualities of culture and spirit but also – and this is of greater interest to us here – the quality of our life context, where well-being is created bearing in mind the whole background of a person's life. (☛ Box *Well-being*).

To understand this better we need to observe more carefully how to create conditions of well-being and, in particular, how to define the relationship between products and services, and the overall quality of the context we live in. To do so we shall introduce two pairs of concepts fundamental to this: that of subject-actor and context of life, and that of common assets and contemplation time.

Subject-actor and the co-production of value

In order to talk about well-being we must first of all describe the protagonist of our story. To be more specific, since we are particularly interested in the relationship between this person and the system of artefacts used to create an idea of well-being, we shall refer to them as the subject-actor. That is, the subject seen in a context, adopting an action strategy to achieve a given result

This picture of the subject-actor placed within a context is what makes our proposition differ from the more common view of a subject faced with products. That is to say, the view of a subject-consumer, where the person is usually considered as disengaged from the complexity of a specific living context, reduced to the singular role of consumer.

The subject-actor pattern, on the other hand, offers the possibility of considering an active person who participates in the process of value production, in other words, in achieving a result. This focus on a possible active role is fundamental if we want to move away from a

picture of product-based well-being and its corollary, of a person limited to the role of consumer.

On the contrary, in pursuing a given result a person can bring about its achievement through various *forms of participation*. These are in turn defined by how he employs his personal resources, whether physical, economic or cultural (what he knows, how much he knows how to do and what he can do – physically and economically speaking) in combination with his time (the time he can and wants to dedicate) and attention (the degree of concentration he is capable of).

The combination of these variables gives rise to various action strategies which, for simplicity's sake, can be placed on a *passive* versus *active* scale. Where on the one hand the person is presented, and considered, as a subject 'to serve', and on the other, as a bringer of potentially valuable resources.

Contexts and life strategies

Thus, the protagonist of our story is placed in a precise setting. This is the context of his actions and therefore also of his daily search for well-being. By the term context we mean the physical space and the social set-up which constitute the background in relation to which action becomes possible and takes on meaning.

So it is the *set of restraints and opportunities* that, in a given time and place, delimit the space in which he can act.

We should stress that between context and action (and actor), there is no deterministic bond: the context directs and conditions but never completely determines the action taken. In short, the context is a 'trampoline for action' that enables the person concerned to jump in various, but not all, directions.

A context can be described by listing its various properties. The aspect that interests us here is the properties of the *natural and artificial system* in which action takes place, the physical space and social set-up which underpin the context itself, in relation to which the subject-actor will assess his own well-being and pursue strategies to maintain or improve it.

Without going into detail we can say that various typologies of assets, and various timescales come into play in the definition of these strategies: assets taken into consideration are both private (mainly acquired on the market), and public.

Timescales refer to the rhythms in which events take place and the existence or otherwise of an ecology of timing.

Various combinations of private and commonly held assets, of different timescales and ways of taking action, constitute the different life strategies by which the subject-actor tries to realise his idea of well-being.

Our hypothesis is that to move away from product-based well-being we need to value community assets more highly, develop islands of slowness and promote individual participation. Exactly the opposite of what is happening today, at least in the mainstream. Let's consider common assets, contemplative time and their current, increasing state of crisis.

Common assets and contemplative time

Common assets are tangible and intangible systems which help create a context and its particular quality, and which by their very nature belong to everybody. The notion of common asset covers a complex range of context components: from basic common physical assets such as air or water, through social ones such as neighbourhood community or the civic sense of its citizens, to more complex ones such as landscape or urban public space or a sense of security. One characteristic of all common assets is that

their contribution to quality of life is not generally perceived until they have been lost in some sense. In other words: when a common asset is in good health, the service it offers seems obvious and normal. We become aware of its importance only when it starts to wane.

The pattern of well-being which now predominates in industrial society has largely neglected the importance of common assets. In fact the central importance given to individually available assets (whether products or, more recently, services) has brought with it the possibly undesired but all too tangible side-effect of their dramatic deterioration, evident in progressive *desertification* (that is, their abandonment and subsequent degeneration) and their increasing *commercialisation* (that is, their transformation into marketable goods such as bottled water in the place of natural water, the shopping mall instead of the public square, a private guard service instead of a neighbourhood watch, and so on).

Contemplative time is time for 'doing nothing' which is lived neither as empty nor meaningless, or alternatively time in which 'something is done' but by choice, slowly. Above all, this expression denotes intervals in time when the flow of targeted or purposeful action is voluntarily broken.

Some obvious examples of contemplative time might be time spent looking at the sunset or doing some form of spiritual exercise. We can, however, assume that there is also a quota

Well-being

Well-being: a set of context properties which a person perceives to be positive and towards which he steers his action strategy.

1. The concept of well-being is complex and controversial. Its interpretation swings from positions seeking a (presumed) objectivity and hierarchy of needs, to those which claim maximum subjectivity of judgement, appealing to the total subjectivity of what is considered to be 'useful'. Here we shall adopt a position midway between the two, following the line of thought laid out by the Anglo-Indian economist and Nobel prize-winner for economics, Amartya Sen, in the study of living standards, and so also of individual well-being.

According to Sen, what determines well-being is neither goods nor their characteristics, but rather 'the possibility of doing various things making use of those goods or their characteristics' (Nussbaum, Sen, 1993). It is exactly this possibility which enables someone to approach his idea of well-being, giving him the possibility of 'being' (what he wants to be) and 'doing' (what he wants to do).

In order to develop his idea Sen introduces two very effective concepts: the concept of functioning and that of capability.

2. 'Living', writes Sen, 'consists of a set of "functionings" relating both to doing and to being, like being adequately fed, housed and clothedЄ being able to move around freely, being able to meet friends and have relationships with them, being able to appear in public without feeling ashamed, being able to communicate and participate, being able to follow one's own creative instincts and so on' (Nussbaum, Sen 1993).

On the other hand, the quantity and quality of functionings which a person can bring into play depends on the integration of two fundamental components: the solutions to which he has potential access and the personal resources which he has available. It is precisely the integration of these two components from which the concept of capability emerges, on which Sen bases his definition of well-being. For Sen, and for us, the condition of well-being emerges from the dynamic relationship between functionings and capability, between what could be done and what one could be and what one actually can, and knows how to, do and be.

Reference to capability in the context of well-being means, then, taking into consideration something which is not (only) a set of products and their possibilities, nor (only) 'the mental reaction to those possibilities, or rather happiness'. As Ota de Leonardis observes, 'Capabilities rest midway – and link – the subjectivism of usefulness with the objectivism of need' (De Leonardis, 1994). In so doing, linking the solutions available in a given context with the personal resources of the person acting in that context, the concept of capability gives a concrete reference on which to base an evaluation of the living standard actually offered to that person.

of contemplative time in such things as walking, eating or communicating with others, at a slower pace.
Traditionally, contemplative time was an important part of life and having such time was a privilege – effectively, the poor often lacked time for contemplation in the past. Now things have changed and contemplative time is disappearing for both rich and poor. This progressive disappearance can be traced to two causes.
The first is time saturation, the tendency to fill every moment with activity and, increasingly, with more than one thing at the same time (such as driving while making a telephone call and having something to drink). The second is acceleration, the tendency to do everything more quickly in order to have the chance (or the illusion) of being able to do more.

- **Quality of context versus market commodities**

Compared to the last century, we can see how the diffusion of market commodities and services has run parallel to the deterioration of common assets and the disappearance of contemplative time.
From here the direct relationship between the diffusion of market commodities (however sophisticated and efficient they may be) and the crisis in common assets, contemplative time and all that they bring as their specific and (economically and environmentally speaking) free contribution to a state of well-being, becomes evident.
So it is from this that our original statement springs: to be sustainable, any idea of well-being must (re)discover quality of context, and therefore the value of common assets and contemplative time.
Reference to life context as the basis for a conversation about well-being is the first move towards changing the rules of the game, laying the foundations for new ideas of (and about) well-being.
The second step is to point out the direction which, as far as we can tell, seems to lead towards sustainability.
All this requires skilful planning. At the same time, it places designers in a paradoxical position in many ways: we need to move towards a world where expectations of well-being are less tied to the existence of new artefacts, but the only way in which designers and business seem able to do this is by designing and producing new artefacts.
Totally new forms of innovation will be needed to overcome this paradox and identify product and service systems that promote and bring about a new idea of well-being: a radical innovation that generates products and services which respond to a social demand, are feasible and also able to *enhance the quality of the context* in which they exist.

- **A new orientation**

A solution to environmental problems, then, demands *discontinuity*: society must move from seeing increases in production and material consumption as the normal healthy state, to being able to develop while reducing these and simultaneously improving the quality of the environment as a whole.
Put like this, while ecologists focus on those physical aspects of a society's metabolism which avoid environmental catastrophe, for all other social actors the problem is how to facilitate a transition which achieves that goal without social (and therefore cultural, political and economic) catastrophe.
More specifically, if the role of politics and institutions is to create an environment

favourable to steering innovation towards sustainability, for designers and business, and also for ordinary citizens in their communities and organisations, the potential for action lies in their capacity to give a *strategic orientation* to their own activities, to define objectives which combine their own needs and requirements with sustainability criteria as they gradually come into focus.
Bringing these different elements together implies considerable planning skills: the ability to generate visions of a *sustainable socio-technical system*; to organise it into a coherent system of regenerative products and services or *sustainable solutions*; and to communicate these visions and systems adequately so that they are recognised and appreciated by a wide enough public to render them practicable.

Sustainable solutions

How can we help people and communities in the search for a well-being which will also bring an improvement in their overall context of life?

Our daily life is based on continuous activity to construct and maintain value production networks: networks of people, things and places which aim to achieve something that we judge to be a result: getting a meal, washing clothes, reading a book, organising a meeting, each of these result-oriented networks can be defined as a solution (☛ BOX *Result*).
The concept of solutions is important not because it answers our original questions, but because it gives us the tools to do so: thinking about sustainable well-being assumes we are capable of thinking of opportune solutions on which to base it, that is, sustainable solutions.

Solutions and results

In its most general sense, a solution is a process by which product, service and knowledge are put together to achieve a result, that is, solve a problem or reach an objective.
In general, this daily activity is undertaken by people applying their personal capabilities according to the opportunities available in the context in which they find themselves. In practice this means identifying a result and choosing products and services to achieve it from among those they have access to.
Recently, the increased speed of transformation in socio-technical systems has presented this traditional way of behaving with difficulties: the traditional know-how people have acquired no longer seems to be adequate since adapting new products and systems, case by case, to those already in existence is not easy, and the actual results to achieve become more and more complex (if, for example, we really want to consider the environmental and social implications of our choices).
So in this context of rapid transformation, it becomes necessary to conceive and create products, services and know-how conceived from the outset as 'a system' to be coordinated, or potentially coordinated, according to result.
Starting from this need, some producers and service providers have begun to offer advanced solutions conceived as unitary systems and therefore distinct from off-the-cuff

solutions, widely put into action without any real plan.

- **Action strategies**

  Considering solutions from the point of view of the subject-actor, they are the result of his strategy, an action strategy understood as a sequence of choices and actions by which, according to his capability, he identifies and achieves a result (☛ BOX *Capability*).
  The concept of action strategy has to do with the way people act and, in particular, refers to how they articulate their life plan in specific objectives and the strategies to achieve them. Strategy, in this context, should be interpreted as a set of choices and moves made for a purpose and carried out in a highly unpredictable context.
  In our case it indicates that the sequence of actions of a life plan occurs in a context which is never entirely predictable.
  Consequently the subject who acts must use his strategic ability to keep on track, receiving feedback from the system he is operating in, constantly redefining his movements and, if necessary, reorienting his objectives.
  In short, an action strategy is the way somebody is able and knows how to determine his moves, how and how far he is able and knows how to focus on a result and, in each situation, identify, acquire and use the means to achieve it.
  This may involve associating different products and services with each other, or accessing a system of products and services conceived at the outset as a 'solution'. In other words, a person's action strategy is the conversion of capability into concrete acts. Therefore his action strategy, as well as his capability, depends on the combination of *forms of participation* which he can, and knows how to, bring in play (mainly the physical, economic and cultural personal resources available to him), the solutions

Result

Result: a property of the context which can be achieved by adopting a suitable action strategy.

1. The concept of result commonly refers to the achievement of something. In our case, what is actually achieved is a new property of the context (or a new set of context properties) which enables someone to approach his own idea of well-being.
Defined in this way, the concept of result introduces those of functioning and capabilities proposed by Amartya Sen in talking about living standards: once reached, every result presents itself as a functioning achieved – the realisation of a particular capability of being or doing.
In the framework of societies defined as 'modern', focusing on desired results and their order and hierarchy is a planning act which we can refer to as *'life planning'*, though given the semantic nuances of the word 'planning', it may be more appropriate to use *'life strategies'*.
So, a life plan is the overall framework of reference which tends to give coherence to results as the subject brings them into focus and tries to achieve them (and which, inevitably affect the life plan itself in retrospect, modifying it to a greater or lesser extent).

2. One result is the objective of a family of intentional actions on the part of a subject-actor. More precisely, those actions which are (mainly) part of the search for well-being. Correspondingly, actions (mainly) pursuing well-being can be considered as a search for a specific set of results.
In turn, the results which make up this set of actions can be varied and may combine with each other in complex networks, leading to a variety of interaction modes, such as hierarchical, parallel, or in series.
The nature of such results, as well as the functionings they refer to and the strategies needed to achieve them, fundamentally depends on the combination of personal resources and solutions available.

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which present themselves (the set of product, services and knowledge which he has access to and which can enable him, if he has the right personal resources, to achieve the desired result).
Consequently, it can be seen that the emergence of new action strategies and that of new solutions are linked.

- **Starting from results**

We have already hinted that thinking in terms of solutions is a pre-condition for the development of sustainable production, use and consumption systems. Now let's elaborate a little.
In order to steer towards sustainability a systemic discontinuity must occur. On the scale of the design issues discussed here, this discontinuity (which can be seen as a *local discontinuity*) emerges as a radical change in results required and in ways to achieve them, that is, as a change in the typology of solutions proposed and in action strategies adopted.
This statement can be better understood if we briefly consider the steps to planning a solution:

» **change our viewpoint.** Move the centre of interest from things (refrigerators and cookers, cars and washing machines) to results. More precisely: to the activities aimed at a result such as getting a meal, moving around the city, or washing clothes.

» **imagine alternative solution.** Plan different possible combinations of products, services, knowledge, organisational ability and roles to be played by the subject-actors involved,

Capability

Capability: the possibility of a person achieving a result using his own personal resources and the set of solutions he has access to.

1. The concept of capability is linked to that of result (and of functioning). It refers to the combination of what a subject has available and what he needs to achieve a given result, where what he has available are personal resources and what he needs is a solution, that is, an appropriate set of products and services aimed at achieving a result.
The interesting aspect of this concept is that it leads us to talk about people's well-being, moving our attention away 'from goods to what goods enable human beings to achieve' (Nussbaum, Sen 1993). In so doing, it allows us to talk about quality of life more objectively than we can by referring to the concept of usefulness (the individual value attributed to a result) and, at the same time, less superficially than when the idea of quality of life is reduced to access to 'a basket' of products and services. A simple description of this basket of products and services does not, in fact, allow us to judge the actual state of well-being to which it is supposed to give access, because the basket itself may involve a different standard of living for people having different personal resources (see well-being entry).

2. The capabilities available to someone depend on the characteristics of a context, especially on the accessible solutions in that context, and on his personal resources. Personal resources may vary: physical skills, especially those which allow a person to do something concrete, are the most obvious. However, we are not merely referring to these. Personal resources also include the knowledge, organizational, entrepreneurial and creative skills which somebody brings to bear on a result, choosing a solution and doing all that is needed to achieve the chosen objective. Finally, time and money are also part of personal resources.

through which these results could, in principle, be achieved;

» **assess and compare.** Various alternative solutions: use appropriate criteria to evaluate the economic, social and environmental expediency of alternatives;

» **develop the most suitable solutions.** Plan following a twofold process: *promote convergence* between enterprises and those involved in realising the chosen solution and connect the products, services and know-how which make up the solution.

Solutions and sustainability

Thinking in terms of solutions can therefore be considered a pre-condition for conceiving and developing sustainable systems, for complementary reasons:

» **it promotes a systemic approach.** Encouraging designers, and those involved in the planning, production, running, use and final disposal (of material components) of the solution, to think in terms of a system, which potentially brings numerous advantages from the environmental and social point of view;

» **it opens discussion on the current system of products and services.** Considering possible alternatives to 'off-the-cuff solutions' currently available (which, as we now know, are largely unsustainable). In so doing, it offers the possibility of introducing criteria and guidelines in harmony with the requirements of sustainability.

On the other hand, the change from products to solutions, from the current systems-oriented-towards-product to new systems-oriented-towards-results, is only a pre-condition and not a guarantee for sustainability.
This is because emerging new solutions could prove even more unsustainable then those they replace. All depends on the design choices actually adopted.
In practice, if we observe contemporary society, we can see an increase in the availability of product and service systems which are in fact solutions. Unfortunately, as we have already seen, the way this is happening is not leading the production, use and consumption system in the right direction.
In order to change the direction of development it is necessary for other transformations to take place that a new idea of well-being, the one we have defined as 'context based well-being', evolves and a new generation of sustainable solutions emerges.

Criteria for sustainability

A sustainable solution is the process by which products, services and know-how are made into a system with the aim of helping somebody achieve a result that meets sustainability criteria.
To be more precise, a result which transforms a given system and generates a new one which is consistent with the fundamental principles of sustainability, being characterised *by low energy and material intensity and high regenerative potential*.

» **Consistency with fundamental principles.** This refers to ethical principles related

to people and society (such as justice within and between generations and international justice), principles related to our relationship with nature and the environment (conservation of biodiversity, zero hazardous wastes and so on). It is also linked to more complex social and economic questions such as fair distribution of wealth and power, of individual and collective involvement, of community empowerment. In short, reinforcing democracy.

» **Low energy and material intensity.** This refers to the lightness of the solution and its effects and is assessed in terms of systemic eco-efficiency, that is on the basis of the quantity and quality of resources used to obtain a result.
Therefore it expresses the technical dimensions of a solution, its capacity to obtain a given result in the best possible way. This is the most traditional set of criteria for sustainability, and it remains fundamental – whatever the system to be defined as 'sustainable', it has to be highly eco-efficient, bearing in mind the overall life-cycle of related artefacts.

» **High regenerative potential.** This refers to the capacity of the solution to integrate with its context of use, enhancing environmental and social resources. It therefore expresses the prepositional dimension of a solution, its capacity to modify, positively, the state of things.
This third criterion embodies considerations about the quality of living contexts and is assessed by means of social, cultural and economic parameters which in turn are the expression of knowledge and social expectations with regards sustainable well-being. Even though the criteria for contextual quality from a sustainability perspective are still a matter for discussion, certain aspects are fairly clear and agreed. It is in particular a widely shared opinion that a system must be highly integrated with its context in order to be defined as sustainable, and it must enhance and, where appropriate, regenerate local environmental and social resources.

Orientation and guidelines

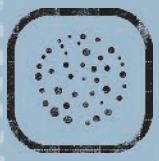
The criteria for sustainability proposed here provide useful indicators to gauge the quality of results; to assess whether and to what extent the system which emerges from the integration of a new solution with the existing state of things (its environmental, social, economic and cultural implications as a whole) is sustainable.
However, the assessment parameters that emerge from these criteria are not planning directives; they enable us to assess choices made, but not guide them before they have been conceived.
To do this we must start from the criteria themselves, and from concrete experience gained so far, and proceed to develop *orientations* and *project guidelines*: general indications and specific suggestions to bear in mind so as to guide design choices towards solutions which, as far as we can tell so far, seem most likely to prove sustainable solutions. These orientations and guidelines are an expression of the state-of-the-art and should be taken as dynamic directives, in perpetual evolution.

TABLE GUIDELINES

General Principles

• Think before doing.
Weigh up the objectives.
Since certain design proposals are in themselves ethically unacceptable, before starting on a project think about its general implications.

• Promote variety.
Protect and develop biological, socio-cultural and technical diversity.
Since sustainability is practically synonymous with diversity, plan to respect existing diversity (biological, but also cultural, organisational and technological).



• Use what already exists.
Reduce the need for the new.
Since we need to minimise intervention, before thinking up something new, enhance what is already there.

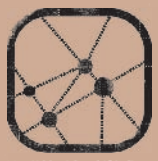
Quality of context

• Give space to nature.
Protect natural environments and promote 'symbiotic nature'.
A densely populated and highly artificial environment needs planned 'natural spaces'. We must plan systems that respect remaining natural areas and integrate natural components innovatively into the urban fabric.

• Re-naturalise food.
Cultivate naturally.
Develop evolutionary advanced, organic food production systems which reduce the artificial nature of our food system and make its product flow more transparent.

System intelligence

• Empower people. Increase participation.
Develop enabling, socialising systems to foster personal capabilities and reinforce the social fabric.



• Develop networks. Promote decentralised, flexible forms of organisation.
Develop systems capable of learning from experience, amplifying feed-back and creating choices which can be reorientated.

• Use the sun, wind and biomass. Reduce dependence on oil.
Develop alternative energy systems minimising production of CO_2.

• Bring people and things together. Reduce demand for transport.
Develop low intensity transport systems to reduce the impact of mobility and reinforce local social fabric.

• Share tools and equipment. Reduce the demand for products.
Develop systems which optimise the employment of products and systems and at the same time foster new forms of socialisation.

• Produce at zero waste. Promote forms of industrial ecology.
Develop industrial ecosystems which tend to 'close the loop of materials' and cascade energy.

• GENERAL PRINCIPLES • In viewing sustainability, certain fundamental considerations must be taken into account before beginning a proper design process. This leads us to some general principles which need due attention before starting a project.

» **Think before doing. Weigh up the objectives.** Since certain design proposals are in themselves ethically unacceptable, before starting on a project think about its general implications. For example, do not use products which have been declared harmful or genetically modified organisms, do not design weapons, do not collaborate with companies that use child labour.

» **Promote variety. Protect and develop biological, socio-cultural and technical diversity.** Since sustainability is practically synonymous with diversity, plan to respect existing diversity (biological, but also cultural, organisational and technological) and if possible generate new forms of diversity. For example, give greater prominence to craft products, to the development of energy systems based on different sources and to fostering multiple modes of transport.

» **Use what already exists. Reduce need for the new.** Since we need to minimise intervention, before thinking up something new, enhance what is already exists. For example, restore infrastructure, buildings and unused products, optimise the use of things that are underused and protect or update knowledge and existing forms of organisation.

• QUALITY OF CONTEXT • By this we mean the tendency to develop solutions which promote the overall quality of contexts. In particular, solutions which imply the restoration of common assets and the promotion of an ecology of timing. This brings us to face complex issues such as our relationship with nature and food in highly artificial urban contexts, or the organisation of space in daily activities and the shared and flexible use of common assets and service infrastructure.

» **Give space to nature. Protect natural environments and promote 'symbiotic nature'**. A densely populated and highly artificial environment requires planned 'natural' spaces. We must plan systems that respect remaining natural areas and which integrate natural components innovatively into the urban fabric. For example, natural parks, urban parks and gardens, but also urban vegetable gardens and city farms; and green, leafy roofs and facades which also help maintain a steady temperature inside the buildings.

» **Re-naturalise food. Cultivate naturally**. Develop evolutionary advanced, organic food production systems which reduce the artificial nature of our food system and make its product flow more transparent. For example, organic food production; direct, transparent distribution systems and product traceability systems.

» **Bring people and things together. Reduce the demand for transport.** Develop low intensity transport systems to reduce the impact of mobility and reinforce the local social fabric. For example, decentralised services; point-of-sale production or consumption; neighbourhood offices for distance working.

» **Share tools and equipment. Reduce the demand for products.** Develop systems which optimise the employment of products and systems and at the same time foster new forms of socialisation. For example, car sharing, condominium laundries, shared gardening and do-it-yourself tools.

• **SYSTEM INTELLIGENCE** • This tends towards an intelligent, sensitive management of renewable resources, energy flows, materials, products and people. Furthermore, in the framework of a transition towards sustainability understood as a social learning process, this orientation strengthens the tendency towards greater systemic eco-efficiency by developing a capacity to learn from experience and correct mistakes. Indeed a capacity to learn is the most characteristic aspect of this form of intelligence.

» **Empower people. Increase participation.** Develop enabling, socialising systems to foster personal capabilities and reinforce the social fabric. For example, well developed do-it-yourself systems; systems for the exchange of possessions, time and skills; interactive information systems and the promotion of informed purchasing groups.

» **Develop networks. Promote decentralised, flexible forms of organisation.** Develop systems capable of learning from experience, amplifying feed-back so that choices can be redirected. For example, systems based on 'bottom-up' organisations; systems equipped with a listening ear and distance check-up channels; decentralised or point-of-sale production.

» **Use the sun, wind and biomass. Reduce dependence on oil.** Develop alternative energy systems minimising production of CO_2. For example, bio-climatic architecture; sustainable employment of bio-mass and wind generators; integrated photovoltaic systems and fuel cells.

» **Produce at zero waste. Promote forms of industrial ecology.** Develop industrial ecosystems which tend to 'close the loop of materials' and cascade energy. For example, symbiotic industrial systems; total re-use of waste and scrap; co-generated heat and electricity and decentralised energy networks.

Promising solutions

A solution which follows this direction and which has adopted one or more corresponding guidelines can be called a promising solution: one which, on the basis of previous experience, has a good chance of being sustainable.

The concept of a promising solution needs more explanation because it is the one most often referred to when talking about proposals for sustainable everyday life. We shall start with some fundamental considerations.

» Consistency with one or two guidelines does not, in itself, guarantee sustainability – this can only be verified through adequate assessment methodologies.

» If all the artefacts that make up a solution are taken into consideration and their entire life cycle analysed, assessment methodologies can still only be applied rigorously when the project has taken shape and all its components have been developed.

» Assessment methodologies are so complex that their application is unthinkable as long as there are a lot of very different alternatives on the table.

Faced with the complexity of rigorous, quantitative assessment methodologies (and the time and financial commitment they demand) simplified methodologies and guidelines have been developed which allow promising solutions to be conceived and developed. It must be clear

that these methodologies, and the promising solutions they give rise to, are relatively uncertain, although this should not worry us unduly. Experience teaches us that every human action gives rise to unexpected consequences. This is also true of promising solutions. It has happened more than once that, when put to the test, they have proved considerably less promising than expected, or have proved to be definitely wrong. In spite of this, we have still learned something which we otherwise would not have learnt. In fact, it was from exactly these errors that we were able to develop new guidelines taking them into account.

In other words, faced with problems of great complexity, it is better to carry out trials conscientiously and observe the results (and so be able to learn from experience), than to do nothing. This is why the promising solution is so important – it tries to use the best of what we know while at the same time explicitly accepting the possibility of mistakes and the need to learn from experience.

Ideas for a sustainable city: proposals and case studies

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Contemporary society is an immense workshop where a great variety of ideas are generated. Some of these find the necessary energy to become cosmopolitan, adapting to different contexts, opening new prospects and stimulating new, original local action.

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In this framework, contemporary society in its complexity is contradictory. It does also produce ideas concerning urban daily life and sustainability: new demand for products and services, new styles of behaviour and totally new forms of innovation from the base of society. These are signs of sustainable, practicable ways of being and doing, ideas of well being, forms of everyday life. It is a question of recognising these ideas, interpreting and spreading them. In short, of making them more cosmopolitan.

3

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This chapter sets out to present and discuss the results of a research programme conducted in collaboration with design schools all over the world. It was based on fifteen workshops on the theme of 'Sustainable solutions for urban living', conducted by young designers in ten countries. Its first and most important result is a vast, articulated *catalogue of promising solutions*: 72 suggestions where the workshop participants have identified and interpreted ideas on how daily life can be made more sustainable, localising them in their own cities.

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The discussion of these results (presented concisely but thoroughly in the supplement: *Album*) focuses on the common traits and specific issues which the various proposals highlight, to greater or lesser extent. These projects with their common traits and these specific issues, together make up potentially useful material on which to carry on research and on which, specifically, to build up a plausible, shared vision of how we may be able to live in a sustainable city.

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Some real case studies, also singled out in collaboration with the workshop participants, have been presented along with each of the emerging issues. Real examples that show how and how much the innovative ideas put forward by the workshops are linked to real situations in which similar proposals have actually been put into practice. This link between project and real occurrence supports a conviction that lies at the base of the whole experiment: namely, the conviction that the most interesting design proposals should not be seen as scenes from the imaginary worlds of designers in isolation, but as sensitive interpretations of what already exists. Or as something which, according to a feeling common to those who care about the theme, could exist.

Everyday life and sustainability

Everyday life is the world seen and lived by a subject in his normal living contexts, where what occurs is "what we do everyday". Just because of this, these are the contexts that each of us refers to when judging the quality of our own lives, when comparing this with our expectations of well being and possibly deciding if and how to improve it.

We act out our lives through a series of contexts in which the functions we meet with on a daily basis take place. These contexts and their functions constitute the daily stage where life modes develop, and along with them the habits of production, use and consumption on which our daily lives are based.
Their everyday nature often makes these practices routine: they occur out of habit from motives and options which are almost always unconscious.
Only in certain periods, when the context and/or functions change, must a routine action turn into a conscious choice in the planning of a suitable action strategy. We are in such a period today, for various reasons, of which the transformation towards sustainability is certainly the most pressing and of greatest interest to us here.
As already said, the transition towards sustainability entails a systemic discontinuity. In terms of everyday routine, this means that each of us will have to stop many of the almost unconscious, repetitive sequences of action which underlie our existence.
We will have to find new grounds, define new objectives and build up a network of people, products, services and know-how to achieve them, and so generate new forms of everyday life.
Some suggestions for solutions in which this changing everyday life merges with a search for sustainability will be presented in this chapter, but before beginning the discussion we can usefully outline the background to these propositions and answer two questions: firstly, what is urban everyday life? Secondly, in what terms can we talk about sustainable urban everyday life?

Everyday life in the city

The concept of everyday city life has to do with the way daily functions appear to the inhabitants, and emerges from a combination of numerous factors. Among these, the most important are those associated with the *forms of the city*, especially its density, the *distribution* of its *functions*, the quality of its *technical networks* (energy, water, transport, waste disposal), the *degree of connectivity* it offers its citizens (the capillarity and extension of its communication channels), the *services* it provides (the nature, quantity and quality of services accessible on an urban and local scale) and also its *building traditions* (principal building typologies, construction systems and the technical systems within buildings).
To these physical and territorial factors we must add others which constitute what we can call the social forms of the city. By these we mean: the size and role of the nuclear families (or more generally the group of people who share a home and deal with daily functions as a unit), the nature of local expectations of well-being (the acceptable standards of quality which are socially recognised at that particular time and place). And obviously the distribution of wealth and knowledge, and the spread of organisations which promote a widespread participatory democracy.

Such factors differ widely in character. They depend on a variety of complex, social phenomena and on options taken by numerous individuals and groups of people in times and places far distant from each other. As a result, from the perspective of a single citizen, they appear to be beyond the influence of individual choice.
In many ways this perception is correct: the physical and social form of a city is something that the individual citizen can accept, not accept or even try to force, but which by himself he cannot change in the short term. It therefore constitutes his *field of possibility* in that given context. By this we mean the system of restraints and possibilities that decides what he can and cannot do; the sensible framework within which he may develop his objectives, and the array of opportunities on which he can base his strategies for achieving them. In so far as he attempts to enact sustainable modes of living, it also draws the limits within which he can direct his own behaviour and his own consumption choices.

Unsustainable everyday life

As it appears today, urban daily life implies an unsustainable environmental weight. On a first estimate we can say that this is true of every existing city, and every city imaginable up to now. This bitter observation is the point of departure for any other consideration on the subject.
However, in the social learning process now underway, not all cities, not all urban forms are to be found at the same distance from the finish line. They are not all moving down the same track, some are demonstrating transformation dynamics that, to all intents and purposes, look negative; others are experimenting with activities and policies that may be promising. Let's look at some examples.
Cities with low population densities are intrinsically worse than those with a medium or high density, if only because of the differing demands for mobility they induce, or the differing technical, economic and environmental efficiency of each possible service idea. Contrary to pseudo-ecological cliché, on the whole it is easier to think of sustainable solutions in compact cities than in areas of less dense urbanisation. Ironically, Hong Kong could be a better starting point for sustainability than Los Angeles.
The existence of certain infrastructures (separate garbage collection, gas supply networks, drainage water collection networks) makes 'virtuous' behaviour by citizens possible, which they would not be even with the best of intentions, if they were not present. It is useless to separate waste if it all ends up in the incinerator anyhow. Similarly, the existence of commercial activities and decentralised services tends to give vitality to a neighbourhood, while vitality starts to weaken when these services are concentrated in large suburban shopping malls.
Pro-capita consumption is heavily affected by the reduced size of nuclear families: on average, one person living alone consumes more than double the amount he would consume if living in a family unit of four, at the same standard of well-being.
The size of the family deeply affects the efficiency of a furnished, heated and air-conditioned domestic space, of the use of household appliances and the conservation and preparation of food.
In conclusion, it is clear that the socially recognised (and so, not easily modifiable) standards of well being, strongly influence the general profile of consumption. For example, expectations for winter heating and summer air-conditioning are the result of a complex socio-cultural process.
The outcome can be paradoxical, and dramatically negative in environmental terms (consider the polar temperatures in public buildings and shopping malls in many tropi-

cal cities and the tropical temperatures in similar buildings in the north of the world).
Similar reflections can be made on many other issues in which a misunderstood idea of well being has led to a really absurd (as well as dramatic) situation: think of the growing distortions in diet which have made obesity one of the main global problems, while much of the world is suffering from lack of food.
And this is happening while encouraging the development of food systems which are dramatically and self-evidently unsustainable.

Sustainable everyday life?

In the light of these examples, it seems obvious that the unsustainability of everyday life in present day cities is the result of complex social processes and of political and economic choices made in the past but consolidated now, or arising now from faraway decision-makers, not easily influenced by individual daily actions.
All this would lead us to think that anything that can be done in the form and scale which mainly interests us here, i.e. on an everyday scale, starting from 'the bottom', has little margin for freedom and little chance of being incisive, given the problems we are facing.
This impression is both true and false. It is true in as much that individual behaviour and purchase options cannot in themselves modify the physical and social forms of the city. It is false because the transformation of complex systems requires that the existing system be put under tension by so many activities that, by exercising a sort of pressure from inside and on a 'micro' scale, they are able to prepare the conditions for a 'macro' change to be possible and even probable. It is this that individual citizens and their communities can do, and are fortunately already doing.
Looking carefully at the social dynamics of the city, we realise that something is happening. The limits created by previous choices can be forced. What exists already can be re-invented with a view to new uses, and the technology and current organisational skills can open new opportunities. All this can generate the cultural and operational conditions for totally new – maybe so far unimagined – solutions and sustainable forms of life.
This 'something happening' emerges from a combination of research studies, projects and concrete activities which indicate promising, practicable pathways: promising because, consistent with certain guidelines for sustainability, they indicate ways of breaking with dominant ideas and consolidated habits.
Practicable pathways because they are supported by social dynamics and technological trends which are already in progress and, if steered in the right direction, may facilitate their realisation. Where the activities in question are also business initiatives, then such trends will also favour their success on the market.
In conclusion, we can see that all this is also a set of ideas: of *cosmopolitan ideas* that are born in one place but have sufficient strength to enter the world communication networks, migrate to other places, regenerate themselves in other contexts and set off other, autonomous experiences.

A catalogue of cosmopolitan ideas

Ideas about sustainable cities and how daily life could be there, are circulating on the worldwide communication network. They are ideas that we can call cosmopolitan and cross-cultural, spanning different geographical and social worlds. Their existence should not surprise us: all cities have aspects in common arising from their common urban structure. Besides this, their orientation towards sustainability introduces other compo-

nents which, in their turn, must extend to all propositions. Sustainable cities, therefore, cannot but be a multiplicity of very diverse cities (sustainability is, by its very nature, synonymous with diversity), nevertheless all distinguished by certain common characteristics. It is to these that our cosmopolitan ideas are addressed.
The emergence of these cross-project ideas, recurrent in various international experiences, can be seen as positive signals: the birth of a design culture which corresponds to a new set of limits and possibilities. These limits and possibilities arise from the co-evolution of society and technology towards sustainability.
In order to single out common traits in this new culture, it is interesting to collect the promising ideas into a sort of large, dynamic catalogue: A *catalogue of sustainable* ideas which mirrors the state of the arts in research and international experience.
This chapter makes a contribution to this catalogue. It is a collection of 72 proposals, the result of fifteen international workshops on the theme of 'Sustainable solutions for urban ways of life' (☛ BOX: *An international programme of design research*). They put forward a series of cosmopolitan ideas in which the initial questions and the solutions found, seem to bounce from one area of the planet to another, assuming different cultural and operative nuances from country to country, city to city. A set of solutions thought up to meet the daily needs of the inhabitants of the new cities, but in a sustainable way. They are creative and practicable solutions which do not necessarily correspond to extreme visions or totally original service ideas, but which help to outline a succinct image of what those involved have so far managed to think up, put forward and, to some extent, share.

Questions and answers

What questions are asked when we imagine life in a sustainable city? What specific issues are perceived to be most pressing and/or stimulating?
Regarding the proposals put forward here, the questions chosen spring from fundamental daily functions associated with buying and preparing food; taking care of things and the house; work, study and entertainment; transport; looking after vegetation, and so on.
In answer to these questions, the solutions put forward present a range of ideas which, at a glance, look recurrent. This gives a profile of everyday urban life that is similar in any geographical or social context.
However, we should add that behind these homogeneous elements, cultural and social differences do exist. To see them, we must move from this initial level of observation (which reflects on daily functions and their corresponding 'ideas for services') to a deeper one.
We can then see differing positions emerging as to how these functions should be organised and what exactly they come to mean in a given culture.
In changing focus, we notice how differences do in fact appear behind the apparent similarities: differences in the organisation of the same service idea and /or in the meaning attributed to it.
For example, cosmopolitan ideas about the sharing of equipment and domestic space have found a home in both Japan and Finland, leading to suggestions for shared baths: interpreted as condominium spa baths in one country and as a network of neighbourhood saunas in the other.
In other words, shared baths were developed as a continuation of local traditions regarding the time and place for body care.
Another example would be 'semi-prepared food products' to ease the preparation of elaborate dishes, where the time and necessary skills are lacking for the entire process to

be undertaken personally. In China, this proposal, which came out of the design workshops time and time again, was collocated within the peculiar Chinese conception of food freshness, making it effectively a totally 'local' idea.
Yet again, discussion on the naturalisation of public green spaces, its collective management and its promotional services, clearly takes on a totally different meaning in Edmonton, Canada from the meaning it assumes in Amhedabad, India.
On the one hand it means choosing from an abundant variety of indigenous plants, resistant to the cold, while on the other it means remembering that the city is in a desert climate and it is the very idea of the 'public green space' that requires critical discussion.

Common traits and recurrent ideas

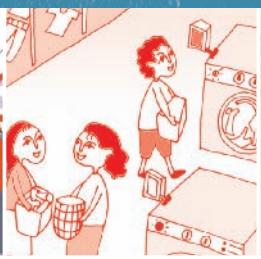
The solutions put forward present some interesting common traits (across the whole group) and outline some of the recurrent ideas (particularly evident in some). The *common traits* we refer to are the following:

Multiple aims. Each proposal has more than one aim. None of them are mono-functional and none are considered only from a functional point of view (there is always a cultural and emotional perspective). This ability to conceive heterogeneous aims is a sign of the spread of a new, emerging – conscious or unconscious – "culture of complexity".
Local-global link. Every proposal is in some way "local", but at the same time "global", and so, open to communication flows. Every proposal is also rooted in a definite context, but none is nostalgic for the traditional idea of place, i.e. the closed village of the past. This attitude alludes to the possibility, and ability, to overcome the contradiction between global and local and develop a 'new sense of place'.
Individual-community link. The proposed solutions allude – more or less explicitly – to a user who is looking for a balance between two opposing tendencies. One towards individualisation, which all the designers in all the workshops, seem to refer to. And the other, the need for community linked to a group identity, which everybody somehow seems to express.
Ecology of time. In general, the proposed solutions move at different speeds. None of them seems to reject speed and rhythms of contemporary metropolises ideologically, but many of them propose different rhythms and promote "slow islands" within the accelerated flows of the city.
Enabling technology. No solution denies the potential role of technology, but none has indicated technology as 'the' solution to the problems. Instead, technology is seen as an enabling instrument to make possible, or simply more accessible, solutions that spring from a multiplicity of considerations.

These traits, common to such different situations and cultures, seem to form a sort of 'spirit of our times' – ideas hovering in the air, which touch everyone who seeks to understand our times and move there constructively. A spirit that generates the capacity, unheard of in the west, to live with contradictions; to accept, for example, that the contrasts between local and global, between the search for individuality and the need for sociality, or between the excitement of speed and the charm of slowness, are irresolvable.
As we said, all this may be the sign of an emerging, new, worldwide culture. A culture that either consciously or unconsciously accepts the challenge of complexity, both by ancient tradition as in the East, or by recent discovery as in Europe. This spirit of the times may still not be the culture of sustainability we are looking for, but nevertheless, given its capacity to accept complexity while maintaining a design approach, it could represent fertile

terrain for growth. In the light of the design proposals under consideration, we can see recurrent ideas emerging alongside the common traits described above. From the perspective of sustainability these would appear to be promising prospects: viewpoints from which we can try to see what everyday life, with its production, service and consumption system, will be like in the transition towards sustainability.
In the following paragraphs some of these prospects will be introduced and discussed, in association with the proposals where they are most evident.

The Kitchen Club
A shared kitchen
(Italy, Milan)



Sky laundry
A clothes care service
(China, Changsha)

Sauna net
Efficient use of space and electricity
(Finland, Helsinki)

Easy shopping
A net-shopping service
(China, Guanzhou-Canton)

The extended home

The extended home is a physical and social context where the various functions of daily life are organised in private, semi-private and public spaces, in an open, flexible way

The overall demand for *domestic space*[1] is growing fast. The increasing population, the changing composition of the nuclear family and the spread of living and consumption models of industrialised society, are raising the demand (both in terms of individual domestic space – square metres per head, and its technical facilities – equipment for heating and air conditioning, maintenance, laundry, etc.). The result is a huge increase in the consumption of environmental resources associated with the extension of *equipped domestic space per person*, with the increase in required services and with the *inefficiency of the technical equipment* generally used.

Proposals

» Reduce domestic space without penalising its liveability, by freeing it of certain activities. This means dedicating private space only to those activities that each of us judges to be most appropriate to his desire for intimacy, and transferring the others to external, shared, service units: the *supplementary services of the extended home.*

» Develop a range of supplementary services that not only "free domestic space", but also give access to a quality of service not usually available in individual domestic use.

Characteristics

This prospect, which we call the *extended home*, looks promising for two fundamental reasons: it allows us to limit the use of equipped domestic space per head and, by optimising the use of equipment, it reduces the resources consumed per unit of service supplied (and therefore per unit of satisfied user). In addition, by proposing the development of public or semi-public spaces, it creates occasions for socialisation and new opportunities for developing the neighbourhood community.

The concept of extended home is certainly not new in itself and the proposal to reduce private domestic space and increase public areas was widely debated in the last century. In the past, however, these ideas led to proposals which were applied – when they were applied – only under the drive of strong ideological pressure and/or pressing necessity.

[1] **Domestic space** is the equipped space available to each person for his daily activities. It is described in terms of its size, its equipment and the way in which this operates.

How can we have a more sustainable, and also practical, daily management of food related activities?

access to a platform of services and equipment for daily food management

KITCHEN CLUB
Common kitchen for residents
Italy, Milan, Politecnico

"Kitchen Club" proposes a collective solution to the individual problem of food managing and preparation, by providing an expert platform of actors related to food, such as supermarkets, producers, consumer associations. Besides being an ideal place for socialization, the shared kitchen facilities makes kitchen management easier, thanks to collective home deliveries, controls of electrical consumption and an optimised use of appliances.

Kitchen Club is a shared kitchen space for members living in the same building.

The members make their order for the shopping on a common communication board.

In the vision of the extended home that emerges today, it is evident that the proposals are non-ideological (or are at least far less so). The reduced dimensions of private domestic space appears here as an expedient by which to augment the quality component and increase freedom of access to high quality supplementary services.
In short, the application of this concept aims to outline a new housing model, where the reduction of equipped domestic space per head is more than compensated for by its advantages and by generally better forms of organisation than those put forward by currently dominant housing models. For example: more private space uncluttered by unwanted apparatus and activities; higher quality supplementary services than those normally obtainable in a traditional housing set up with traditional services; the possibility of enacting flexible living strategies, putting together the “basket of services” most appropriate to our needs and interests at any particular time.

shared kitchen space
and delivery service

The ordered products are delivered in large quantities on collective request.

+ a professional kitchen
+ optimised delivery services
+ direct relationship with suppliers
= a kitchen workshop for daily needs

The common kitchen is professionally equipped, and is the ideal space for socialization.

optimised logistic
management and use
of electrical appliances

Electrical consumption is shared by the members through a pay-per-use system.

Practicability

The prospect of the extended home widens the possibility of access to everyday services by offering solutions which are new, more advanced or simply more suitable and adaptable to the requirements of different users at different times. The keywords to its practicability are:

» **flexibility:** the possibility of enacting adaptable living strategies, putting together the "service packet" most appropriate to our needs and interests of the moment.

» **quality of service:** access to a higher quality of supplementary services than those normally available in a traditional housing set up with traditional services for individual use.

» **free space:** domestic space for private use, uncluttered by unwanted functions and apparatus.

How can we provide a more environmental-friendly solution for domestic washing while promoting the sharing of community resources?

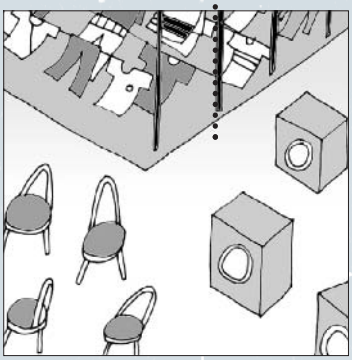
management and process ecology: water recycling, solar energy and optimised use of domestic appliances

environment friendly user service.

SKY LAUNDRY
A cloth caring service

China, Changsha, Hunan University

The "sky laundry" is a clothes washing centre built on the roof of each building where clothes care functions such as washing, drying and solar- sterilizing services are provided and facilitated. The centre is designed in a very eco-efficient way. The clothes care equipment and processes are mostly powered by solar energy, while a water recycling system has been installed to make use of rainwater. Space is reserved for social gathering, where residents can enjoy a relaxing chat during the washing cycle.



There is a laundry center at the rooftop of Xiaoju's building...

...where she likes to go with her mother to meet neighbours and friends.

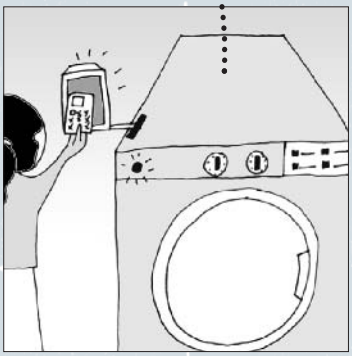
CASES

The extended home as co-housing

In the last few years, a way of life has appeared in many countries that could, at first glance, remind one of the communes of the sixties, although it is in fact a far cry from these. It has two distinguishing features: the integration of private space with various shared facilities, and the creation of communities of people who choose to live together on the basis of considerations which are more practical than ideological, in practice having clear, negotiated rules governing any future life in common.

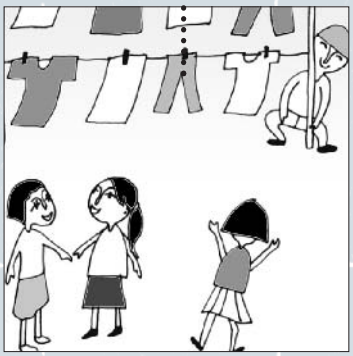
The facilities shared through this decision process might include the kitchen, laundry, do-it-yourself workshop, children's play area, guestroom, garden and garden tools. In every case however, the decision to share something is seen as an opportunity to enjoy a facility they would not otherwise have. The development of this idea has led to the creation of various or-

card operated,
shared washing machines



Clothing care facilities can be hired by means of a resident card.

a shared roof-top laundry



While waiting for the washing, Xiaoju plays hide-and-seek with friends...

solar powered drying
and sterilization

...and day dreams while gazing at the colorful clothes dancing in the gentle breeze.

ganisations to share the experience, such as *The Co-housing Association* of the US, *Canadian Co-housing Network*, Co-*housing Australia*, Co-*housing Network Japan*, and the *Swedish Collective Housing Network*.

The extended home as service-apartments

Another way of organising domestic life which is becoming more widespread, and in many ways recalls the extended home, is the service-apartment. These are minimal apartments with ample condominium services. The idea and practicability of this mode of living are by no means new. Nevertheless, given the sociological and economic transformation underway, they are spreading. An emblematic example of this trend is housing in Hong Kong, where the

majority of recent buildings are constructed in this way. Obviously, these apartments cannot be considered positive examples of the extended home, in the way they are conceived today, but they do show clearly how dwelling space could be successfully experienced in new ways.

Laundry and more

In various parts of the world laundries are evolving. One way in which they are developing is in conjunction with a bar or restaurant. For example, *Brain Wash* (San Francisco), The *Laundry Bar* (Miami Beach), *Waschbar* (Linz), *Wasch Bar* (Hamburg), *The Laundry Café* (London), or *Holly's* (Berlin).

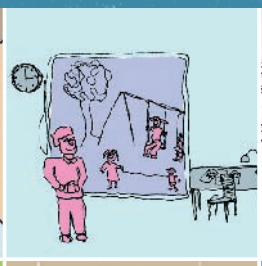
These advanced laundries are examples of how an essentially technical domestic function, such as washing clothes, can be taken out of the private home and carried out in a fully equipped high quality facility. Doing so can improve both the environmental and aesthetic standard of existing public laundries, enhance the service and turn the laundry itself into a place of entertainment and, potentially, of socialisation.

Shared kitchen, sauna and thermal spa baths

Numerous examples of extended homes, in their traditional context, look obvious. However, imagining them in different contexts or different cultures becomes more interesting. For example, a *shared kitchen* is common to student campuses all over the world, but the same solution could be applied to other living situations designed for young people, people living alone or for people who live in a city for limited periods. Again, *condominium saunas* in Finland and *shared thermal spa baths* in Japan are commonplace in their countries of origin, and show that it is possible to imagine sharing places dedicated to well-being and body care.

MA-Office
Office space in the neighbourhood
(Japan, Tokyo)

Cityosis
Optimised management of city centre work space
(USA, Chicago)



Net Work Neighbourhood
Sharing office space
(Canada, Edmonton)

Tea Pavilion
Tele-work and traditional recreation
(China, Changsha)

Localised activities

Localised activities are decentralised work, training, entertainment or service related activities carried out in the residential areas and so contributing to the generation of a sense of place.

The characteristics of *production and consumption systems*[2] hold wide implications for the life modes based on them. The present day phenomenon of *delocalisation* of production and service activities generates considerable, and growing problems on a social, environmental and eventually economic, level. As far as daily life is concerned, it distances production and service activities from the place of residence. The result is a rise in *forced mobility* (in other words, mobility made necessary by the very nature of the system), *loss of visibility* over the production processes and, in short, increased social, cultural and economic desertification on a local level.

Proposal

» Reorganise work, commercial, study, information, entertainment and care related activities so as to bring them closer to the place of residence and if possible interlink them.
» Utilise new technology to facilitate the decentralisation of production and services and their re-composition as *multi-service centres*, linked on a worldwide level but rooted locally and able to promote local circuits for the transport of people and goods, and for energy use.

Characteristics

The prospect of developing *localised activities* looks particularly promising. It encourages activities and forms of locally based organisation and, in so doing, inclines towards the regeneration of existing social resources and the generation of new ones. In addition, as a direct consequence, it reduces transport intensity per unit of product and service rendered (in other words, the number of kilometres travelled for each unit of material transported) and minimises people's forced mobility in carrying out their daily activities (so reducing urban traffic). Finally, it increases the possibility for control, by subjects and communities, over the production and consumption processes they are involved in. Such a prospect looks quite innovative even though, in some ways, it seems to hark back to a pre-industrial organisation of production and consumption systems. We can observe how most activities

[2] **Production and consumption system** the socio-technical system which supports the production, use and consumption system of a given society. It is distinguished by the nature of its constituent processes and by their collocation in time and space.

How can we meet the working needs of the residents directly in their community?

office and additional services brought close to home

flexible, decentralised organisation

MA - OFFICE
Office space in the neighbourhood
Japan, Tokyo, Zokei University

"The Ma-Office" is a sophisticated office complex that can be used on a space and time basis: the space is rented by different users and all the office appliances are shared or rented at a reasonable price. It is also equipped with a day childcare center and many other services. Moreover, a professional assistance for machinery troubles or questions is always available. A key factor of the service is the security of the user's personal information, thanks to the "members only system."

Close to where we live, there is a building complex called Ma-Office.

A writer, Ms. Saeko Nakamura, is a frequent user.

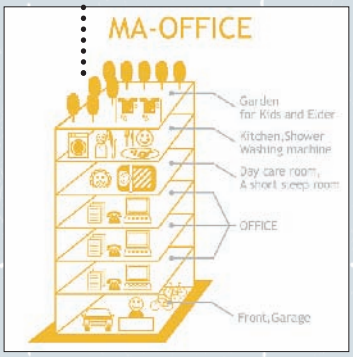
in the past were inevitably localised. To take up the theme of localisation again, after more than two centuries of industrialisation and progressively mounting delocalisation, does not only mean a desire to turn back the pages of history. The localisation talked of nowadays is really "glocalisation" – an integration of the global dimension we are immersed in, with a local dimension that would seem desirable, and in many ways possible, today.
For this reason, the current proposals for localisation differ from many of the positions (and practices), which have gradually emerged over past decades; positions tending to the nostalgic (the "village was beautiful", just because it was pre-industrial) and/or ideological (the "small is beautiful", just because it goes against dominant trends). These positions from the past have little to do with the proposals put forward here. For them, the present potential of localisation is seen as an advanced expression of the contemporary, as fertile ground for innovation on which to employ the best technology and the most original forms of organisation.

easy access to a fully-equipped office with additional services

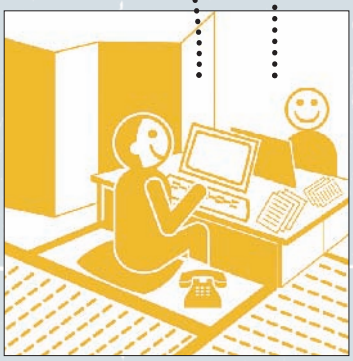
shared working premises and services

+ office for the time required
+ up-to-date equipment
+everyday support services
= a multiservice centre working close to home

She brings her daughter to the day care center, which is located within the same space.



There are many services within the building complex, which has been designed to optimise the working environment...



...and by utilizing the Ma-Office, Saeko can concentrate on her work and has more time to play with her daughter.

If true that a new society based on networks is emerging, the network society, it is also true that part of the potentiality of this great worldwide transformation underway is to facilitate the development of decentralised, intelligent, sustainable forms of organisation based on the enabling platform of network technology. These organisational forms are also conceived in the perspective of economy of purpose: a design and organisational approach (more easily followed nowadays than in the past) thanks to which the economic efficiency of a system is given not by the scale of the processes enacted (economy of scale), but by the integration on a single platform of different but congruent processes (economy of purpose).

Practicability

The promotion of localised activities entails an organisation of the production and consumption system which enables citizens to carry out a series of daily functions in the proximity of

How can equipped spaces in the city-centre be used throughout the day

full and complete exploitation of equipped space

shared technical equipment

CITYOSIS
Service for the optimised management of city-centre working spaces
USA, Chicago,The School of the Art Institute of Chicago

"Cityosis", city-symbiosis, is a service which optimises the use of equipped space in the city-centre. It organises and manages these spaces by the logic of hotelling: during the central part of the day they are reserved by a permanent client who pays high rent, at other times they are let to various associations at a rate proportional to the value of that time band (night time rate is lower). Cityosis ensures efficient equipment maintenance and facilitates relationships between different users.

An office in the centre of Chicago can be used for different activities. From 8.00am to 5.00pm, it is a traditional office place.

From 5.00pm to 7.00pm, it is a lecture room for young people having an evening Spanish course.

CASES

Polycentric cities

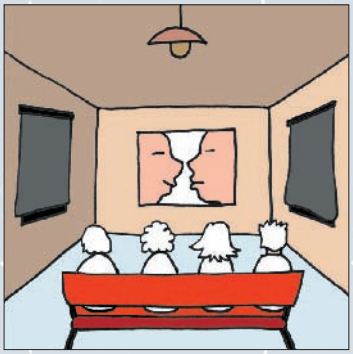
The issue of revitalising town centres and urban suburbs by placing a variety of activities in multi-functional urban areas has long been the subject of debate in urban and land planning. This is now being reinforced by a new range of production and service activities potentially distributed throughout an area and integrated with other activities (mainly residential). The most obvious of these are associated with information and knowledge and their support services.

However, the evolution of production processes and the demand for flexibility have also led to the creation of production cycles where the final phases are decentralised and brought close to the consumer. In this way the product is customised when it is bought (point-of-sale-production). For example, the on-the-spot production of a specific paint colour, a pair of glasses of the right strength, or the developing of a camera film. This also includes personal-

+ an office
+ a classroom
+ organisation headquarters
+ a cinema
+ a meeting room
for cultural associations
= a fully exploited
multifunctional space

regulated, subsidised access
to equipped spaces
for the organisation of social
and cultural activities

From 7.00pm to 9.00pm,
it becomes the head office
of a homeless helping centre



From 9.00pm to 11.00pm,
it is a private cinema

And, from 11.00pm to 12.00pm,
it is the place for the meeting
of a cultural association.

ising motorcycle helmets (Rebel Art, in Milan) or articles of clothing (some Levi's shops), or altering new and used clothing as in the case of Les Ciseaux, in Brussels.

Neighbourhood multi-service centres

Different activities are increasingly converging in a single place, generating multi-service centres. To date, this has most often happened where an existing place, such as a shop, is enhanced with new services, giving it a slightly different role and a new dynamic. Examples are the bookshop that houses a bar and cultural centre (*Tikkun*, Milan), a bakery that offers space for the preparation and refrigeration of food (*Cottage Baker*, Rugby, UK) and the grocery shop that offers meetings and study courses (*Natura Ride*, Milan).

Another type of multi-service centre includes those set up along the lines of a one-stop shop,

where you can find everything you need for a given problem. An example could be the *Healthy Living Centre* (Norfolk, UK), where as well as medical services you can find learning and work spaces, play space, a bar, a garden for the disabled and a citizen's advice desk.

Distance working centres

The spread of information and communication technology is changing the way we work and the places we work. This has led to a demand for new support services such as the opening of neighbourhood offices (tele-cottages) and support services for people who work from home. In the first instance, we are talking about a totally new kind of service that offers work-stations, meeting and teleconference rooms, and secretarial services for hire (*Eureka*, Milan; *Virtual Station*, Fortaleza, Brazil).

In the case of tele-working support, it is a question of evolving existing facilities, such as photocopying shops and/or switchboards, to provide access to apparatus and services for distance working (photocopiers, special printers, access to broadband, and so on). For example, *Mizen Telecottage* (West Cork, Ireland), *The Wren Telecottage* (Warwickshire, UK), *Proxima* (Milan Sesto San Giovanni, Italy).

Reclaiming and recycling as a local activity

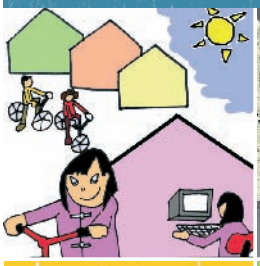
Collecting products at the end-of-life and reclaiming and/or recycling their component parts and materials can most easily be set up at a local level. Many organisations operate in this way. Some also carry out educational and information activities or organise craftwork. For example, *CASE-Helsinki Recycling Centre* (Helsinki, Finland), *ReStore* (Edmonton, Canada), *Furniture Recycling Network* (UK), and *Mani Tese* (Italy).

their home, and to do so at the highest level of quality and efficiency. Its practicability keywords are:

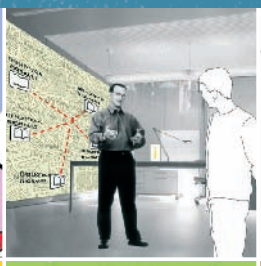
» **local proximity and dynamisation:** the possibility of accessing a multiplicity of high quality services close to one's home and, at the same time, as the regeneration of an interconnected fabric of productive activities and services on a local scale;

» **transparency:** the possibility of improving visibility in the production, distribution and service processes the user-consumer has to do with. This gives them a clearer picture of the products they use, how they are made and by whom;

» **agility and economy:** the possibility (on the offer side) of making the production and service system lighter and more flexible, bringing production, or at least its final stages, closer to context of use and creating service centres (if possible able to provide multiple, congruent services) nearer the user.



Kiri Kiri
Social Network System
(Korea, Seoul)



Plug-in
The city at your disposal
(Milan, Italy)

Windows Community
An interface of information-excange in a building
(Paris, France)

Building regisseur
Mutual help between families
(Naples, Italy)

The elective community

The elective community is a local network of people who help each other in solving certain problems and/or who interact together on subjects of common interest

The urban social fabric[3] is a social resource that is getting more and more difficult to reproduce in present day cities. The causes of the current crisis are diverse and complex, but they all boil down to the progressive individualisation of society, which has reached extreme levels in mature industrial societies and has, in effect, interrupted the spontaneous processes that create a neighbourhood community.
Daily life has always been largely based on people in the same neighbourhood helping each other. Whatever the nature of these communities, they have always formed local, cooperation-oriented networks, able to support their individual members through most of life's events. These collaborative networks, which were traditionally the fruit of slow, self generating, social processes are now considerably weakened and no longer tend to reproduce, or at least tend not to do so as they did in the past. The joint virtualisation of relationships, flexibilisation of life styles and desynchronisation of daily routines has inhibited the regeneration of those conditions of proximity, stability and continuity in relationships that were at the base of any traditional idea of community. This has been causing serious repercussions in people's lives, particularly in their everyday life and the quality of their living contexts.

Proposal

» Facilitate people's lives by enabling them to face, and resolve, a range of problems on as local a level as possible, through existing community competence and infrastructure, with the combined use of different kinds of economy (market economy, barter and gift economy).
» Utilise new technology and organisational systems to generate neighbourhood networks able to provide the required support every time it proves necessary, but with the flexibility and reversibility that contemporary city life seems to call for.

Characteristics

The social value of the *elective community* is evident: by giving more importance to local competence, skills and abilities, it favours the regeneration of people's living contexts, both for the individual and the community. However, it also presents interesting characteristics from an

[3] **Urban social fabric** the system of relationships that binds people in a community together. It is distinguished by its spatial conformation, its duration and its depth, in relation to a the variety of issues it is based on.

How can we increase interaction among neighbors in our individualized society?

find communication easy thanks to a local Intranet

scale and management ecology in services

KIRI KIRI
Social Network System
Korea, Seoul, International Design School for Advanced Studies - IDAS

"Kiri Kiri" aims at creating a strong social interaction among residents of a community, by creating an interlinked network, whose benefits are multisided and concern both everyday life activities and free time. Being part of a community network generates a sustainable style of life, because many activities might be carried out once and commuting might be reduced. For example, the shopping can be made in turn, optimising the commuting and saving money because of the bigger quantity of items bought.
On the purely social side, a social network system helps strengthen the sense of belonging and a sense of security in each member.

I am part of the Kiri Kiri network, thanks to which I have new friends around my neighbourhood...

...by shopping in bulk, we save a lot of money...

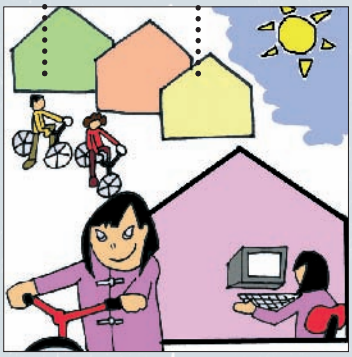
environmental point of view, in that by promoting the shared use of materials, products and infrastructure, it reduces the demand for new products and optimises the use of existing ones.
The concept of elective community is obviously close to the concept of neighbourhood in the traditional sense of a stable, localised interweave of social relationships, where single individuals and/or single families were able to find support of various kinds.
What distinguishes the new concept from the traditional is the fact that it presents a form of community reversible in time and flexible in space, i.e. a form of community that can be adopted and/or left, if and when the subject deems necessary. In other words, the new neighbourhood is a choice not an obligation. This implies that it is not an established entity, where we find ourselves living whether we like it or not, but a social entity, to be designed, built up and managed as we go along.
On the other hand, even though an elective community is more loosely bound to territory than

share and exchange activities and services

Facilitating socialisation and mutual help

facilitating communication by networking

enhancing community feeling and mutual help



...in our spare time we meet and share different interests together...

...and at the weekends we organise parties open to the other members too.

Last but not least, I know that in case of emergency I surely can count on them!

a traditional neighbourhood, a bond does exist in that the direct contact and mutual help, which also form the basis of the elective community, depend on physical vicinity. It is exactly this bond with territory that makes this proposal different from other emerging forms of contemporary community. These are prevalently virtual (the main relationship is conducted via communication media), de-localised (they are mainly free of any territorial base) and very often, monothematic (their existence depends mainly on one, well-defined topic of interest).
By contrast, communities based on the concept of elective neighbourhood are prevalently: real communities (though they may also make use of telematic networks), localised (though the "place" is not necessarily limited to adjacent spaces) and multi-thematic (though they may have some form of specialisation).

How can foreigners integrate into a new city, by exchanging their own cultural knowledge with residents?

decentralised
access to services

PLUG-IN
The city at your disposal
Italy, Milan, Domus Academy

"Plug-in" is a service that links together several existing infrastructures enabling people arriving in a city to satisfy their basic needs easily: housing, household services (telephone, gas, electricity) and transportation.
In this way the new citizens not only benefit from the knowledge of the local inhabitants in making their day to day life easier, but also begin to integrate with the local community. The key to this project is the optimization of various infrastructures involved: customs, ports, foreigner service bureaus, local libraries and local communities.

Takashi, a young Japanese designer, staying in Milan for a while, has received the Plug-in flyer at the customs.

He doesn't know how to manage his life in town and so decides to followthe Plug-in advice.

CASES

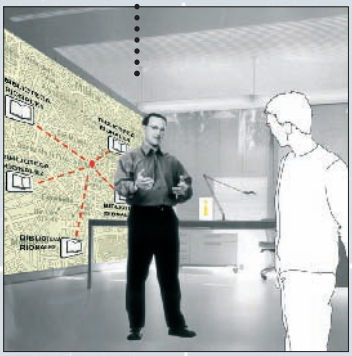
Community and barter

New forms of barter are appearing all over the world. Organisations that advocate such dealings are known by various names (LETS-Local Exchange Trading Systems, SEL-Système d'Echange Local, BdT-Banche del Tempo), but they are based on the same fundamental principles of solidarity, reciprocation, and exchange (of goods and services, but also time and skill). These organisations constitute the contemporary, metropolitan evolution of the mutual help that neighbours have always given each other, but which tends to disappear in the new urban contexts.
The barter models vary from country to country. In Italy, the members of the *Banche del Tempo*, mostly women, carry out activities mainly associated with daily functions. In Ithaca, in the United States, *Hours* has generated a real local currency. Something similar has occurred in Hong Kong with the St. James Settlements and, especially, in Dakar, Senegal where the *S.E.C.-Systèmes d'Echange Communitaires*, organises monthly markets where the local currency,

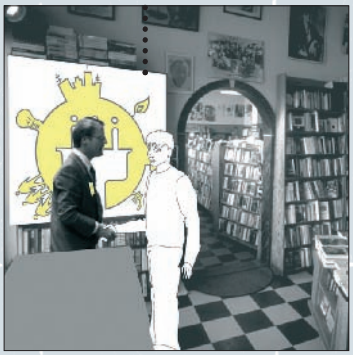
+ facilitated access to the city
+ awareness of services available
+ friendly relationships
= a solution for facilitating intergration into a new city

easier contact with people and neighbourhood services

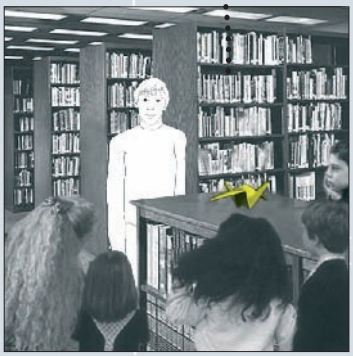
enhanced people skills and neighbourhood services



Mr. Carlo asks him which information he needs and directs him to the neighbourhood library...



...where Takashi introduces himself to Luca and explains his problems and what he is looking for.



To repay the help he receives Takashi teaches how to make origami to young people of the community.

the *bons de travail*, is used. Finally, in Shanghai, members of an exchange organisation (*Labour/Money Saving*) offer their work in exchange for assistance in the future, when they are elderly.
In these organisations time and work become exchangeable resources not only to give in mutual assistance, but also to develop new forms of mutual trust and the feeling of belonging. In short, offering time and work serves to generate new forms of neighbourhood community, starting from the everyday.

Solidarity purchasing groups
Typical examples of the elective community are groups of people who get together and share shopping tasks. There are now many such purchasing networks in Italy, formed not only by people who live near each other, but also by people who wish to buy similar types of product

or wish to choose their purchases according to precise ethical principles. For example, in Fidenza, Italy, the *Rete Gas-Gruppo di acquisto solidale* (Solidarity purchasing group) has been set up to purchase organic produce and fair trade products. In Finland, communities have set up *Ruokapin* (food circles) in a similar way to the Italian GAS.

Hybrid communities

Meet Up is a telematic platform existing in 561 cities in 34 countries throughout the world. Its aim is to bring together people with similar interests (from book crossing to cycling or silent movies, to name a few) who live in the same city. Being residents in the same city means that participants in the scheme, as well as interacting on the net, can also interact physically, organising real meetings. In this way, interest groups are set up that in turn lead to the creation of new kinds of hybrid, virtual-real, community.

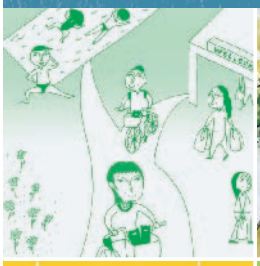
Surplus exchange

Plant a row, Grow a row in Edmonton, Canada, proposes a system whereby excess produce from vegetable gardens is sent to a 'food bank', which in turn distributes it to other people, especially those in need. So a traditional form of mutual assistance among neighbours is reproduced in an organised way.

Practicability

The concept of elective neighbourhood presents a balance between various demands: the demand for individual freedom, i.e. flexibility and reversibility in life choices; community, i.e. sense of identity and belonging; localisation, i.e. a local support network, which everybody feels the need of when faced with the problems of everyday life. The keywords are:

» **Electivity**, i.e. the possibility of choosing how, when, who with, and how long for, to generate a close social relationship.
» **Accessibility**, i.e. the possibility of rendering neighbourhood interaction more fluid among subjects who are becoming increasingly mobile, and whose routines differ more and more widely.
» **Low cost**, i.e. the possibility of accessing "services" based (completely or partly) on forms of social economy, which can provide solutions that are generally cheaper than those available through similar services offered by a totally market economy.



Town of bikes
Local mobility service
(China, Hong Kong)

My bus
Personal public transport
(Italy, Naples)

Mobile steward
A local service for delivery, mobility, and security
(China, Beijing-Peking)

Movie Delivery
Mobility for entertainment
(Italy, Naples)

Alternative mobility

Alternative mobility is an articulated transport system, which uses different means to meet different needs, favouring light vehicles and collective services.

Urban mobility[4], the impact of the urban transport system and the problems it generates, must be resolved principally by facing questions about the territorial distribution of activities. Having said this, we can observe that problems caused by mobility are also the result of a distorted concept of transport system and of citizens' expectations. This distortion has led to a widespread "car mono-culture": the idea that there is only one means of transport, the private car, by which to undertake movement of any kind. The resulting improper use of the car, often used by only one person and for short distances, is one of the principle causes of the environmental crisis in the city.

Proposals

Introduce local transport systems based on the pedestrianisation of city streets, facilitating the use of light vehicles efficiently linked to fast public transport for longer distances.
Generate technological and social networks able to optimise flow, by co-ordinating the different means and facilitating the shared use of vehicles and apparatus, and administrate such a variegated set of transport means and infrastructure.

Characteristics

The alternative mobility proposition is promising in that it improves the overall efficiency of transport systems. In addition, by favouring movement on foot or bicycle, it reduces the consumption of non-renewable energy and fosters health. Finally, by generating mobility focused on specific contexts, it contributes to their economic and social regeneration.
This perspective, which we can call "multi-modal transport", has had a long history in the debate on city and territorial planning. Today it has been re-launched under current environmental pressure, thanks to the crisis in the old idea of car-centred mobility.
On a local level, such as interests us here, the development of alternative mobility involves co-ordinating a multiplicity of alternative solutions as simply and smoothly as possible: pedestrian walkways or cycling paths, custom-made collective mobility systems and car sharing, directed towards user option, according to circumstances, as to which route or mode of transport is most suitable. This requires activating highly innovative systems, whether in a technological, social or cultural sense.

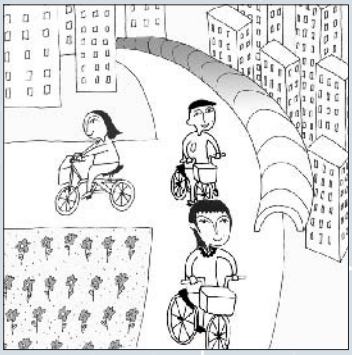
[4] **Urban mobility** the flow of people and things, which feeds the metabolism of a city. Its intensity is characterised by its nature, configuration and pace.

How can we get around freely, quickly and easily in the neighborhood without using cars?

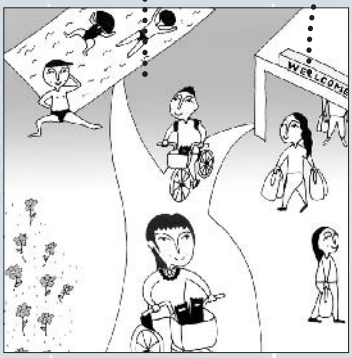
a platform of integrated services available to incentivate bicycle use

TOWN OF BIKES
Local mobility service
China, Hong Kong, Polytechnic University

"Town of bikes" is an entire community fed by a network of covered cycling paths linking blocks of buildings with all major leisure facilities, and transport and pick-up points. A well-planned and well-designed system of cycling paths in a residential community, together with comprehensive related facilities, such as bike parking areas, bike hire services, spare parts sales and repair services, will incentivate residents to use bikes as a means of daily transport.
The provision of such a cycling path network provides a convenient means of transportation that is also environmentally friendly.



Jenny always uses her bike to move around the residential community...



..she can travel freely from place to place along a well-designed, covered cycling path...

Practicability

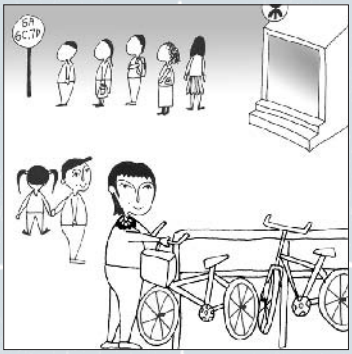
The perspective of *alternative mobility* involves organising an articulated transport system that enables inhabitants to move (and/or transport things) conveniently and efficiently using the most suitable means according to circumstances. This would render private transport less attractive and promote a new idea of urban quality and well being. Keywords are:

» **Low cost:** reduced cost and time spent in travelling around the city.
» **Urban quality:** decrease in traffic jams and atmospheric pollution, and also a new way of living the city.
» **Physical well-being:** not only as a result of physical exercise due to increased pedestrian mobility and bicycle use, but also of reduction in the stress of moving in urban traffic.

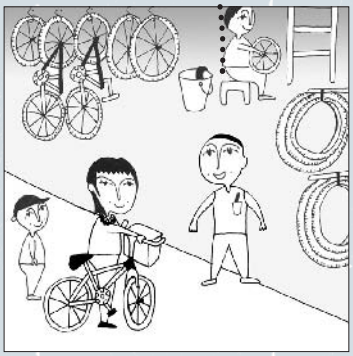
+ cycle paths
+ bicycle hire and maintenance
+ bicycle parks at transport link points
= a neighbourhood equipped for the cyclist

assisted maintenance to lengthen bike life

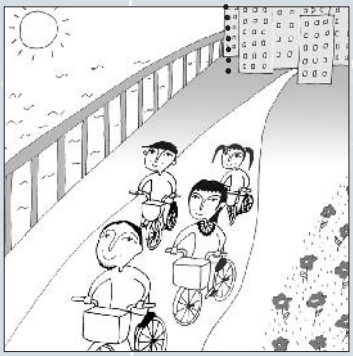
encourage and facilitate bicycle use



...with well-planned parking facilities which connect to railway and bus stations...



The system is also supported by bike maintenance and repair services.



Sometimes Jenny enjoys a trip with the whole family on a sunny weekend.

How can we move around the city without using a car, but using alternative mobility services?

decentralised organisation and flexible reservation system

sharing a vehicle for parts of a journey

MY BUS
Personal public transport
Italy, Naples, Istituto Superiore di Design - ISD

"My bus" is a differentiated service, that enables users to customise routes, thanks to a computerized system. By using the phone or touch screen at the bus stop to reserve a personalised route, people can reach their destination much faster. It is available for city dwellers who cannot, or do not wish to, drive in the city traffic, but is also very useful for tourists who wish to plan their own sightseeing tour.

Ciro's grandmother calls My Bus for a ride...

...in fact, every Tuesday, she meets her friends at the bus stop and they go shopping together.

CASES

Alternative mobility areas

Entire cities or city districts are developing and creating a large variety of alternative transport systems, from public vehicles to shared taxis, from cycling paths to the real possibility of moving easily and enjoyably on foot. As a result, it is possible to live well in these cities and districts without using a car. This occurs in various European city districts, such as *Hollerland* (Bremen), *Langwasser* (Nurimberg), *Seepark* (Freiburg), and in other parts of the world (*Arlington's Urban Villages* in Virginia, USA). In all these places resident communities have abolished car use and people move around on foot, by bicycle and, when necessary, using a network of light railways.

The *Car-free Cities Network* has been active in alternative mobility since 1994. It coordinates initiatives of this kind in more than 65 European and non-European cities and regions. There are also worldwide organisations offering advice and services to urban areas and communi-

+ optimised local mobility
+ service on request
+ journeys in company with other passengers
= a bus made to measure

a customised urban transport service available on request

A tourist chooses his tour and reserve the service, thanks to a touch screen at the bus stop.

My Bus collects the passengers that have reserved the same tour...

...the tourists can thus visit Naples, commuting more easily!

ties that wish to encourage the development of pedestrian and cycling areas, such as *Walkable* Communities Inc., a non-profit making organisation operating in High Springs, Florida.

Use cars better (car-sharing and car pooling)

Car-sharing (optimising the use of cars) and car pooling (optimising each car journey) are initiatives that have developed within the field of alternative mobility in recent years, giving rise to a real international movement. Just to give an idea of the size and scale of this movement we can name *Stattauto* (Germany), *I Go* (Chicago), *City Car Club* (Helsinki, Finland), *Autoshare* (Canada), *Mobility* (Switzerland), *Caisse-Commune* (France), *Carplus Network* (UK), and *ICS* (Italy) for car-sharing, and *Car Pooling Centre* (Madrid), *Lift Club* (Beijing), *Utrecht* (Holland), and *SACOG-Sacramento Area Council Government* (California) for car-pooling.

To school on foot

Local authorities in some countries, either autonomously or in conjunction with other bodies and private firms, have set up projects to help families with their daily obligation to take children to school. This is the case of *Walking Bus*, in Great Britain, and *A scuola a piedi* (To school on foot) in Italy. In practice these initiatives consist in organising groups of children who go to school on foot together under the supervision of adult guides.

Bicycle services

Over recent decades projects have begun in many cities to encourage the use of bicycles. This has been mainly by creating cycling paths and supplementary services that facilitate the use of bikes themselves. Some of the many examples are the *Toronto Bike plan* in Toronto, the *City Bike programme* in Copenhagen and the *Chiavi della città* (City Keys) project in Ravenna, which makes bikes available for moving around the historical centre of the city.

We love cooking
Trouble-free cooking
(China, Guangzhou -Canton)

Cuisines on cue
Home-made food at your office
(India, Ahmedabad)

Living with the seasons
Seasonal food delivery services
(China, Hong Kong)

Traditional Art of Eating
Health prevention through traditional eating
(China, Beijing-Peking)

Advanced natural food

Advanced natural food is fresh, seasonal, organic food produced (where possible) locally, which an innovative system of production and distribution enables us to enjoy even in an urban environment.

The urban food system[5] is a complex entity under rapid transformation. The population increase, growth of metropolises and the spread in currently dominant models of nutrition have led to an increased demand for products and towards substantially unsustainable diets. Unsustainable because of the quantity of environmental resources we consume in following them, because of the pathologies they generate and because of the loss of biological and cultural variety their universal diffusion leads to.

On a quantitative level, bearing in mind the demand for food which will come from future urban populations, and considering the environmental cost of nutrition models dominant today, the substantial unsustainability of the trends underway would appear evident.

On a qualitative level, the widespread pathology of obesity, in a world where the majority are undernourished, is one of the most dramatically emblematic paradoxes of the substantial unsustainability – material but also social and ethical – of our currently dominant food model.

Finally, the spread of this model of nutrition is leading to a loss of variety in product and local food traditions, which are stifled by the growing standardisation of taste and the agricultural and production systems that support them. From the perspective of sustainability every reduction in diversity, whether biological or cultural, is a serious loss, a stage on the journey towards the impoverishment of the whole system.

Proposals

Develop an innovative food system that makes organic food (if possible fresh, seasonal and locally produced), available in urban environments.

Use new technology to facilitate these activities and, in particular, to introduce innovative systems of preparation and distribution, to promote a direct, transparent relationship between producers and consumers and, finally, to develop cultural and educational activities on the theme of nutrition and health.

[5] **Urban food system** food products accessible in an urban environment, integrated with production, commercial and logistic systems that make it available, together with the equipment necessary for its preservation, preparation and final consumption. It is characterised by the nature of its products, production and distribution system, and by the activities involved in its preparation and consumption.

How can we enjoy the fun of cooking while reducing the pollution and wastage created during the preparation process?

WE LOVE COOKING
Trouble-free cooking
China, Guangzhou-Canton Academy of Fine Art

"We love cooking" is an integrated service, based on a local center for food preparation, where you can buy ingredients, pre-cooked food and semi-prepared products. Answering specific customer requests, the center's professional staff carefully selects, cleans and processes the ingredients before delivering them to your doorstep. Using advanced info-tech and highly efficient management in centralized processing, the service is able to reduce the wastage of water, energy and material while ensuring a healthy diet for the residents.

+ selected fresh vegetables every day
+ telephone orders
+ semi-prepared products
= traditional Chinese cooking

the right ingredients available when required

Li Fei likes cooking at home from time to time.

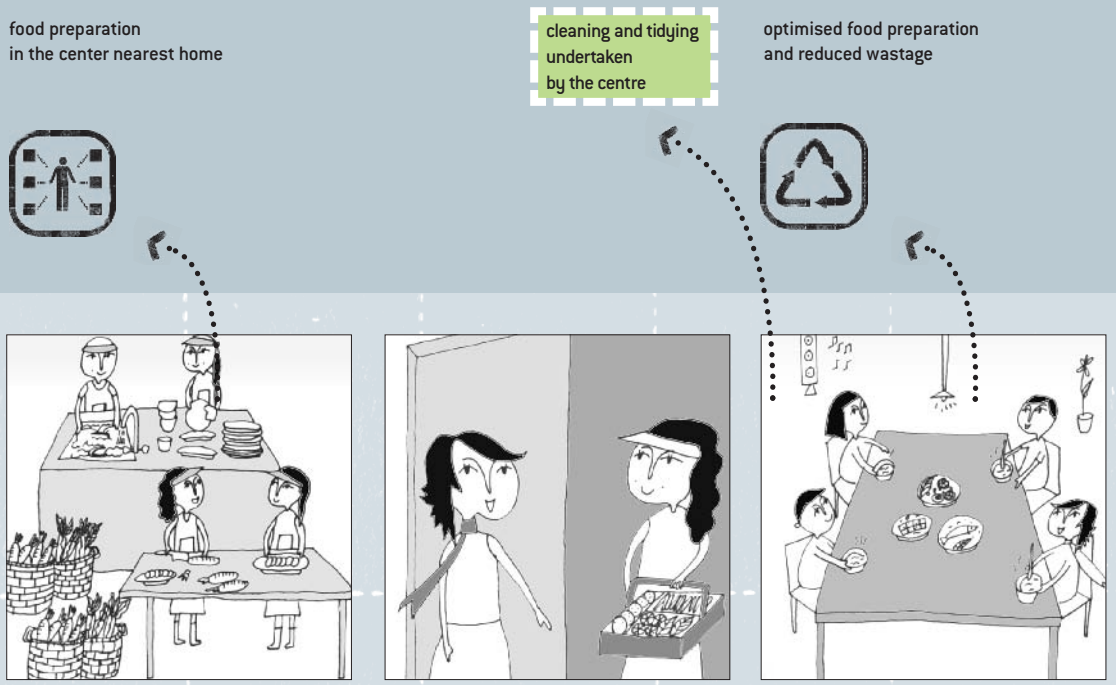
With the new service, she can order precooked ingredients...

Characteristics

This perspective, which we can call "advanced natural food", seems promising for various reasons. First of all, because it encourages us to get to know and consume organic, local, seasonal products. Doing so favours a healthier, more balanced diet on the one hand, (consequently reducing the consumption of medicines) and on the other, regenerates and gives more importance to local wisdom as to food production and the medicinal use of food.

At the same time, this perspective favours the development of highly eco-efficient production systems and preparation technology, low transport intensity distribution systems, and economic activities on a local scale, which utilise locally available physical and social resources.

The concept of advanced natural food integrates traditional know-how with advanced



knowledge, technology and organisational logic. It's most innovative aspect is this merging of "fresh and traditional" with "technologically advanced", which makes it possible to utilise the best technology to increase transparency in the food system, supply information, develop nutritional skills and support new forms of organisation among consumers and between consumers and producers.

Practicability

Advanced natural food enables city dwellers to supply themselves with fresh, organic food (and to be certain it really is fresh and genuine), and find out how to use it, so putting them in a position to prepare it. It meets the varying and contradictory requirements emerging in contemporary society: the demand for fresh, healthy produce and, at the same time, the demand for products and services that compensate for the lack of time

How can employees be supplied with home-made, fresh, healthy food?

supply
and demand network

CUISINES ON CUE

Home-made food at your office

India, Ahmedabad, National Institute of Design - NID

"Cuisines on cue" is a service for such people who long for good tasty homemade food preferably of their tradition at their workplaces during lunchtime: home-made food is delivered directly to the place where it is requested.
The main objective of this solution is to bring back some of the culture and tradition that can be found in food to people who, for different reasons, are unable to have lunch at home. Beside this important social benefit, the environmental advantage stands in the fact that food wastes can be avoided and the means of transports to get food are optimized.

At lunchtime in the office, homefood is missed.
Different employees have many different eating traditions and many different preferences.

The new service, Cuisine on Cue, is a solution to this problem...

CASES

Advenced natural food

Organic produce, products of certified origin, and fresh, natural, seasonal produce are becoming easier to find in most metropolitan areas. Often these attempt to make the whole process of production and distribution more visible and to encourage the development of dietary skills, and indeed a complete new food culture, in purchasers. For example, the Italian chain *NaturaSi*, and the North American *Whole Foods* chain are widening their range of products to include products for well-being and books and magazines on alternative and natural medicine. Other initiatives, such as the *Natura Ride* chain of shops in Italy, go so far as to see the shop as a centre for the promotion of a new food culture offering focused educational activities and courses.

Seasonal produce

Some organic fruit and vegetable home delivery organisations offer solutions that connect the

making it easier for housewives to send a homecooked meal to their husbands in the office

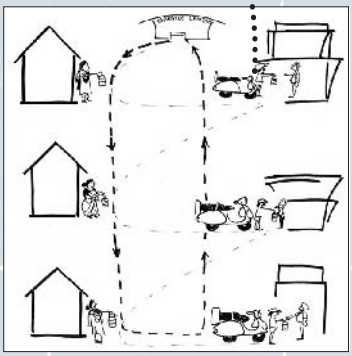
enhanced work skills and opportunities

economy of scale in transport: effective, capillary distribution network

possibility for office employees to get homemade food in the office

those at home can be near those in the office
•
freshly homecooked meal at the office

...it gives the orders to the housewives of the workers, each of them preparing the requested meal.



When it is ready, the deliveryman collects and delivers the home-made food directly to the working place...

...so that employees can have fresh, home-made food for lunch at work.

Advenced natural food

Organic produce, products of certified origin, and fresh, natural, seasonal produce are becoming easier to find in most metropolitan areas. Often these attempt to make the whole process of production and distribution more visible and to encourage the development of dietary skills, and indeed a complete new food culture, in purchasers. For example, the Italian chain *NaturaSi*, and the North American *Whole Foods* chain are widening their range of products to include products for well-being and books and magazines on alternative and natural medicine. Other initiatives, such as the *Natura Ride* chain of shops in Italy, go so far as to see the shop as a centre for the promotion of a new food culture offering focused educational activities and courses.

Seasonal produce

Some organic fruit and vegetable home delivery organisations offer solutions that connect the

but they also satisfy the desire to re-establish a closer relationship with 'nature', or at least with nature as regards organic cultivation and animal farming.

Urban organic markets
Organic markets are becoming common in many cities. Farmers from the surrounding area sell directly to the consumer on a weekly basis. Among many examples are Chilteman Market (Dublin), Prenzlauerberg (Berlin), Anacostia Farmers Market (Washington D.C.), Ferry Plaza Farmers' Market (San Francisco), and Mercato Biologico all'Isola (Milano). As well as offering a range of organic and natural products, they provide an opportunity to come face to face with traditional farm life.

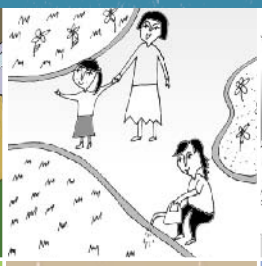
City vegetable gardens
Urban family vegetable gardening is a longstanding tradition that has been regaining popularity in recent years. In Great Britain, more than anywhere else, numerous local associations offer allotments for hire to people who want to work their own piece of land, even in major urban centres. These associations are linked through the National Association of Allotment and Leisure Gardeners. This trend is now developing internationally.

and skills necessary for the preparation of high quality food.
So, advanced natural food enables us to combine the gastronomic quality of food with the quest for well being, to the point where, in some cultures (Chinese culture for example) the question of nutrition merges with that of the prevention and treatment of certain illnesses. The keywords are:

» **fresh and wholesome:** the system must produce food that is, and is perceived to be, fresh, wholesome and from certified origin. This perception increases when products are in season, and of clear local origin. A series of supplementary services help the consumer to understand the specific qualities of the product and use it to the best advantage in his own diet;
» **accessible and easy:** the system must produce food which is, and is perceived to be, "easy to prepare". Food preparation and connected services must enable even those who would not otherwise have the time and know-how to do so, to utilise the products.

Breathing walls
A green space for residents on building facades
(China, Beijing-Peking)

Luma Landscaping Services
Eco-shaping communities together
(Canada, Edmonton)



Public-private garden
Greening and environmental service
(China, Guangzhou-Canton)

Fish, mulberry and field
A greening service linked to tradition
(China, Changsha)

Symbiotic nature

Symbiotic nature is a combination of parks, gardens, greenhouses and urban vegetable plots stretching throughout and over the city: "nature" which depends on human beings and their care for its survival.

Urban greenery[6] is both a natural and a social resource, which must be considered principally in relation to the configuration of the city. Its existence holds physical and psychological implications for the individual citizen, and social and environmental implications for the overall community. There is a relationship between the quality and quantity of vegetation in an urban environment and the physical and psychological health of its inhabitants. It has also been demonstrated how vegetation increases energy efficiency in buildings, reducing demand for air conditioning in the summer, and improving the city microclimate by avoiding overheating and making the streets and squares more liveable and inviting. For all these reasons the decline in urban greenery should be seen as one of the most important factors in the intrinsic unsustainability of the city.

Proposals

» Devise systems of urban vegetation able to meet residents' "demand for nature", which also influences the microclimate both indoors and out, improving inhabitability and reducing the energy consumed in air conditioning.

» Develop urban vegetation suitable to the local climate and living patterns, able to integrate with densely populated built up areas. Exploit the spaces between buildings and vertical and horizontal structures, using the most advanced cultivation and monitoring technology for its maintenance.

Characteristics

The focus of interest in this perspective, which we call symbiotic nature, is obviously to make the city more liveable and, by so doing, regenerate the social and environmental living contexts of its residents.

However, since an intense, appropriate use of vegetation improves the microclimate both inside and around buildings, it is also interesting to think of urban vegetation as a sort of "vegetable air conditioning system": a refined bio-technical system for cooling and purifying air, which works on

[6] **Urban greenery** all forms of vegetable life that populate the city. It is described in terms of its size, its quality and its forms of management.

How can we bring nature back to urban high-rise buildings, also reducing energy consumption?

urban greening

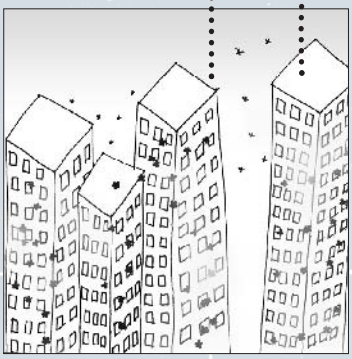
ecological sky-crapers built with sophisticated bio-technology

vegetation for air-conditioning in homes and urban greening

BREATHING WALLS
A green space for residents on the facades

China, Beijing, Tsinghua University

Even in a high density town like Beijing, such a solution as "Breathing walls" can introduce the so-called "nature-imitating" architecture. This new "Bio-tech" architectural design and environmental-greening and care service utilizes the recycling of wastewater for hydroponic plants in order to build a high-rise green house with air-conditioning. The building is covered with a layer of transparent glass and plants grow between this and the building wall. The idea is to make use of the circulatory convection of air and the temperature adjusting power of plants to create a thermal balance and improve air quality.



The buildings of Zhang's community are covered with spectacular high-rise green walls...

...Zhang likes spending time admiring the beauty of the vegetation.

the basis of natural processes, but is aided and supported by the use of the best technology available.
The idea of infiltrating built up environments with green spaces has a long history, not only in the remote past, but also in recent thinking and debate on urban planning and architecture. The currently emerging concept of symbiotic nature updates these traditional ideas, introducing new possibilities, technology and management forms. This is a new kind of urban vegetation that offers new opportunities but requires new treatment: new cultivation techniques, new service typologies, new capacity for self-organisation on the part of citizens.

Practicability

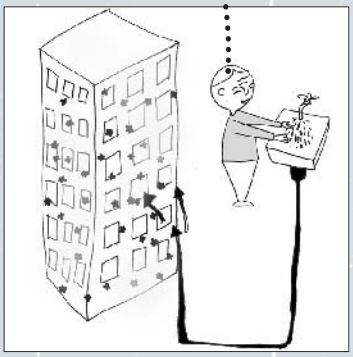
Symbiotic nature represents a new kind of balance between the natural and artificial components of the urban environment. It responds to a widespread "demand for nature" in all

reduced consumption
of oil and electricity
for air-conditioning

use of recycled waste water
for hydroponic plant cultivation

green domestic
air-conditioning service

It helps protect Zhang's house
from severe sandstorms
and regulates its temperature.



The system utilizes wastewater
for hydroponic plants...

...and provides gardening
maintenance services.

cities and also contributes to the improvement of domestic and urban microclimates, generating more inviting public spaces. Its keywords are:

» **naturalness and air conditioning:** a response to the widespread demand for some form of direct relationship with nature and its cycles, but also the possibility of improving the urban microclimate in a natural way;
» **entertainment and facilitation:** making it easier to enjoy gardening activities and grow vegetables in the city.

How can we foster a more ecological greenery and a higher exposure to natural beauty in urban settings?

creation of large gardens organised by the neighbourhood community

LUMA LANDSCAPING SERVICES
Eco-shaping communities together
Edmonton, Canada,
University of Alberta

"Luma Landscaping service" is designed to 'eco-scape' entire communities, by planting low-maintenance species native to the region, and removing backyard fences between neighbours.
The native plantings will thrive under realistic climate conditions, decrease the amount of time devoted to lawn and garden maintenance, and reduce the noise pollution and water and pesticide use associated with traditional gardening. This solution gives families a larger outdoor space to enjoy, and more interaction between neighbours working together in the garden.

About a year ago, my neighbour and I removed the fences surrounding our yards....

...now, many other people in the neighbourhood are doing the same thing!

CASES

Green spaces and the shape of a city

Land planning has long dwelt on the relationship between 'the shape of a city and green spaces': concepts such as the green belt – a strip of countryside, parks and non-built up areas on the edge of urban development zones, and greenways – chains of open spaces that protect the biological habitat in the city, have been at the base of the best experiences in British urban planning and are still positive reference points for the most advanced urban planning in Europe. One noteworthy example is Munich, which has given itself the strategic goal of creating a network of green spaces and ecological islands throughout the city.
The existence of these complex networks of vegetation around and within the city is a determining factor in its livability – both in answer to the widespread 'demand for nature' from citizens, and to improve the climate and quality of air in the city itself.

large, open,
shared garden

**a large, open,
continuous garden
unites the area**

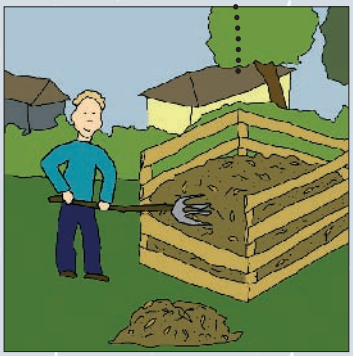
•

**native trees that grow
more easily
and ecologically**

promotion of native vegetation,
more suited to the local climate

**an interesting activity
to undertake with neighbours**

We no longer have to buy expensive annuals every year...



...and it's nice to know that the area my children play in is free from harmful chemicals.

Without fences it's feeling more and more as though we live right in the middle of a park!

Green air-conditioning

In Shibuya, a densely populated neighbourhood in the centre of Tokyo, scores of roof gardens have been created on office buildings.

This anticipated what the city council is now demanding – that all buildings with a flat roof which covers more than 1000m.sq., should turn at least 20% of the roof surface into gardens, to improve the city's micro-climate.

The Tokyo case demonstrates how feasible the development of vegetation symbiotic with urban building actually is. The aim of such vegetation is heat regulation in buildings and the surrounding areas, even in already heavily built-up districts.

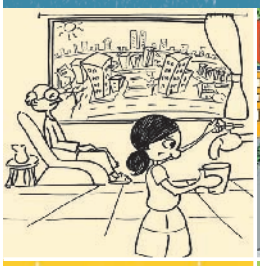
Obviously, the use of greenery to regulate the micro-climate can be used with even greater success in the development of new residential areas such as some residential ecological

districts (Bo01 in Malmö), and in building projects intended to exploit the potential of vegetation as a micro-climate regulator.

Community gardens

One local answer to the lack of vegetation can be seen in self-help organisations that regenerate run down or marginal urban areas and turn them into shared gardens. In these gardens, residents can cultivate parcels of land and exchange gardening experiences and skills. In Great Britain alone there are 1,200 community gardens, members of the *Federation of City Farms and Community Gardens*. However, it is possible to name many other examples, such as *Alice Griffith Community Garden* (San Francisco, USA), *Clinton Community Garden* and *Green Guerillas* (New York, USA), and *Orti del Tempolibero* (Milan).

A Canadian association, *Evergreen*, which develops programmes for the naturalisation of urban areas with direct citizen participation, should also be mentioned. Suitable places are the outside of school buildings, parks and private gardens and also the flowerbeds in the central reservation areas and traffic islands of city roads.



Drops of Sand, Grains of Water We make your city your dream oasis **(India, Ahmedabad)**

Green water roofs
A new urban landscape
(Brazil, Rio de Janeiro)

Our spa on the roof
Communal spa
and bathroom facilities
(Japan, Tokyo)

Aquamind
Efficient use of water
(India, Ahmedabad)

The eco-sensitive system

An eco-sensitive system is a socio-bio-technological system able to minutely manage local environmental resources, minimising their use, favouring the use of renewable energy and tending towards the closure of material cycles.

At present cities are huge wasteful machines that consume enormous quantities of environmental resources while offering most of their citizens low, even unacceptable, living standards. Therefore they are doubly unsustainable: as regards their consumption of global resources (unsustainability measurable by the size of their ecological footprint) and as regards their local contexts (unsustainability measurable in terms of the environmental and social quality of the context in which citizens live out their daily lives).

Proposals

» Starting on a local scale, develop urban systems that approach the workings of an eco-system and, in so doing, minimise the ecological footprint and maximise liveability in the local contexts they refer to.

» Encourage re-use and re-cycling, reduce water consumption, minimise the consumption of energy resources and maximise the use of renewable energy. Use urban vegetation to improve the microclimate both inside buildings and around the city.

Characteristics

Everyday life in the city is based on complex techno-organisational support. This is true of every city, but it is even more so when thinking of a sustainable city. Here the techno-organisational infrastructure must not only enable a large number of people to carry out their daily lives and activities, as in any city. It must also do so while guaranteeing minimum impact on the environment and generating the necessary conditions for the development of a balanced social and productive fabric.

Practicability

Today the concept of eco-sensitive systems runs counter to what is generally happening both in the cities of industrialised countries, and in the rapidly growing cities of recently industrialised and non-industrialised nations. On the other hand however, it indicates some interesting di-

How can we re-use household water and solid waste to meet urban problems?

DROPS OF SAND, GRAINS OF WATER
We make your city your dream oasis
India, Ahmedabad, National Institute of Design - NID

By either altering the plumbing or making a new network of piping "Drops of Sand, Grains of Water" is a solution aiming at recycling water. Waste water from each house is collected, taken to communal tanks and then to larger tanks in the city. Water is used to cultivate "green spots" at specific points in the city (the green areas in the city don't need to have lush greenery, consuming too much water, but desert vegetation).
Also the solid waste from the kitchen is dumped from each house into pipes running down into the basement to a collection pit, to become manure, that will be used to cultivate the "green spots" in the city.

Mr. Soni and his grand daughter's apartment often suffers from water shortage...

...the "Drop of sands, grains of water" service may provide them with a solution in order to live in a healthier environment...

rections for development towards an increased sustainability of urban systems. Its practicability is backed by two basic concepts:

» **restorative economy:** the possibility of developing an economy finalised in the regeneration of context quality: a locally based economy, high in occupational, quality and knowledge content (in order to design, realise and manage such sophisticated systems as eco-sensitive systems must be);

» **enabling technology:** the possibility of eco-sensitive systems becoming the field of application for a variety of innovative technological apparatus (for capillary monitoring the variables in question and for programming necessary actions).

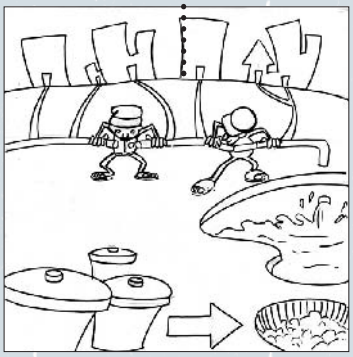
access to an efficient domestic refuse recycling service

- water wastage
+ urban vegetation
+ recycled domestic refuse
= sustainable green public space

systematic recycling of water and organic waste to cultivate green areas

increased urban vegetation

...the water from washbasins is re-directed to the flushes and the solid waste is dumped into pipes running under the basement...



...all the household waste water is linked to common recycling tanks, as well as the solid waste to a single collection pit, to become manure.

Thus, the optimisation of water use and the collection of solid waste help keep the city cleaner and more liveable.

How can we improve the urban slums and prevent the houses from falling after the showers of the rainy period?

city greening

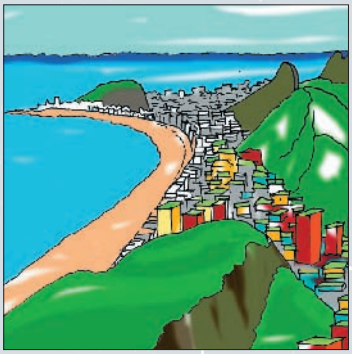
+ systematic use of rainwater
+ urban cultivation of fruit and vegetables
+ flood damage prevention
= ecological rooftop vegetable garden

GREEN WATER ROOFS

A new urban landscape

Brazil, Rio de Janeiro, ESDI / UERJ Escola Superior de Desenho Industrial

"Green water roofs" is a system of rainwater collection through tubes along the houses, so that water can be collected and used for creating gardens on the roofs. The gardens would help in regulating the climate of the houses, but they would also help in raising vegetables for private consumption or for sale in the common market that residents organise once a week. This stimulates convergence among them, by increasing social cohesiveness and sense of belonging. Moreover, the system can be seen as a prevention against the damages due to the flooding.



The houses that are part of one of the slums of Rio have changed their aspect.

Many of them have gardens on the roofs, watered by a new system of rainwater collection.

CASES

Sustainable cities and districts

ICLEI (International Council for Local Environment Initiatives) is an association of more than 400 cities, which aim to promote concrete initiatives in sustainable urban development. In this framework and spirit, many cities have developed plans to exploit various renewable energy sources and construct bio-climatic buildings. Kronsberg in Hanover is an example – on a neighbourhood scale, it integrates solar panels (both photovoltaic and thermal), wind generators, co-generational systems (that is, the combined generation of electrical and thermal energy), and bio-climatic buildings with high standards of environmental performance. Other examples are Vauban (Freiburg), Saarbrucken (Germany), Malmö and Göteborg (Sweden), Vikki (Finland), Oberwil (Switzerland), Pefki (Greece), and Las Gaviotas (Colombia).

What distinguishes these experiences is the careful management of the characteristic flow of

possibility of cultivating fruit and vegetables on the roof

rainwater collection for the irrigation of roof gardens

The gardens give the residents the possibility of cultivating fresh vegetables...

...to consume with their family...

...or to exchange with the neighbours at the weekly local market.

energy and materials in the urban metabolism. It is control in minute detail made possible by the integration of sophisticated plant with information systems enabling the 'intelligent management' of material and energy flows.

Participatory ecology

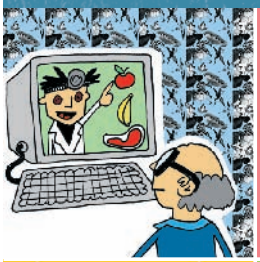
One of the initiatives that have made Curitiba in Brazil into a model sustainable city is a project that has drawn residents into the process of refuse collection. Called Green Exchange, it has contributed to cleaning the city and, at the same time, to raising awareness among the inhabitants. It introduced bus tickets or shopping coupons in exchange for refuse bags brought to a purpose-built centre. In a similar way, under the Eco-ticket plan in some Polish cities such as Mikolow, Osweicim and Krakov, children are given cinema or swimming pool tickets in exchange for a specific quantity of paper for recycling. These examples are notable from various

angles, but what interests us most here is that they show how it is possible to increase system intelligence without special sophisticated technology, but by finding the right way to engage the capabilities of members of the community.

Thermal contract

Numerous energy companies, from Stadtwerke in Hanover to AMG in Palermo, to mention but a few, offer their clients a contract guaranteeing specific conditions of thermal well-being for a set period, rather than selling them heating fuel. The contract presupposes that the service manager will see to the maintenance of the system and any necessary energy requalification of the heating plant or the building shell.

The environmental advantage of this system is that it is in the interests of the service manager to optimise the system (plant plus building shell), to minimise energy consumption. In other words, the economic interests of the supplier converge with the reduction in environmental resource consumption.



Dr. Food
Healthy food
for outpatients
(Korea, Seoul)

Kid's Coach
Learning from experience
(Japan, Tokyo)

Relay cart Distribution of shopping orders in the neighbourhood **(USA, Chicago)**

Freewheeling
Micro-mobility workshop
(Italy, Milan-Politecnico)

The enabling platform

The enabling platform is a system that provides cognitive, technical and organisational instruments so as to enable a user to achieve a result, using his skills and abilities to the best advantage.

The transition towards sustainability requires attention, ability and widespread expertise: attention for the people, things and the environment we relate to, competence and skill to do so appropriately. Today we lack such diffused competence and expertise, and attention is a rarer and rarer gift. This is no accident. For many years, the prevailing tendency in developing technical systems has been towards the use of innovation to relieve the user of any effort or responsibility for his actions. In the name of a mistaken idea of comfort and efficiency, the only quality encouraged was that of reduced personal effort and, in short, "disinvolvement" and ignorance with regard to the way things – especially the environment – function and how to look after them. This disinvolvement and lack of care fuel the throwaway world we live in today, and its growing unsustainability

Proposals

» Place issues of comfort, efficiency and care on an effective discussion table. Increase people's capacity to deal with questions related to them and provide them with the means to do so in the best possible way.

» Develop products, services and systems that integrate their specific "intelligence" with the resources of individuals and communities, so offering new opportunity for action.

Characteristics

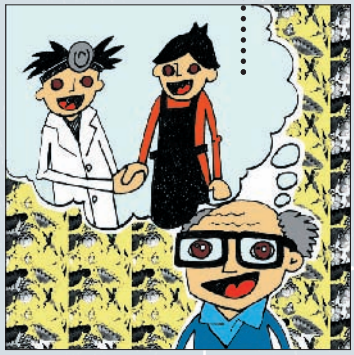
The concept of an enabling platform refers to operative tools, able to help the user focus on a result and achieve it in a sustainable way. In carrying out this role they must bring a special type of intelligence into play: an intelligence that enables them to stimulate, develop and regenerate the ability and competence of those who use it. Obviously the more expert and motivated the user, the simpler the necessary instruments may be. On the other hand, the less expert the user, the more the system must be able to make up for his lack of skill by supplying what he doesn't know or can't do. In addition, the less the user is motivated, the more the system must be attractive and draw him into action as though it were a game.

How can people continue taking care of their health out of hospital, not only with medicines but also through eating?

creation of a network of healthcare experts and products

DR. FOOD
Healthy food for outpatients
Korea, Seoul, International Design School for Advanced Studies - IDAS

"Dr. Food" is a service providing outpatients with diet assistance from the hospitals. The outpatients can receive confidential information rapidly from the doctors, according to their personal health needs. "Dr. Food" shares a database outpatients with the hospital, with the main objective of supporting outpatients in their health care when out of hospital, and helping hospitals cure outpatients more efficiently by using the results of its service.



Thanks to 'Dr. Food', I can be networked both with the hospital I was treated in and with the food provider.

In fact my personal situation is recorded in the hospital database...

The concept of enabling platform therefore indicates the possibility of seeing technology as a system that increases and strengthens individual and collective opportunity. Operationally it is a system that makes a given solution possible or simply more feasible by actively involving the user in bringing it about.

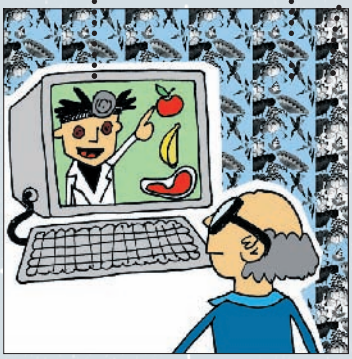
Practicability

As a prerequisite to any learning process it is essential that subjects are able to operate intelligently, sensitively and with interest. This is equally true in the quest for sustainability: for a system to be sustainable the individual actors must play an active, conscious role. They must bring a certain amount of their personal resources, in terms of time, attention and expertise, into play.
At present all this looks highly problematical. On the one hand the issues to be dealt with are

help service for the maintenance of a correct diet

daily access to customised information and services

+ a customised diet on-line
+ a doctor in control
+ home delivery
= a food and health advisory service



...and the doctor can give me advice about particular food and recipes in line with my specific health problems.

I can purchase, and have delivered, the ordered food from the food provider, part of the system...

...thus being sure that I am eating the right things, well for my health.

increasingly complex and new, on the other, the actors involved are generally increasingly less expert and more pressed for time (or rather, by the impression of lack of time).
However, if we observe the dynamics of the technological and socio-cultural innovation in progress, we can see contradictory but interesting phenomena linked to the spread of new technological opportunities and to cultural and behavioural changes which, although still only minor, indicate important, interesting development possibilities. These are:

» **friendly expert systems:** i.e. the application of technological innovation able to enhance even minimal residual personal resources, without making the attention and time required seem effort or loss of time, but rather as an interesting experience;

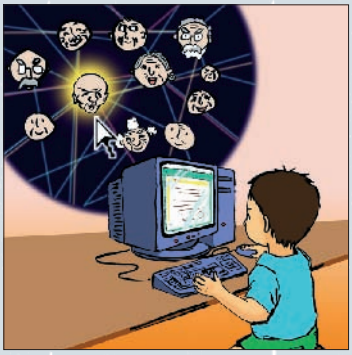
» **the value of care and slowness:** the expression of an emerging cultural attitude which

How can we make the best of the experience of the elderly and use it for kids who want to learn new things?

KID'S COACHING
Learning from experience
Japan, Tokyo, Zokei University

The "Kid's Coaching" is a social service, contextualised in the Japanese community, which provides opportunities for the kids to learn from the elderly in the neighborhood. A coaching management company coordinates and networks the kids and elderly people, considering each kid's activity area and the availability of the "teachers". It also monitors the relationship between kids and coaches. "Teachers" must be specialized in a certain field and they must also be able to establish a good relationship with the kids. Finally this service helps to create occupation for elderly people and a good social community.

Norihiko is left alone when he comes back from school because his parents are at work.



He decides to use the coaching system to look for something new. The system is accessible from the web.

CASES

User friendly, accessible, expert systems

Information technology and the user friendly expert systems they are able to generate are potential enabling platforms. They make accessible to many people complex systems and sophisticated equipment which could otherwise only have been used by a few experts. Instruments for medical diagnosis are heading in this direction, enabling people to become more aware and self-reliant as far as their health and well-being is concerned. In a similar way, systems can be seen as enabling platforms when they make it possible to know and monitor the functioning of complex apparatus, allowing them to be used more expertly. Here we could include anything from the maintenance of a camera to the optimisation of energy consumption in a heating system.

By its very nature the Internet is also potentially a great enabling platform. It can give access to the information and expertise necessary to deal with (almost) any activity, from the most

easy link between offerer and seeker

There are coaches in many activities, such as pastry making, sports, photography, language...

a useful and participatory activity for the elderly

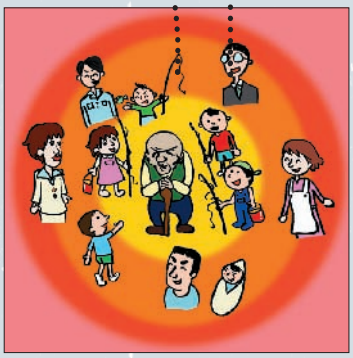
possibility for children to become experts in an activity

He find his coach in fishing. The coaches are specialized in a certain field and teach the kids knowledge and skills.

valorising personal iniziative and skill

elderly people as teachers for the neighbourhood children

- **a system which connects and activiates resources**
- **a more integrated, coesive community**



Through coaching, elderly people begin to attract kids, creating a good network of people in the community

eccentric, such as the art of candle-making, to the more mundane and everyday, such as trying to find a lift through the car-pooling system.
Information and communication technologies together open up totally new opportunities. However, none of this can be taken for granted, although the potential is there. In other words, information and communication technology can give rise to extraordinary enabling platforms or to useless gimcracks. It depends how they are planned and used.

Assisted do-it-yourself workshops

In some countries, workshops have opened which offer modern facilities, with the tools for various activities and the technical and professional advice to fill gaps in skills and know-how. Cyclists can take their bikes to *Bike Works* in Edmonton (Canada), and mend them themselves with technical assistance if necessary. Similarly, *Nuovo Centro Hobby* in Castel Guelfo

(Bologna, Italy), is a carpentry workshop open to those who wish to work with wood, but do not possess the equipment to do so. As well as providing assistance, the centre organises training courses at various levels of specialisation.

Enabling shops

Many food shops also function as enabling platforms for cookery skills and expertise. *Un Mondo Leggero* is a shop and restaurant in Milan that offers cookery courses and advice on light, natural diet, in conjunction with *Associazione Sana Gola*. *Cous Cous Clan* is a cultural association, operating in Turin, that sets out to discover 'ethnic flavours'. As well as being a cookery circle, it offers cookery courses, guided food tasting and intercultural itineraries. *Edible*, in Great Britain, is orientated towards particularly exotic gastronomic experiences. It proposes recipes using animal and vegetable ingredients from tropical countries.

recognises the value in looking after things, and that taking time to do this properly is the only way to achieve results of a high standard.

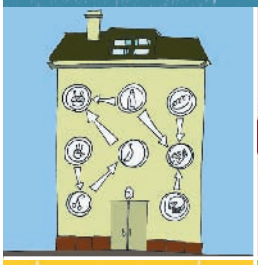
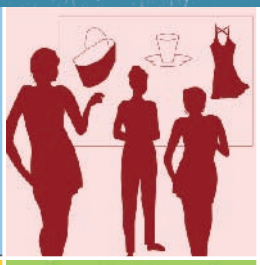


Plate with me
A co-operative for cluster-purchasing among neighbors
(Paris, France)



Tool Box
Knowledge, space and tools for residents
(Finland, Helsinki)

The best lunch box
Food sharing in the neighbourhood
(Japan, Tokyo)

Let's go
New friends along the way
(Italy, Milan-Domus)

The co-operative network

A co-operative network is a system of connection and information handling that enables different people to connect together and organise themselves to achieve a result.

The transition towards sustainability is a huge social learning process. It requires the adoption of decentralised, flexible organisation models to operate well. In other words, systems able to recognise the distinguishing features of a context, able to act and, above all, learn from experience.
The best organisational metaphor to describe this optimal organisation model is a network: a network of sensor-actors who operate locally and exchange information and experience globally, by means of the network itself.
On the other hand, although network is a widely used metaphor nowadays, it usually refers to activities and relationships that have nothing to do with the local or the problems of everyday. In fact it is exactly the diffusion of networks that is often considered to be one of the major causes of our loss of sense of place (and of interest for place). In turn this fuels ways of being and doing that are insensitive to the specific features of their context and, for this reason, are unsustainable.

Proposal

» Foster network systems that mix *short networks*, on a local scale, with *long networks* that link the local to the global and generate local-global systems.
» Develop socio-technical systems able to adapt to the context, act and learn from experience, so amplifying feedback and redirecting options. These are based on bottom up organisation models, open to debate and the flow of cosmopolitan ideas.

Characteristics

The concept of *co-operational* network refers to an enabling platform similar to that described above, but oriented specifically towards creating networks of actors able to co-operate in resolving problems or developing activities together. Also in this case the intelligence of the system consists principally in developing the abilities, skills, and desire to be

How can we facilitate direct contact between customers and producers in order to permit small cluster purchasing?

Internet access to small producers

local and organic food producer circle

facilitating co-operation between neighbours in the direct ordering of food

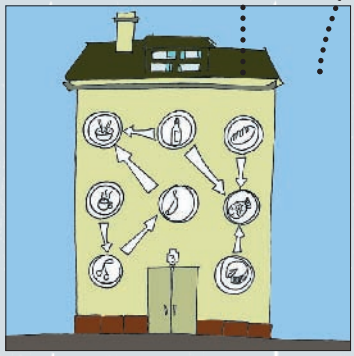
PLATE WITH ME

A co-operative for cluster-purchasing among neighbors

France, Paris, Les Ateliers / ENSCI

"Plate with me" is an Internet based solution for ordering local and organic food products directly from the producer even in small stocks. In the residential building, all kitchens are connected by an Intranet system which allows inhabitants to share, and make suggestions for, the cluster-purchasing of typical and organic food products.
This solution aims to valorize and develop small scale producers, encourage users to self manage and control their own food supply, and enhance consumer competence in food issues.

Marguerite loves good cheese, and she would like to share her passion with her friends.

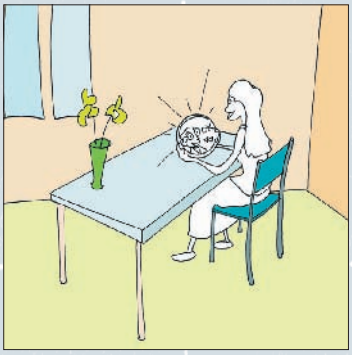


In her house, an internal network allows her to connect to the other inhabitants.

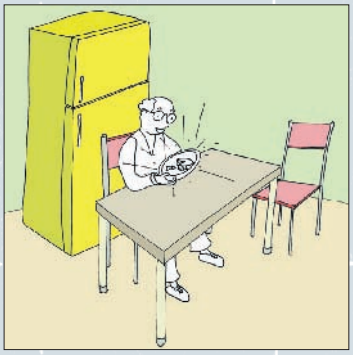
active, on the part of the subjects, who are here seen as links in a network.
On the other hand, the co-operation required to achieve results pertaining to everyday functions, requires a physical proximity between the actors involved. Consequently the networks which arise must also be of a local nature.
It is this physical, local dimension that most characterises these co-operational networks. However, this local dimension is not the only one: dealing with everyday urban problems requires proximity, but it also requires knowledge and information that may derive from distant geographical situations. Co-operational networks must also be able to meet this requirement, connecting local actors to this kind of knowledge and experience. In other words, by integrating the short networks of local operations with the long networks of global communications.

+ neighbour interaction
+ personal initiative
and entrepreneurship
+ local and organic food
= consumer co-operative
for qualità food

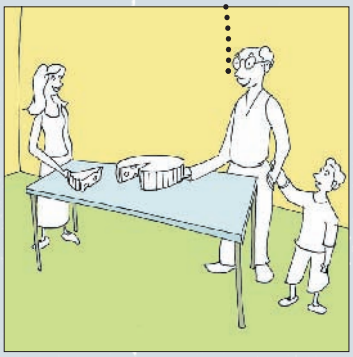
encouraging self management
and co-operation



In every flat, a “digital plate” connected to the internet receives the “cluster purchase” proposals for food products.



A neighbour is interested in Marguerite’s proposition and decides to join the order for cheese...



...finally, the cheese is delivered directly to the customers' house.

Practicability

Nowadays the development of network organisations is one of the most widely debated issues. From this point of view, the concept of co-operational network is linked to a strong current trend, but with a variation. Discussion on community and on emerging network organisations has so far focused on virtual communities, leaving the question of limits in the shadows, and not sufficiently considering other possibilities, namely, the potentials of the new means of communication as instruments for the development of local, or rather local-global, networks. The concept of co-operational networks points clearly to these potentials, which from our point of view, look to be strong arguments for their realisation.
These strong points are:

How can a community foster interaction between people and knowledge, theory and practice, strengthening its social net?

enhancing technical skills
with the opportunity
of passing them on to others

TOOL BOX
Knowledge, space and tools for residents
Finland, Helsinki,
University of Art and Design - UIAH

"Tool-Box" aims at interweaving the expertise of art and design professionals with the local community providing the opportunity of mutual learning. The idea is that the University of Art and Design – supported by the City – provides space, workshop, tools and machinery to local residents. Design and art professionals, students, and researchers register as instructors and all Tool-Box members book free tools, space or instructors via the Internet or their mobile phone.

Arriving at the nearby Tool-Box, Kaisa checks her instruction hours for next month...

...for two hours, she instructs a group of local teenagers in designing an evening dress for their graduation party...

CASES

Fair trade

Fair trade networks constitute a point of reference for producers in developing and emerging countries, enabling them to find new market openings, improve their working conditions and promote self-development projects.

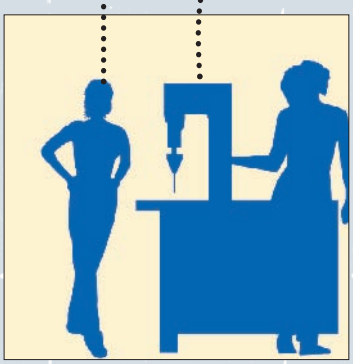
Examples of such networks include the *Consorzio CTM-Altromercato* in Italy, *Fair Trade Organasetie* in Holland, *FairTrade* in Austria, *Transfair* in Germany and *Transfair* in the USA. As well as single national organisations there is also an international organisation, *FLO-Fairtrade Labelling Organisation*, which provides a guaranteed trademark to producers from 40 countries. These organisations dedicated to the import of products have given birth to shops to sell them. There are 3,500 of these shops in Europe belonging to an organisation known as *NEWS-Network of European World Shops*. In Italy there are about 200.

access to a service platform
for teaching and learning
simple do-it-yourself activities

+ technical training
+ availability of professional equipment
+ exchange of experience
= a learning-teaching centre

easy access
to equipment
and work space

...later Kaisa shows some of her latest work at Tool-Box getting feed-back from local people...



Then she asks for help with the wood workshop tools to make a Christmas present for her boy-friend...

...and, before leaving, she reserves some tools for the weekend.

Cooking organisations

There is a particularly interesting collaborative network behind *Bombay Lunch Delivery* in India. This initiative organises the daily distribution of thousands of home-cooked meals produced by the wives of employees in offices throughout the city. The success of the service is due to the organisation of its underlying structure – a network of 'meal porters' (the dabbawallah) who act as a link between the wife who cooks the meal for her husband at the office, and who pays a monthly subscription for the service provided. Today, people who do not have a family but who wish to receive a home-cooked meal, can also subscribe to the system, which has been so successful that for the last few months it has also been possible to order meals on-line.

Micro-producer networks

One very interesting Indian collaboration network is called *Amul*. It is a co-operative associa-

tion of milk micro-producers (small farmers with a few head of cattle each), which as a unit, forms one of the largest milk producers in the world. These small farmers, scattered over a multitude of villages, are able to survive economically because they are part of this wider network. The role of the co-operative is to collect, treat and distribute the milk, and to guarantee hygiene on the farms and the quality of the final product.

» **flexibility and adaptability:** i.e. the possibility, as any other network, of generating organisations able to adapt themselves in time and space; consequently of being light and relatively easy to set up, and if necessary break up;
» **openness and localisation**: i.e. as in any other network, the possibility of being open to global communication flows, but at the same time of being rooted in, and in tune, with one place. This puts co-operative networks in line with one of the most interesting demands emerging from contemporary society.

Microworld
Integrated micro-nursery system
(Italy, Milan-Politecnico)

Via carioca beachwear
The magic of Rio Carnival through beachwear
(Brazil, Rio de Janeiro)

You ring, we bring
All you need at your doorstep
(India, Ahmedabad)

Yes, we have bananas!
Regeneration of the bananeiros communities
(Brazil, Rio de Janeiro)

Sustainable micro-entrepreneurship

Sustainable micro-entrepreneurship is a form of organisation that favours and supports business on a local scale for socially and environmentally valid activities.

Sustainability requires enterprise: oriented enterprise, able to develop vital activities that are "in the right direction". Nowadays this oriented enterprise is expected of everybody, from the large corporations operating on a global scale, to the businesses which promote and run production activities and services on a smaller, local scale. Here we refer to the latter, particularly to tiny activities – micro-enterprises. In other words, to capillary economic activities which are rooted in a place, as an expression of everyday social and economic dynamics emerging from the 'bottom' up.
In a sustainable perspective, the problem with micro-enterprise is twofold: it must develop because it represents a way of resolving, or at least reducing, many of the social and economic problems faced by vast sections of the world population. But it must also be suitably oriented, otherwise it tends to use resources unsustainably.
Today, the problem of micro-enterprise is evident on both sides: on one side, it is not given due importance and consequently is not sufficiently supported and promoted. On the other, when this form of activity effectively develops, due to lack of information and/or investment capital, it tends to operate in an unsustainable way.

Proposal

» Promote and support small enterprises that are oriented towards sustainability. Develop services that favour the set up of new business enterprises and support their activities
» Promote the generation of micro-enterprises that favour bottom-up activities and generate a wider, more informed system with greater contracting power.

Characteristics

The debate on micro-enterprise and widespread business activity has grown in vitality and im-

How can we encourage the development of new micro-enterprise and create an official role for the new professional figures which emerge?

+ a willing, enterprising mother
+ children in the house together
+ a practical support organisation
= a micro-nursery next door

MICROWORLD
Micro-nurseries integrated system
Italy, Milan, Politecnico, Facoltà del Design

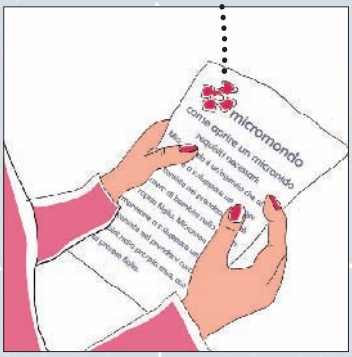
"Microworld" is an agency which helps individuals to develop micro-nurseries. These consist of a small number of children cared for by an individual mother in her own home, together with her own child. Microworld aims at provide integrated services with a series of concessions to the applicants. It offers financial and architectural advice, access to the Internet and Intranet, and administrative support. It also organises training courses and helps to solve initial, practical problems.

Since Francesca had her second son, she spends most of her day at home with him...

...she has actually thought of taking advantage of the experience that she has acquired with children and applies to Microworld...

portance over recent years. It now touches all sectors of society world-wide: from the most technologically advanced levels of mature industrialised society (small high-tech businesses), to the weakest and most isolated ones (the production and commercial businesses for daily survival in the new metropolises). These activities should be seen as a fundamental social and economic resource. Indeed, in some cases (those we most refer to here) they are the only resource that people can really rely on.
When considering micro-enterprise and its needs, we are faced with a twofold problem. Firstly, to promote solutions that stimulate and support new activities over time and, secondly, to guide those concerned so they can operate as sustainability agents, positively influencing the transition towards a restorative economy and a sustainable society.

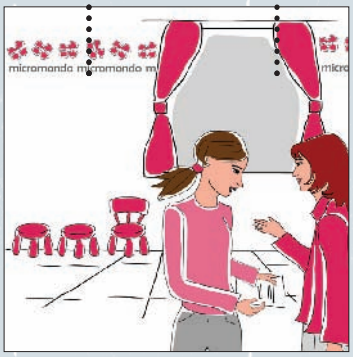
encouraging initiative
and interpersonal skills



...where she gets
the information she needs
to start a micro-nursery.

a possibility for mothers to organise a home based activity, by looking after other people's children as well as her own

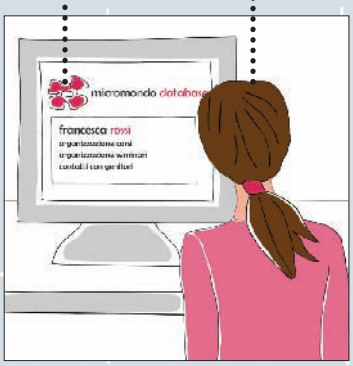
a possibility for families to entrust their children to a familiar, competent neighbour



She is helped in initially setting up the space, in order to be in line with rules and regulations.

organising
a widespread service
throughout the city

a network organisation
which facilitates
an exchange of experience



She is also entered into the database of Microworld, where she keeps contact with families, municipality and suppliers.

Practicability

The prospect of micro-enterprise as sustainability agent may seem a far cry from today's reality. However, it is not a prospect without foundation. There are various reasons to suppose that it has every possibility of carrying out a fundamental role in the creation and subsequent management of sustainable systems. To think up sustainable solutions, put them into action and run them, requires attributes which, by definition, micro-enterprise possesses. In particular these are:

» **localisation and diffusion**: i.e. rooted locally, situated near the problems to be acted on, and with the capacity to spread throughout the area;
» **flexibility and reactivity:** i.e. the ability to adapt and react to variables by trying to find new opportunities.

How can we take advantage of the local expertise generated from Rio Carnival to develop a set of beachwear that recalls that atmosphere?

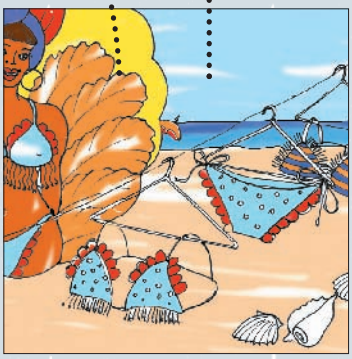
opportunity to purchase environmental friendly souvenirs from the most spectacular carnival in the world

organised production and sales network in the poorer districts

VIA CARIOCA BEACHWEAR
The magic of Rio Carnival through beachwear
Brazil, Rio de Janeiro, ESDI / UERJ Escola Superior de Desenho Industrial

The favela inhabitants are skilled in producing the costumes for the Rio Carnival Parade. "Via carioca beachware" aims at using this skill to produce a thematic line of beachwear, based on the same concept as the Carnival costumes, such as the use of alternative materials and the use of gaudy colours.
The products would be sold on a human-powered vehicle, the Eco Mobile Shop passing by the hotels, driven by the favela inhabitants themselves, who will speak English and Spanish. The samba is played during the selling process.

While I was going to the beach, I came across the Eco-Mobile Shop...



...selling a great variety of beachwear similar to the costumes of the Carnival Parade.

CASES

Social enterprise
Many examples of micro-enterprise operate as *social enterprises* – designed to produce economic and social value at the same time. These firms follow the now famous initiative by patients and staff in the ex-psychiatric hospital in Trieste, who began setting up service co-operatives in 1987 and in so doing developed and put into practice the concept of social enterprise. Since then the idea and practice has spread and developed in different ways.
One notable example is *Laboratorio* in Milan – a micro-enterprise in catering and home meals delivery, particularly for convalescents who have difficulty moving. The most interesting aspect is that it is the outcome of work in a day centre for psychiatric patients who are supported and encouraged to realise their potential by developing their creative and entrepreneurial abilities. Cookery courses were set up in this spirit and these, in turn, led to the present activity in the catering field.

trade organised
by the economically
underprivileged

+ characteristic style and materials
+ picturesque, ecological sales system
+ characteristic style and materials
= a sustainable souvenir

Beachwear is produced
and sold by the favela inhabitants,
and made of alternative materials.

I decided to buy one for myself,
and a few for my friends, so that
they can have a taste of Rio.

It is nice to hear the samba played
by the mobile shop going around!!!

Other proposals tend to favour micro-enterprise in socially needy areas. Among these the DSNI or *Dudley Street Neighbourhood Initiative* in Boston aims to regenerate one of the poorest neighbourhoods in the city. It promotes local micro-enterprise by organising the production and sale of products created by residents. The organisational and economic system has been conceived as far as possible so that proceeds remain 'in situ'.

Women's enterprise in India

Around the city of Bangalore in India, a network which organises the work of women in villages (*Charaka*) has been set up to sell their products in the city through a special chain of shops (*Desi*). They produce household objects, clothes, stationery and certain food items. Thanks to the quality of the products and the care and pleasant atmosphere in the shops, the initiative

has been successful and has created paid work for groups of women in need, giving them personal satisfaction and social recognition.

Micro-nursery schools as micro-enterprise

Micro-nurseries are nursery schools situated in private homes, able to accommodate small groups of children aged 0-3. They exist in several countries (Italian examples are *Terzo Tempo* in Turin, *CosePiccoli* in Padova, and *MicroNidi* in Bologna and Milan) and are interesting both from a social point of view and as an expression of a new form of micro-enterprise. Setting up a micro-nursery means that a mother can start her own small business, looking after her own children together with others and, at the same time, play a socially useful role and earn an income.

Organisations promoting this kind of activity also provide theoretical and technical advice on how to guarantee required standards in buildings that will house the nursery, and how to run it on both the educational and organisational level. In addition, the central promotion and coordination offices check micro-nurseries to guarantee adherence to quality standards.

An international programme

A design research project on the theme of "Sustainable solutions for urban living" was developed on an international scale during the period 2001-2003. Research operations were based on 15 workshops, organised on the same theme and with the same structure, in 10 different countries: China, Korea, Japan, Canada, the USA, Brazil, India, France, Finland and Italy.

The initiative was, in turn, an outcome of a wider international programme put forward by the Faculty of Design - INDACO, Politecnico di Milano, and developed in collaboration with other design schools throughout the world.

The aims of this programme – which is still in progress – is twofold: firstly to develop a series of solutions for sustainable ways of life (a catalogue of promising solutions) and secondly to build a network of design schools around this theme (called: International Network on Design for Sustainability).

The main theoretical and methodological characteristic of the programme is the choice to consider the young designers as antennas and catalysts, i.e. as sensitive observers of "bottom up" innovation and as promoters of new and promising solutions. The first and main result has been a detailed catalogue of promising solutions: 72 proposals on how to deal sustainably with everyday functions.

Schools where workshops were held

Domus Academy
(Dante Donegani, Luca Buttafava), *Milan, Italy*
ESDI / UERJ Escola Superior de Desenho Industrial
(Freddy Van Camp), *Rio, Brazil*
Guangzhou Academy of Fine Art Division of Design
(Tong Huiming), *Guangzhou-Canton, China*
Hong Kong Polytechnic University School of Design
(Benny C.H. Leong), *Hong Kong (SAR), China*
Hunan University Department of Industrial Design
(Zhao Jianghong), *Changsha, China*
International Design School for Advanced Studies - IDAS
(Roger Pitiot), *Seoul, Korea*
Istituto Superiore di Design - ISD
(Alfonso Morone), *Naples, Italy*
Les Ateliers / ENSCI Ecole Nationale Supérieure de Création Industrielle
(Licia Bottura), *Paris, France*
National Institute of Design - NID
(Jogi Panghaal, Shashank Mehta), *Ahmedabad, India*
Politecnico di Milano Facoltà del Design - Dipartimento INDACO Industrial Design
(Ezio Manzini), *Milan, Italy*
The School of the Art Institute of Chicago
(Linda Keane), *Chicago (Illinois), USA*
Tokyo Zokei University
(Fumikazu Masuda), *Tokyo, Japan*
Tsinghua University Department of Industrial Design, Academy of Arts & Design
(Cai Jun), *Peking-Beijing, China*
University of Alberta Department of Art and Design
(Robert Lederer, Steven Bell), *Edmonton (Alberta), Canada*
University of Art and Design - UIAH Department of Product and Strategic Design
(Peter McGrory), *Helsinki, Finland*

Scenarios

Overview:
multi-local city scenario

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Imagine a densely populated, dynamic, cosmopolitan city where every inhabitant can live and carry out his daily activities without leaving his neighbourhood, unless he so desires. Each neighbourhood has its own social, cultural and economic identity, but is also open and connected to all the other places in the city and with the global metropolis. What we are visualising is the skeleton of a possible scenario in a sustainable city, in order to orient social conversation and expectations of well-being towards sustainability.

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The sustainable city in this scenario is not a complete picture. It is rather the motivated vision of a platform of opportunities, from which various ways of dealing with everyday life could take off. On the other hand the sustainable city must, by definition, incorporate the idea of limits and however vast the range of alternatives, it must still steer citizens' actions in certain directions while blocking others. In short, we must think of the sustainable city as both a platform of opportunities and a series of limits. A better understanding of these limits and opportunities is the main reason for building this scenario.

4

BUILDING A REFERENCE SCENARIO

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This chapter presents the reference scenario for a sustainable city. It is a scenario that emerges when putting together the responses gathered so far, as outlined in the criteria and guidelines for sustainability in Chapter 2. They are described in greater detail in the results of the international workshops (particularly the common traits and recurrent ideas which emerge from them) presented in Chapter 3.

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The ideas put forward form the 'raw material', or 'semi-finished products' used in building the overall scenario and describing some of its possible workings. Both are the outcome of a design project and consequently possess the element of subjectivity common to all such projects. However, since the design activities started by working with 'semi-finished' products (that is, the state-of-the-art on the issue), the scenario and its workings are a design interpretation of materials that should be considered a social product.

Sustainable cities: common characteristics

The sustainable city is a multi-local system: an interconnected whole, made up of places, each of which corresponds to a well-defined, socially, culturally and economically characterised territory. Each place is the locus for a variety of residential, production and service activities.

Our aim is to generate visions of a sustainable city. To be precise, we want to generate everyday scenes: detailed visions of what daily life might be like in a sustainable city (☛ BOX *Scenarios: an Introduction*). We do this in two stages. Firstly, we sketch out some features that should be common to all forms of sustainable urban life (the reference scenario). Secondly, this common platform is broken down into certain behaviour patterns made feasible by this scenario, and which for various reasons look important (behavioural scenarios). The following notes briefly describe some aspects of our reference scenario.

» **Density.** In the sustainable city, settlement is concentrated in order to leave space for agricultural activities, urban vegetation and natural parks. This also minimises consumption of energy and environmental resources by reducing the demand for equipped space per head (the quantity of building, infrastructure and public and private facilities necessary for the well-being of each individual) and for essential mobility (the quantity of transport caused by the widespread distribution of daily functions). This in turn implies a greater density within settlements. Finally this density correlates to the need to provide citizens with a wide range of services which are both environmentally and economically efficient. In general this is an easier result to achieve in densely populated cities than where housing is more widely spread.

» **Multi-functionality.** . The sustainable city is dense but decentralised. Each neighbourhood offers a wide range of services and high standard job opportunities, which highlight local resources and give citizens greater control over the production and service systems which affect them.
These activities include, for example: decentralised urban services, the services of the extended home, widespread production activities, waste disposal or distributed generation of energy. We shall return to these various activities later. For now it is enough to say that, on the whole, they make the area where they are based active, dynamic and in many ways self-sufficient.

» **Connectivity.** The sustainable city offers a balance between the demand for cosmopolitan openness, which implies a certain territorial fluidity in people's living contexts, and the diametrically opposed demand for social and functional integration, which implies the possibility of feeling part of a community and optimising the effort and time dedicated to daily activities.
Such a balance is obtained by sophisticated networking. In fact, interconnection (through networking) creates the conditions for generating new forms of community, which are simultaneously open and closed: long-lasting, consolidated neighbourhood or interest-based communities which open onto wider networks and anything of interest that a cosmopolitan culture may offer.

» **Elective community.** The sustainable city can be identified as encompassing new neighbourhood communities. These are made more solid by the variety and frequency of

Scenarios: introduction

Scenario: overall vision of a context, as it might appear under certain conditions.

1. Scenario building entails focusing on three fundamental elements: a vision, a rationale, and some proposals, which together constitute the scenario architecture.

» **Vision:** this is the most specific element of a scenario. It answers the basic question: 'What would the world be like if...?', and it does so by telling a story or sketching a picture of what things would be like if a certain sequence of events were to take place.
» **Rationale:** this is the element that justifies the scenario's existence and confers its meaning. It answers the question: 'Why is this scenario meaningful?', and it does so by explaining rationally what the scenario is meant to achieve, what its premises are, what underlying conditions apply and how various alternative propositions will be assessed (that is, using which criteria and instruments).
» **Practicability:** this is the element which adds depth and consistency to the vision. It answers the questions, 'What are the various aspects of the overall vision? What does it consist of? How can we make it happen?' Different kinds of scenario give rise to different kinds of proposal which have in common the capacity to bring the scenario to life.

2. The usefulness of scenarios in decision-making increases according to the turbulence of the debate, the complexity of the system affected, and the number of actors involved (or to be involved). In fact it is true to say that:

» **a.** the greater the number of elements in the system, the more interdependent those elements are and the more uncertain and faster the changes in the context, the more difficult it becomes to produce, intuitively, a model of the reality we are referring to and working on.
» **b.** the greater the number of actors who have to take part in the decision-making/design process (and the more complex the system and the reference context), the more difficult it is to prepare the ground, the 'platform for interaction', on which that process can effectively unfold.
When these conditions arise, scenario building not only allows us to overcome the limits of intuition and more simplistic modelling, but also puts us in a better position to choose with awareness and talk our options through in a participatory planning process.

3. The kind of scenario varies according to its underlying rationale, and the way it is built depends on the phase of the design process it is to be used in.

» **Policy-orienting Scenario (POS):** this is the vision of a context as it might appear in the presence of certain (economic, social and cultural) dynamics, and/or should certain (economic, social and cultural) policies be implemented. It supports decision-making in the face of complex and/or participatory institutional or industrial options. In general, several sets of POS present themselves, corresponding to the various policies that could be enacted.
» **Design-orienting Scenario (DOS):** this is a (motivated and multi-faceted) vision of a context as it might appear in the presence of certain (economic, social and cultural) dynamics and if carefully defined design choices were enacted. It is a support tool used in design activities where different actors take part in the strategic orientation of choices. In general, various sets of DOS present themselves, corresponding to different design options. This methodology can also be used in relation to both individual and community behaviour, In which case the 'projects' that the DOS refer to are individual life projects or processes of social innovation arising out of a combination of various such individual projects.
» **Solution-assessing Scenario (SAS):** this is a vision of a design proposal and its context which tends to highlight their reciprocal interaction. It is a support tool used in the assessment phase of a well-defined design hypothesis. In general, a single SAS is put forward which corresponds to specific design proposals and their clearly defined contexts.

opportunities for interaction that its multi-local structure, dense population and multi-functionality facilitate. At the same time, these neighbourhood communities are themselves elective communities whose members choose when and how to collaborate. The formation of these elective communities is facilitated by the existence of special technologies (co-operative networks) which enable sufficiently stable and reliable ties to be generated between people whose lives are highly flexible and whose routines and schedules therefore make meeting and co-operation difficult.

» **Subsidiarity.** The sustainable city is organised 'from the bottom up' on a subsidiary basis. This means many decisions and actions are taken at a local level, remitting to higher levels only matters which absolutely cannot be decided or done lower down. This simple principle has the advantage of regenerating the idea of democracy and participation in making choices. However, it is also the principle which inspires the most efficient forms of local government, those prepared to adapt flexibly to circumstances, use existing resources in the best (and most sustainable) way possible, and learn from experience. The novelty of these proposals is that this classic principle becomes essential in a sustainable city (it is in fact the only way to guarantee its governability) and by using new technology appropriately it also becomes possible.

The production dimension

We have seen that the sustainable city is the setting for a series of localised production and service activities.
For our discussion it is useful to examine this matter more closely and introduce some of the main types of decentralised activity that can be found there.

» **Decentralised services. A decentralised city.** localises high standard urban functions deriving from local traditional activities (such as schools, libraries and shops) and brings regional scale services (hospitals, administrative services, banks, places of entertainment) closer to residential zones.

» **The externalisation of domestic functions.** Here we refer to the services and facilities in the extended home that are associated with the care of things, the house and clothes, but also the preparation of food and personal hygiene.
Thanks to these, anyone who so wishes can free domestic space of undesired functional activities and apparatus. Externalisation also provides access to high quality equipment, both from the point of view of the service rendered to the user and that of overall efficiency in resource use.

» **Localised production activities.** From the latest forms of distance working (carried out at home or in purpose built tele-working centres) to crafts development (craftsmanship which integrates traditional skills with advanced technology) and from decentralised shops where the final stages of production cycles are carried out, to *point-of-sale-production* (where a product is finished or customised at the moment of purchase, such as printing a T-shirt, book or disc, or mixing paint of a given colour, or preparing a pair of glasses of a precise strength).

» **Activities connected with the distributed generation and local use of energy.** The local knots of a highly developed energy network are represented by generators in the form of small, clean power stations suitable for localisation in an urban environment.

According to circumstances they integrate different sources of energy: from solar energy to the scattered energy deriving from other production activities, to energy produced by fuel cells.
In this scenario buildings themselves become power stations, able to produce as well as consume energy.
Alongside these activities of production and distribution we find the technical and administrative activities associated with heating and lighting system maintenance, and consumer advice on questions relating to these issues and to the 'intelligent' management of the energy network.

» **Product recycling or re-use and waste disposal activities.** These activities are situated near where products are used and thrown away. The aim is to bring the contexts of product regeneration (for re-usable products) and treatment (waste to be disposed of) close to the contexts of use and consumption.
This is partly technically motivated because it reduces transport requirements. However, it is also systemically motivated in that allowing communities to observe directly the quantity of waste associated with their consumption habits will enable them to deal with and, hopefully, also reduce it.

» **Urban agriculture and care of vegetation.** These are activities created by the green spaces which exist alongside, and symbiotically penetrate, densely populated areas. These spaces also allow for a variety of localised activities: from ordinary maintenance to the care of public and semi-public vegetable gardens, to urban farms and the sale of their products.

- ## The environmental dimension

The sustainable city as a multi-local system looks particularly promising in that it encourages forms of organisation, solutions and behaviour that are consistent with general sustainability principles and development guidelines.

» **Transport reduction.** The multi-local character promotes activities and forms of decentralised organisation, grouped together according to neighbourhood.
This means that a large part of our daily activities require only short distance travel, on foot or light means of transport. In other words, it tends to minimise the demand for structurally essential mobility (that is, the mobility caused by the widespread distribution of daily functions).

» **Use of the sun and renewable resources in general.** The dense population of the sustainable city could seem to be in opposition to the use of renewable resources, especially solar energy. By definition, these are spread over an area and so would seem more in keeping with a widespread city.
This is partly true, but we can also look at the situation in another way. The sustainable city outlined is densely populated yet has extensive, open spaces. In addition, its buildings are designed according to the rules of bio-architecture, using solar energy to the full. Again, it is home to a symbiotic nature, which works its way between and over buildings, acting on the internal and external microclimate like solar-powered 'green air-conditioning'.

» **System eco-efficiency.** The spread of externalised domestic functions opens new opportu-

nities in terms of the optimisation of systems and their use. For many the scale of a neighbourhood or condominium is potentially ideal. Their intermediary size, between large-scale plants and domestic equipment, allows for systemic planning and the adoption of low consumption, high efficiency plants, which would be difficult to adopt at an individual household level). At the same time, they avoid the problem and the diseconomies of large-scale plants (concentrated territorial impact and increased essential mobility).

» Industrial ecology. Multi-functionality makes the prospect of industrial economy in urban environments feasible. This means, for example, that we can produce electricity by recuperating thermal energy, which can then be used in production processes and for heating greenhouses or dwellings. Co-generation systems of this kind, which aim to 'cascade' the use of energy , water or other materials, become possible thanks to the multiplicity and mingling of functions (whether living, service or production) to be found in and around the neighbourhood. Such a variety of functions gives rise to varying demands for energy and materials which, if combined appropriately, can lead to the models of industrial economy mentioned above.

» Process visibility. The localisation of production and service activities, combined with some form of neighbourhood community, allows citizens to see their options and their environmental implications clearly. The most obvious example of this is waste production and disposal. If rubbish is processed a long way from the community which produces it, there is no direct incentive to produce less or recycle more. On the other hand, if each community must dispose of its own rubbish in the vicinity, it is likely that the direct image of the mass of material to be processed will act as a driver to producing less. We should add that, in order for this to happen, the community must be able to perceive the problem (and feel it to be a collective problem), and find the resources to act, possibly change its behaviour and take the right decisions.

• Enabling technology

Many people today seem to agree that a new society is emerging, based on knowledge and characterised by a high degree of connectivity and organisational networks. This widely shared vision may coincide with the image of a sustainable city. Indeed, it is possible that this worldwide transformation could facilitate the development of multi-local systems, that is, of organisational forms based on decentralised, intelligent, sustainable systems. This may evolve by various routes.

» Expertise and sensitivity. Technology can make highly complex systems more visible and hence more comprehensible (mapping), and can enable the processes within them to be recorded widely and accurately (monitoring). It should be stressed that capillary mapping and monitoring constitute the basic knowledge necessary for the eco-sensitive management of complex systems, consequently their existence is a prerequisite for the development of sustainable solutions.

» Local and global connectivity. The sustainable city as a multi-local system is based, by definition, on network possibilities. Indeed this system requires short (local) and long (global) networks to be connected. In other words, neighbourhood communities (territorial) on the one hand, and interest-based communities (non-territorial) on the other, must be linked. The connectivity potential of new technology is a familiar, much debated issue.

However, the discussion has so far focused on long networks and their potential for overcoming territorial limitations, completely ignoring the other side of the coin – the potential for short networks and the consequent generation of new, localised communities. Yet this is exactly what now needs to be developed.

» Customisation and contextualisation. The sustainable city requires systems that offer suitable solutions for each user and each context: multi-user and multi-context platforms that use the most advanced solutions to combine the need for economic efficiency with the need for appropriateness. This arises from their proximity to user demands and their alignment with the specific features of the context.

» Fluidification and synchronisation. The sustainable city requires technology that makes socio-technical systems work more easily and more directly (in other words more fluidly). Given the importance of shared facilities (and of services enabling this), the most crucial technologies may be those which make different timetables compatible.

» Distance working and tele-attendance. The sustainable city requires that work and high quality services be near one's place of residence. So, it requires technology to develop opportunities for distance working and, in particular, the use of tele-attendance as an instrument for connecting neighbourhood centres with the entities that supply the best relevant services.

» Multi-service platforms. The sustainable city consists of multi-functional territorial zones. This territorial multi-functionality coincides with the need for multi-functional centres able to provide a range of services. So, technology needs to provide integrating systems that make different activities compatible.

» Computer-energy networks. The sustainable city is fuelled by an energy network based on the principles of distributed generation and interactive networks. It can be described as a system of two-way knots and flows, in which each element in the network can either produce or use energy. The management of such complex networks need sophisticated information technology, resulting in a sort of integration of two networks into a single information-energy network (☛ BOX *Distributed Generation and Advanced Energy Network*).

» Economy of purpose. The technical-economic system of the sustainable city is based on the combination of two efficiency criteria, generating two types of system. One criterion bases efficiency on appropriate size (economy of scale), the other sees it as the result of integrating different activities on the same platform or, to be more down to earth, in the same place (economy of purpose). New technology can facilitate systems based on economy of purpose by rendering them feasible on a large scale, and so making them the economic cornerstone of multi-local development.

Ways of living: behavioural scenarios

Given the general characteristics of the sustainable city, it is now just a question of exploring its potentials and its limits: how many sustainable cities can exist? What lifestyles can they embrace?

Sustainability and ecology are virtually synonymous with diversity and so a sustainable city, based on ecological principles, can hardly be other than home to the greatest possible diversity in lifestyles.
However, sustainability and ecology are also synonymous with the presence and awareness of limits: the freedom that the sustainable city offers must always be considered in relation to their environmental cost. In a limited world, getting something always means giving something. In other words, from a sustainability perspective we can choose different paths, but each implies some form of commitment or cost which needs to be taken account of.
In this chapter, scenarios are offered in answer to our opening questions, introducing three possible forms of the sustainable city (☛ BOX: *Scenario Building*). *Quick*, the

Scenario building

Scenario building: this design methodology enables us to draw up a set of visions of what a given context might be like if certain conditions were met. In our case we are considering possible alternatives in a reference scenario of the sustainable city.

1. The exercise in scenario building presented here had as starting materials the results of the international workshops presented in Chapter 3, with the common traits and recurring ideas which emerged from them.
Its general context of reference was the scenario of a sustainable city (described in the present chapter). Its rationale is to explore the range of possible alternatives such a scenario makes practicable, especially those feasible alternatives that can be traced back to the behaviour of subjects and the availability of solutions that make such behaviour possible.

2. In order to undertake this exploration, two meaningful variables were chosen: the level of sharing and the level of participation. Moving on from here, two distinguishing polarities were identified, by which to lay out the field of system possibility in terms of potential solutions:

» **Individual solutions v. collective solutions:** This is the solution polarity which corresponds to the level of sharing required to achieve a given result.

» **Facilitating solutions v. enabling systems:** This is the solution polarity which corresponds to the degree of first person participation required to achieve a given result.

3. Using the above-mentioned polarity scales as scenario building criteria, and using the results of the workshops as 'raw material', the following three interaction scenarios were drawn up:

» **Quick**, access and simplicity, based on facilitating and collective solutions.
» **Slow**, quality and care, based on enabling and individual solutions.
» **Co-op**, co-operation and enterprise, based on enabling and collective solutions.

A fourth scenario, which we can call no-care and which, in theory, could emerge from the combination of the individual and facilitating poles, has not been taken into consideration in this exercise, which aims to outline sustainable alternatives. Indeed, such a scenario would describe behaviour and solutions very similar to those dominant today. For reasons given elsewhere in this book, a scenario that requires no significant system innovation cannot be considered a sustainable alternative.

access and simplicity scenario, based on facilitating, collective solutions; *Slow*, the quality and care scenario, based on individual, enabling solutions; and *Co-op*, the co-operation and enterprise scenario, based on collective, enabling solutions.
As we shall see, they correspond to different ways of being and doing or, more precisely, to different ways of defining and achieving results.
It should be said that these scenarios are introduced to open up for debate their premises and implications, in order to stimulate the imagination (and so, hopefully, impel action) in those potentially interested in the issue.

- **Quick. Access and simplicity (collective-facilitating solutions)**
  This is the world of people who want to deal with everyday problems rapidly and with the minimum effort. They require full, fast and relatively accessible services, even though they may be relatively simple and basic. In other words, this is for those who give up a little variety, flexibility and customisation in favour of extra ease, speed and accessibility.
  From the point of view of sustainability there is a kind of *trade-off* between variety, flexibility and customisation on the one hand, and ease, speed and accessibility on the other. Providing highly effective, eco-efficient services requires the organisation of a system with purpose-optimised

Action strategy

Action strategy: **a sequence of choices and actions carried out by a person to define and achieve a result based on the capability of that person.**

1. The concept of action strategy has to do with the way subjects act and, in particular, refers to how they articulate their life plan into specific objectives and into the strategies required to achieve them.
The term *strategy*, in this context, should be interpreted as a set of choices and moves made to a purpose and carried out in a highly unpredictable context (this means that, in such a context, it is impossible to determine, a priori, the nature of the actions which will prove necessary to obtain the desired result. We should point out that, in this sense, the concept of *strategy* contrasts with that of *planning*, by which we mean – an activity where predetermination is deemed possible). In our case the term is used to indicate that the sequence of actions on which a life plans hinges occurs in a context which is never entirely predictable. So, the actor must activate his ability, his strategic ability, to maintain his course, receiving feedback from the system in which he is operating, continually re-determining his moves and, if necessary, re-defining his objectives.

2. An action strategy is the expression of the way a subject is able and knows how to determine his moves. This means, how and how far he is able and knows how to focus on a result and, in each situation, identify, acquire and use the necessary means to achieve it (this may involve associating different products and services with each other, or accessing a system of products and services conceived at the outset as a "solution").
In other words, a person's action strategy is the conversion into concrete acts of the *capability* of that person (see definition of *capability*).
A subject's action strategy, as well as his capability, depends on the combination of *forms of participation* which he can, and knows how to put in play (therefore mainly on the physical, economic and cultural personal resources available to him) and on the *solutions* which present themselves (therefore on the set of product, services and knowledge which the subject has access to and which can enable him, if endowed with the appropriate *personal resources*, to achieve the desired result).
Consequently, the resulting action strategies can be classified either on the basis of a polar scale relating to the forms of participation (*passive modality v. active modality*) or on the basis of a scale relating to solution typology (*relieving solutions v. enabling solutions*).

dimensions and functions. This places limits on what can be effectively and efficiently offered to the user.

It could rightly be objected that technological innovation tends to reduce the weight of this trade-off. True, we can imagine systems that are both very effective and able to offer varied, flexible and customised services. However, faced with the demand for eco-efficiency and social responsibility in the transition towards sustainability, even the most sophisticated technical systems cannot prevent ease of access having a cost, which in this scenario is paid for in simplification (or rather what, according to current 'standard' expectations, may be perceived as a reduction or simplification).

In other words, in the sustainable city, users looking for easy, non-engaging solutions may find what they want. However, this involves accepting the limits that a collective service must have if it is ultra-efficient on an environmental level and equally efficient on a social one. What exactly these limits are depends on multiple factors, such as the availability of technological systems and organisational forms that will reduce the degree of simplification and standardisation.

- **Slow. Quality and care (individual-enabling systems)**

This is for those who require high quality in results (and in the processes to achieve them), and who are prepared to commit themselves personally, to pay attention to what they are doing and take the time to do it well. In short, those willing to slow up for love of quality. Quality, by definition, is a condition of the system that cannot be trivialised – it requires a commitment of time, care and competence. This has always been true, but in pursuing sustainability it is even more so.

The idea of quality is enriched by the environmental and social dimension, which has often been forgotten in the past. What is more, in a sustainable world, the quality of a product or service cannot be separated from the context in which it is produced or collocated.

All of this means that quality (in this case, extended quality), cannot be just delegated to the production system, however sophisticated. High quality levels for user, society and the environment take time, care and skill on the part of all involved.

In conclusion, users wanting to find quality in the sustainable city (or high degrees of extended quality, to be more precise) can certainly find it. However, to do so they must also invest time and effort, as the price to be paid for quality. How high this price is obviously depends on the operation in question, the competence of the user and the availability of technical support.

Indeed it is precisely the existence of technology to support and strengthen individual and collective capacity that today makes certain traditional dimensions of quality, otherwise condemned to disappear, 'offerable' (or rather, 're-offerable' in an up-to-date form).

- **Co-op. Co-operation and enterprise (enabling-collective solutions)**

This is for those who – in everyday habits – see opportunities for building forms of socialisation, and who commit their time, enterprise and organisational ability to meet this objective.

Such commitment can be targeted towards various results, from the simple sharing of equipment for daily use, to maintaining and regenerating the vicinity, resolving a social problem or organising a fair-trade network.

What distinguishes this scenario is that the results are not only for their own sake, but also aim to create new partner networks or build some form of community. In short, they aim to cultivate social relations because in contemporary cities and society, social relations are no longer a given, instead being the result of patient, active building which requires effort, enterprise and organi-

sational ability. From a sustainability perspective this is even more evident: the production of social relations in fact almost coincides with the regeneration of the living context. In other words it coincides with the fundamental criteria of sustainability.

The creation of social relations and the building of an elective community also generate innovative forms of organisation. That is, production and service organisations where the distinction between 'producer' and 'user' progressively merges with the co-planning and co-production of value. This is where technology can give a positive impetus by providing enabling systems for new, previously unimagined and unimaginable forms of organisation and co-operation, and therefore also of social relationships.

In conclusion, in the sustainable city people who are more inclined towards community building can find ideal conditions for doing so, by using their time, enterprise and organisational capacity. All this effort is, or could be for some, the price to pay for social relations. As with the Slow scenario above, the price to pay obviously cannot be predicted as it depends on the circumstances, the ability of the people involved and the availability of support technology.

Restoring the links between citizens and nature

Bas de Leeuw, *United Nations Environment Programme (UNEP), Division of Technology, Industry and Economics (DTIE)*

If an alien from outer space were asked why on Earth cities exist, he or she would no doubt answer that its inhabitants use those to move around, mainly to practice the art of shopping. Look at any city centre in the world – increasingly showing the same brands on billboards and in shop windows – and that is indeed what is the most striking characteristic. Cities are the places where supply and demand come together. Happy consumers carrying their catch home. And happy retailers re-filling the hunting grounds. Supported by all means of transport, heavy trucks sometimes being restricted to show up only in the early morning hours.

Environmental and social damaging impacts of consumption and production patterns are either directly visible – air pollution and noise – or happening far away from the view of the consumers. Raw material extraction, food production and food processing, transport and all other phases of the supply chain of products and services are located in the countryside and far out of view of the city consumer. Separating the act of consumption from its sustainable impacts is indeed an effect of modern cities. Some children in developed countries do not even know where the vegetables come from that their parents buy in the supermarket. And the connection between the milk and the cow is sometimes not that obvious as well to those young consumers. The world behind the product, in short, is largely invisible.

We might wish to reflect for a minute on the consequences of this indispensable element of our modern society. Some argue that this in essence is the cause of the present state of our world, where concentrations of the greenhouse gas carbon dioxide continue to climb, and where just a third of the world's fish stocks are now ranked as depleted, overexploited or recovering. The world's forest cover has declined by 2.4% since 1990. On the social front, overall poverty rates remain strikingly high, with 2.8 billion people – nearly half of humanity – living on less than $ 2 per day. A steady increase in material consumption and production strains the ecological health of our planet and threatens the welfare of current and future generation. Children living near the highway in the Dutch city of Rotterdam have the lungs of a smoker who smokes 17 cigarettes a day. Figures for cities such as New Delhi, Saõ Paulo or Mexico City are even far more alarming.

The emergence of cities has broken the links between consumption and production. And what you don't see you don't care about, isn't it? So should cities be abandoned all together? A ridiculous question since cities have so many beneficial effects as well, being the centres of employment and cultural exchange. All people returning to the country side and living in harmony with their own cattle may sound appealing to some romantic souls, but would not be feasible nor fit in today's society. A way forward would be to combine the best of both worlds. Cities should be places in which modern society can live together while at the same time keeping the connection to nature. Far more attention need to be paid to physical planning items such as green and 'blue' spaces – parks, city forests, water – and attractions such as city farms, where children and students can re-discover the connection. Moreover, modern

technology can help to keep mankind and his surrounding together. Information tools in the super market, such as logo's and labels on products or screens, can visualize the "world behind the bottle of milk". In this increasingly virtual world, the Internet and other communication techniques certainly have a lot to offer to visualize the impacts of our consumption patterns to the world around us. Imagine your portable phone advising you what brand of coffee to choose.

How can this be achieved? Based upon a thorough analysis of what functions cities have to consumers, apart from providing shelter, employment and cultural exchange, present consumption and production patterns that seem to fulfil those functions need to be critically analyzed. And alternatives need to be developed with due regard to all three pillars of sustainability: the economic, ecological and social dimension. This is not something that can be done by one societal group alone. Architects, designers, city planners, retailers, business, consumer groups need to sit together and stimulate each other to think "out of the box". Creativity rather than laws and prescriptions will have to lead us to the sustainable city of the future.

Cultivating slowness: A new vision of time

Giacomo Mojoli, *International Slow Food*

'Speed has become our chain, we are all prey to the same virus: the Fast Life, which upsets our habits, attacks us inside our own homes and locks us into feeding on Fast Food.'
(From the founding Manifesto of the Slow Food Movement, Paris 1989)

A few authoritative voices incautiously declared that the first decade of 2000 would be the decade of speed, as much in business as in socio-cultural change. However, apart from dramatic scenes that have erupted violently, one after another, all over the world, and the worrying acceleration towards deplorable worldwide conflicts, the desire for a 'speeded up world' does not seem to hold first place in the list of human aspirations. On the contrary, as some sociologists maintain 'it is curious to note that the Twentieth Century began sputtering, with the cult of dynamism, only to finish like a tango, with the desire to rediscover slowness'. But this is not all, there is an increase in the number of people and movements becoming aware of the limits of a 'bite and run' existence, or worse still, of a monotonous 'driving perpetually in the fast lane', with the consequent neuroses and other illnesses induced by over-accelerated rhythms of life. It feels as though the world is running faster than we are, with a frenetic timetable which buries our days in a landslide of appointments, commitments and deadlines.

It is no coincidence, given this context, that a movement such as Slow Food, which has made the word 'slow' the very emblem of its strategy, is developing widely in just such fast, frenetic, societies as the USA or Japan. Neither is it a coincidence that writers, economists, town planners, designers, sociologists or philosophers – just as meaningful to our purposes – increasingly broach the topic of slowness. Rather, this indicates the proportions the phenomenon has assumed in the sensitivity of an age, and the importance of coming to terms with it.

In this way, however the upholders of speed would have it, they themselves become victims of their own 'adrenalin rhythms', of an addiction to efficiency which risks sending the whole planet haywire. Everybody complains of not having time, indeed modern western society is always characterised by an excessive emphasis on efficiency, which goes hand in hand with a utilitarian concept of time. All this despite people's longing to slow down, for fear of losing control of their lives and their affections. Signs of this are emerging even in the United States and, according to various economists, many Americans would like to live differently, even giving up the idea of making money in exchange for more time.

In 2000, Hans Magnus Enzensberger hypothesised that it would no longer be a question of 'killing time' but of cultivating it, enjoying it, in order to improve the quality of life, to find the joy of existence, to raise one's own spirits. 'It is not from work that civilisation is born', declared the philosopher Alexandre Koyre, 'it stems from free time, and play'. Clearly, from a new kind of free time, product of a more human and intelligent organisation of work, of space, of the city as a socialising place, where the words idleness and happiness are no longer considered taboo. Also because, according to a Zen idea, 'Whoever is master of the art of living sees little difference between his

work and his free time, between his mind and his body, his education and his recreation, his love and his religion'.

If anything, the risk is of not knowing how to harmonise a vision of life with that of work, of contaminating the first with the virus of speed, of confusing frenzy with efficiency, free time and even holidays with forced industriousness. True, 'speed kills old economic practices, old companies and old rules', it contributes to global modernisation, to the rise of syncopated and chronometric thought. But then what? Absurdly, this virtual business-created, digital communication model has already itself faded, ridiculously 'flooded'. A neurotic dogging the footsteps of modernity, trying at all costs to melt into it, is today a sign of confusion, of strategic backwardness, of a blurring of that stimulating design farsightedness.

Future bets are on more new revolutions, such as becoming our own bosses in order to continually adapt to new wisdom, improving our own well-being but also that of others. Slow down then or, paradoxically, 'run slowly', in order to go back to thought and reflection in search of a profound philosophy of the 'slow life'; the search for life taken easily which can 'tame the dizzy race towards modernity', where slowness can become a kind of homeopathic medicine to cure existential schizophrenia, a sort of new grand passion to take loving care of. Let yourselves be seduced by calm, warm rhythms, by tiny everyday gestures, without straining wildly to get ahead, rediscovering those little-great pleasures that are the best defence against stress.

Slowness needs to be nurtured and defended with a flexible, elastic strategy, sustainable within your own life and, as Claudio Magris wrote, 'without tackling the frenzy of the world, but rather avoiding its spires like a Chinese fighter, reporting sick – whenever possible – when called to the general fray'. Why not start with meal-times? With food which, as many would agree, is the expression and metaphor of a large part of what we assimilate from the external environment or, to be more precise, from our 'cultural ecosystem': for the daily planning and promotion of our passage into the future, against the sense-stifling effects of the fast-food system, to explore the riches of a forgotten cuisine and protect the biodiversity of many products which are fruit of the slow work of nature and mankind.

The re-conception of food in view of food ecology, of sustainable lifestyles, of a new sense of place, of space and time, represents an emblematic sign of how contemporary human beings are changing. Free time, total management of one's own personal scenario, but above all, creative idleness, which leads to psychological peace and tranquillity, are becoming the status symbols of the coming decades. Not money, not success for the sake of success, much less career. As if to say 'time is not money' or, if you prefer, that money does not equal time. It could be that the much maligned idleness, 'father of all vices', becomes the saviour of humanity.

The sustainability of experience. Virtual technology and reconciliation with the material

Alberto Seassaro, *Politecnico di Milano, Facoltà del Design*

Looking around the world in which we live, we can see fear and uncertainty growing, heightened by recent political and social events. Recurring environmental crises only increase this sense of malaise, which is gradually affecting all aspects of our existence and our communities. In this context, new technology is often presented as a practical solution in that it enables the materiality of objects to be translated into 'immateriality', reducing consumption, waste and impact, while increasing efficiency and potential. However, in these times of *White Noise*[1] it is difficult to do without the materiality and human contact that are an antidote to anxiety.

We also live in a society of knowledge and digital technology and our economic and production system – I mean that of Western countries – is increasingly based on immaterial values: we have 'exported' our materiality to developing or recently industrialised countries. Yet in doing so, we risk losing a culture of 'doing' which, bound up with the material and passed on through experience, has brought precious cultural and environmental reserves to life.

It is almost as though we are trying to cultivate a kind of phobia towards the material which has turned against us and which we are now attempting to drive away and annihilate; even aesthetics have begun to betray this through an extreme minimalism, absence of colour and essentialism of form. It is, however, a phobia that is in strong contradiction to our ever more frenetic need to 'produce' and 'consume' goods to guarantee the survival of the system we have created.

In the scenario I like to imagine, technology is by no means a solution able to free the individual from the material, but rather the means of reconciling him with it. A world where digital networks and minute multi-functional, intelligent objects do not displace the pleasure of leafing through the pages of a book, but multiply this possibility. I imagine a society in which 'lightness' is not produced by 'miniaturising' or 'virtualising' material – from goods to experiences – but is rather the fruit of our ability to devise new modes of 'exchange' that do not abolish goods, but make them more available, more universal, more shared, but at the same time, paradoxically, less 'consumed'. I believe the most interesting and leading-edge visions of the service economy are moving in this direction: shared cars, shared bicycles, shared wardrobes.

However, society itself is finding its own autonomous and spontaneous ways of expressing this inclination. For example, on the underground I recently found my first book in a book crossing chain, though I am not sure how much this phenomenon can be attributed to a real need for relationships and sharing, or whether it is just a passing fashion. On the other hand, I really do think we have before us a new model of 'consumption' emerging from the bottom up, in which the availability of goods (services, knowledge and experience) is not necessarily synonymous with their possession.

The literature on the rise of this service society has somehow always supported this trend, but I believe that what we have before us today is somewhat different. Here, it is a question of services where the active participation component, the 'user self-

organisation' element, is of crucial importance. This participation is for the first time guaranteed, indeed amplified, by the possibilities that the new technology offers. The circulation of information and knowledge over digital networks is tangibly able to translate the virtual availability of goods and services into real access. I can find out how and where to find what I am looking for. In addition, and this is a still more important aspect, it effortlessly brings together communities of similar character, interests, tastes, lifestyles and requirements. Never before has the phenomenon of 'virtual community' had such an explosive impact on real communities, revolutionising the traditional engines of social and political aggregation. I believe it is unlikely that all this will fail to have an impact on the dynamics of consumption or the shape of markets and goods.

I can describe the scenario I like to imagine by sketching a picture, telling a brief tale. Here I am, starting out on a long journey, taking only the clothes on my back. Light-heartedly, I am able to repeat the words of the Greek philosopher, Biante. To those who marvelled at his taking no luggage when he fled with the others from his city, conquered by Ciro, he said, Omnia mea mecum porto, 'I take with me all that I possess'. In my case, I am not referring to innate wisdom and ingenuity, as he was, but to the minute electronic object in my pocket. It is my guarantee that at the right moment I will find all that I need on my way, leaving everything else to the disposal of others.

[1] See De Lillo D., *White Noise,* 1985

The Post-Spectacular City

John Thackara, *Doors of Perception*

'I believe that a desirable future depends on our deliberately choosing a life of action, over a life of consumption. Rather than maintaining a lifestyle which only allows to produce and consume – a style of life which is merely a way station on the road to the depletion and pollution of the environment – the future depends upon our choice of institutions which support a life of action'.

That was Ivan Illich, in 1973. Thirty years ahead of the rest of us, Illich argued for the creation of convivial and productive situations and institutions – including our cities. A sustainable city, Illich foresaw, has to be a working city, a city of encounter and interaction – not a city for the passive participation in entertainment. Sustainable cities will be post-spectacular.

Sustainable cities, working cities, will necessarily be complex, heavily linked, and diverse. As the English writer Will Hutton has commented, just as local knowledge and information was key 150 years ago, when there were 80 different steps in the button-making industry, so, too, complex local knowledge and linkages are also key today if you are a software, media, care, or educational enterprise. The ideal city needs to contain a rich mixture of craft-based workshops, consultants, law firms, accountants, distribution and logistics companies, advertising agencies, universities, research labs, database publishers, local or regional government offices. Unique skills, clusters of specialised suppliers, local roots, and a variety of human skills that are unique to a region – all these are a powerful advantage for local cities and regions on today's economic stage.

This picture confronts smaller cities with a dilemma: they cannot realistically offer the same density and complexity of knowledge skills that a large metropolis can. The metropolitan centres have their own problems, it is true, but they will always win on diversity, which is a key to evolutionary success. So how are the smaller ones to compete? The answer lies in webs, chains and networks of cities and smaller regions.
By aggregating their hard and soft assets, collective cities – multi-centred cities – can match the array of functions and resources of bigger centres, while also delivering superior social quality. The ability of small cities to offer a context that supports intimacy and encounter – what the French call 'la vie associative' – is where small-city webs will win out over the big centres.

This is not a new idea. City networks date back to the thirteenth century when, in the Hansa League, an alliance of more than seventy merchant cities collaborated effectively for their common good in order to control exports and imports over a wide swathe of Europe. A powerful network of trading partners, the Hansa League, became one of the major economic forces of the Middle Ages. At one stage it controlled much of Scandinavia, the Baltic states, northern Germany and Poland – and outposts can be found even today as far away as Scotland and the Basque Country.
http://depts.washington.edu/baltic/papers/hansa.html
http://www.fordham.edu/halsall/maps/hanse.jpg

The emergence of modern urban and regional networks can be traced back to the formation of the International Union of Cities in 1913. The Treaty of Rome, in 1957, accelerated the emergence of networks of cities and regions as supra-nation state actors

in Europe, and architects and spatial planners first started thinking about clusters in the 1960s: in 1963, Christopher Alexander and Serge Chermayeff wrote that, in designing on a large scale, 'we must look at the links, the interactions, and the patterns'. As institutions, however, architecture and planning have evolved slowly – so it is only now that this approach is really gaining momentum. More recently, clubs and associations of cities committed to sustainability have been formed, but they tend to be single-issue associations. The International Council for Local Environmental Initiatives (ICLEI), for example, connects more than 400 cities, towns, counties, and their associations around sustainable development issues. But ICLEI is not yet a major player in major urban and regional development projects. We are coming to the end of a transitional phase in which 'sustainability' is treated as a single separate issue rather than the issue which underpins all planning and design. http://www.iclei.org/

Sustainability may not yet be the major driver, but the design of regional alliances is now a major business. According to Philip Kotler, a marketing professor in the United States, some ten per cent of business-to-business advertising – a vast amount – is now spent on marketing places, regions and nations. Place marketing, or more properly, place and regional design, has become an important economic activity in its own right. Place design is about the evaluation and networking of complementary functions – the 'core competencies' of a region or territory. The concept of territorial capital, for example, combines the 'hard' and 'soft' assets of a place in an integrated evaluation. Hard assets include natural beauty and features; history and famous personalities; shopping facilities; cultural attractions; festivals, events and occasions; buildings, museums, monuments and so on. Soft assets are all about people: their skills, traditions, their social ties, their civic loyalty and governance, their memories, their capacity to learn.

For networked, multi-centred cities to succeed, and in particular, to succeed as contexts of work, rather than contexts of spectacle, their human assets need to be linked together by a combination of physical and informational networks. Their social and intellectual capital needs to be exploited. The hubs, links, and flows of city and regional networks need to be proactively designed in ways that help a working culture flourish. This concept, of designing the context and infrastructure of a human network, runs counter to the ideology of self-organisation which has been so heavily promoted as the default organisational norm of the new economy. In practice, networks of cities and regions need to be facilitated, nurtured, guided, supported, and steered – otherwise, they have a tendency to degrade. Many of us in today's 'Europe of the regions' have experienced the frustration of life in under-managed, under-resourced, and unprofessional thematic or project-based networks. The need for added-value coordination applies just as much to multi-centred cities as to research networks.

That lesson, the need for professionalism and new skills in network design, is not yet learned. But networks of cities are becoming easier to design with the development of new software tools. Winy Maas, a principal of the Dutch bureau MVRDV, has developed a family of software tools called The Regionmaker, which is a case in point. Maas observes that 'as with the atom and neuron, regions have never gained a complete or satisfactory description. The main problem we face is the sheer complexity and the abstraction of the reality they embody. The magnitude of information concerning a region is overwhelming, complex, and constantly changing. It is nearly impossible to represent all the relationships, and the webs of interdependencies, of a region. That's why we need a more dynamic approach and tools for planning and design.'

The Regionmaker, first developed by MVRDV for a project called 'RhineRuhrCity', is a tool for analysing the spatial configuration of a given, or contemplated, region. It orchestrates a variety of existing information sources and flows, for example, demo-

graphic data, or outputs from Geographical Information Systems (GIS). 'With the Regionmaker, there is no limit to visualization. You can look at maps, study charts, access databases, export images, import video feeds from helicopters or satellites, connect to the internet, use CAD drawings, and so on.' Maas hopes the Regionmaker will evolve as a tree-structure of sub-machines and routines. He has plans to add knowledge on the movement of people, goods and information. A housing sub-routine could develop scenarios for optimal housing design. A light calculator could optimise the need for and control of natural light in built spaces. A function mixer could propose optimal mixtures of activities according to economic, social or cultural criteria. Maas speculates that such systems could become decision support systems in a more pro-active and critical sense. 'We could add an Evaluator or an Evolver that can suggest criticism of the input we make,' he speculates.

The emergence of multi-centred cities will really accelerate as the effects of pervasive mobile communications, and in particular location-based services, make themselves felt. User-generated, location-specific events and services are already evident on the streets of cities like Seoul and Tokyo. The Economist described a Japanese restaurant review service that enables reviews, contributed by previous customers, to be called up on a mobile phone by somebody outside the restaurant who is wondering whether to eat there. 'In effect, previous customers leave their comments floating in the air around the restaurant.'

Pervasive computing and location-based services undermine the need for services to be clustered in one place, as in big cities. As the writer Bruce Sterling observes, 'if you know where a thing is, you do not need to own it, or keep it in your house'. Anthony Townsend, an urban planner at New York University, is among those who believe location-based services will be integrated with urban and city planning. This, he says, will confront designers with a complex task – 'human-machine-environment interaction' – but it may well be the design process that makes the post-spectacular city, the participatory city, the working city, a reality.

Living at low energy intensity: visions of possible (or rather, realistic) futures

Federico Butera, *Politecnico di Milano*

What might, or should, a sustainable neighbourhood be like in terms of sustainable energy? Let's try and imagine.

Every building is an energy generator: the roof and the south facing wall are covered in photovoltaic material and in the place of the chimney rises a little, vertical, spiral aerogenerator. The south facing window panes are controlled by a computer which lets the sun through in winter and blocks it in summer; the others are fitted with special glass panes, again controlled by a computer, which become more or less transparent according to the need for heat (or cool) and light.

A hydrogen distribution network reaches each building in the neighbourhood, whether residential or service, to fuel the cells which form the crux of the local energy system. These produce both electrical energy and heat. The electrical energy is fed into the power network and the heat is used for winter and summer air-conditioning. CO_2 emissions in the neighbourhood are non-existent.

All this constitutes what is known as 'distributed polygeneration', enabling us to reduce to a minimum the number of intrinsically inefficient and polluting large-scale power stations which produce energy far from the place it will be consumed.

The neighbourhood production of electrical energy equals demand. In fact, houses are planned in such a way as to supply the most efficient and appropriate services with minimum energy consumption, thanks to innovative technology coupled with sophisticated computerised control systems.

In the home, thermal comfort is obtained by means of a personalised, infra-red, air-conditioning system, a 'comfort bubble' which follows every movement in the house; even the lights are activated by a people detector. The comfort bubble avoids the necessity of always keeping the whole house warm (or cool), even rooms where no-one is present, and together with lighting that only comes on where there are people to enjoy it, leads to a considerable reduction in energy consumption.

All this is managed by an energy service company which owns the photovoltaic collectors, spiral generators, hydrogen plants (produced by hydrolysis with electrical power from renewable sources), distribution networks, fuel cells and so on. In short, the company owns all the neighbourhood energy system. Consumers pay per KWh of electricity consumed, the thermal KWh supplied for heating, cooling, hot water production and cooking and need not worry about anything else. If anything starts to go wrong with the fuel cell, the photovoltaic collector or the aerogenerator, with the air-conditioning or the boiler, the gas cooker or the washing machine, a technician will be sent to put things right before you even realise there is a problem.

The domestic electrical appliances are also managed by the service company, which is paid by the weight of items washed, not by energy consumption, by the units of heat removed from the fridge, not by KWh of electricity consumed, and so on. All domestic appliances are supplied by the service company, with a wide selection, and remain the property of the company. They are all linked by the

internet – as is the air-conditioning plant, the fuel cell and all the other energy production systems – to a central power station which constantly checks and regulates their functioning. All appliances supplied are very high output: all profits come from energy savings.

Contrary to present day homes, where there is only one water supply and drinking water is also used for washing floors, in the sustainable home there are two supplies. One, which collects rainwater in a special container in the cellar (in summer, condensation from the air-conditioning is collected) supplies water for the WC, the shower, the floors, and for the first stages of washing clothes and dishes. In this way, consumption of water from the city mains is reduced to a few dozen litres of drinking water per head per day as opposed to the hundreds consumed today.

Outdoors, we find narrow, tree-lined streets and extensive areas of vegetation. There is no trace of cars parked along the sidewalks: for short distances there are pedal-assisted bicycles and for longer journeys there are robot taxis. These are called by the mobile terminal supplied to all, and in a few minutes one will draw up, guided by its GPS system. The door opens and we sit in the driver's seat; after fitting a credit card in the slot, the taxi glides silently away, with its electric engine powered by fuel cell batteries, swiftly crossing the city where only robot taxis, bicycles and public transport vehicles, also hydrogen powered, circulate in the streets. For the same degree of mobility, the number of vehicles circulating has decreased enormously compared with today. The streets are no longer blocked by hundreds of metal boxes; the air is clean and the background noise of traffic has disappeared, revealing sounds obscured for decades.

Utopia? No. This vision derives from the development and spread of already existing technology and models of enterprise, and forerunners have already been realised. However, perhaps it will take additional environmental disasters before those in power take climate change more seriously, and such a way of life becomes current.

Sustainable everyday life: enabling platforms and empowered places

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How do you live in a sustainable city? How do you prepare food? How do you look after things and the house? How do you work? How do you study? How do you move around? How do you use energy and how do you produce it? How much greenery is there and how is it looked after?

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We can suppose that there may be different and somewhat fluid answers to these questions in the picture of a sustainable city we are drawing: (almost) anything can be done (almost) anywhere and in completely different ways. On the other hand, this fluid everyday life requires a new generation of services, which minimise the consumption of environmental resources and promote new forms of socialisation, if it is not to be unsustainable on a social and environmental plane. This leads to the proposal for a network of multi-service centres able to respond sustainably to the demands of contemporary society. The proposal has an emblematic value in that it makes the suggested scenario more visible, yet it could also indicate a concrete direction for the future: multi-service centres as a new typology of everyday artifacts.

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This chapter presents some proposals for multi-service centres as a possible practical rendering of the reference scenario described in the previous chapter. They show only one of the many possibilities that could be generated from such a scenario. However, it is particularly interesting that by developing the theme of multi-service centres, the new forms of organisation, community and production and service activity a sustainable city engenders, are clearly highlighted.

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The design proposals presented here are a further elaboration of the results of the international workshops presented in chapter 3. They correspond to various daily functions and depict six multi-service centres able to meet multiple requirements.

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Their overall characteristics are described along with their principal functions. In addition, three special services are introduced for each one. These correspond to the patterns described in the behavioural scenarios Quick, Slow and Co-op of the previous chapter.

Enabling platforms:
a new generation of services

Nowadays we may work in the train, eat in the street, sleep on the bus, phone from the bathroom, have a shower at the office, wash our clothes in the bar or have coffee in the laundry. This may also occur in a sustainable city, but with one or two substantial differences.

One of the things which characterises contemporary society is its fluidity and one of the most important aspects of this is the melting of rigid ties between daily functions and contexts – almost anything can be done almost anywhere.
In present day society, the widespread fluidisation of the relationship between place and function is often described as a sort of new nomadism: a highly unsustainable nomadism which increasingly uproots social relationships and, at the same time, fuels the demand for a multitude of products and services to support its mobility.
On the other hand, behind this melting of ties and social conventions, there are deep sociological and anthropological transformations which, in our opinion, are now largely irreversible. This means that sustainable cities and society will also be characterised by the same nomadism and fluidity, unless some devastating catastrophe intervenes. Consequently everyday functions within them will also be somewhat fluid.
How can the sustainable city be home to neo-nomadic subjects and communities? Is it possible to fulfil everyday functions in a way that is both fluid and sustainable?
One answer consists of two ideas arising from the fact that what nomads need lies more in the nature of the place than in the baggage they carry with them: travel light and provide facilities at stopping off points.

» **Travel light.** Coming back to our present situation, the advice to travel light is consistent with the tendency (discussed in Chapter 2) to seek well-being in access to services rather than in the possession of products. In the sustainable city this way of thinking must be made more coherent and radical. Today the search for service-based well-being adds to, rather then substitutes, product-based well-being, thus creating very heavy baggage. In a sustainable city this must no longer apply, and so a deep cultural and operational shift will be needed.

» **Provide facilities at stopping off points.** Here we refer to facilities and equipment found in places travellers pass through, that is, to the quality and quantity of services offered which enable people to be relatively mobile while also taking part in collaborative networks and having only a light impact on their habitat (being nomadic does not, in itself, mean either being socially uprooted or impacting heavily on the environment). However, achieving this complex, and in many ways, contradictory result will require a new generation of enabling services to emerge.

So let's imagine a new generation of localised facilities. Imagine that each of them is able to provide a variety of services fulfilling everyday functions. Imagine that they are also highly interconnected, in other words, that they are operational platforms from which it

is possible to access the best services and information. We shall call these multi-service centres.
The conception and development of these multi-service centres could be the tangible answer to our opening questions. In fact, it is necessary to think of a network of support platforms in order to fulfil basic everyday functions in both a fluid and sustainable way. Such platforms must enable a series of services and networks focused on socialisation, information and expertise.
Going back to our nomad metaphor, these new multi-service centres can be seen as stop-off and socialising points that allow people to travel with very little luggage, and so leaving a light footprint on the environment.

Multi-service centres

By its very nature, the concept of the multi-service centre will take different forms according to specific geographic and socio-economic contexts, and the aims of those who promote it. Here, we refer to what it could be like in an urban context, where the main aim is the promotion of sustainable everyday life. Within this framework it can be defined more precisely as follows:
A multi-service centre is an enabling platform that operates in the everyday sphere, offering solutions, opening opportunities, and facilitating co-operation between those in the production and consumption system (that is, among users, among producers and between users, producers and others involved); and doing all this at a high degree of systemic eco-efficiency.
In order to describe the nature of this proposal better, we can demonstrate certain characteristics relating to the activities carried out, the relations it enjoys and the processes it is based on.

» Related activities. Multi-service centres are platforms that allow related activities to be carried out together. That is, activities which, when seen from the user's point of view, can be grouped together. So, the idea behind these centres is similar to the concept of one-stop-shop: a place where you can find everything necessary to solve a given problem. This takes the user as the principal point of reference, with his problems and desires as they appear in daily life. From this, it sets out to put together a varied but coherent set of services to meet his needs. For example: support services for tele-workers, or the nursery where children can be taken during working hours.

» Local-global relations. Multi-service centres are systems able to connect the short networks of local social, economic and environmental resources with the long networks of global economy and knowledge. From this point of view they are system organisers which render cosmopolitan systems of service and expertise accessible on a local scale and, vice versa, are able to give weight to local resources on a global scale. For example, systems that connect a fair-trade shop with a supplier in the product's country of origin and with other international reference points interested in the same issues.

» Eco-efficient processes. Multi-service centres are based on processes and technologies conceived and scaled to achieve a high level of systemic eco-efficiency, thanks to their ability to optimise equipment use, integrate processes and use renewable resources. For example: a neighbourhood laundry where the laundry is done in professional washing ma-

chines, recycling water, heated by solar energy or energy supplied by the nearby local thermo-electrical power station.

Empowered places and local connectors

The multi-service centres we describe here are seen as the operating ground for advanced technical and organisational systems. Two fields of innovation, in particular, are put to the test in the proposals presented: ambient intelligence and tele-presence:

» **Ambient intelligence.** This usually refers to the potential to introduce an element of 'intelligence' into products and systems, so making their entire context more 'intelligent'. In our case, ambient intelligence can be considered a totally new characteristic, enabling communication with a localised system, constantly aware of its performance and organising it in a fluid way.
For example: a system of gardening tools hire and exchange, or a toy library for children where, thanks to a special 'intelligent' label, the manager is able to track the whereabouts of the tools or toys and their state of repair, and participants able to access information as to their use and maintenance.

» **Tele-presence.** This refers to a vast field of applications linked by a common characteristic – the potential to set up complex patterns of interaction between people and communities physically far apart. The applications that interest us here are those that can bring a high standard of service to residents.
For example: libraries or neighbourhood emergency medical services that, by connecting to the global network of libraries or health facilities, offer their users the widest possible range of books and the best international medical advice.

The multi-service centres proposed here use this technology widely. They look on it as a place aid – a technical system that endows places with totally new properties (☛ BOX *Empowered Places* and *Local Connectors*). Properties enabling such centres to become typical examples of augmented reality where, thanks to ambient intelligence, it is possible to add more elements than would be available in the objective reality of the single place, and where it is also possible to interact with physically distant subjects through tele-presence.

A propos of this, it should be added that the extensive and apt use of this technology in the following proposals is the result of a well-meditated decision. Even though many of the proposals would have been in some way conceivable without it, it seemed to us worth taking up the design challenge to test its potential.
This was for various reasons, the most general and obvious being that this technology exists and it is useful to verify whether and how it can be channelled towards sustainability. However, there is also a more specific, technical reason: knowing some of its characteristics, we imagined that this technology could act as a facilitator and fluidiser for more complex processes, thereby making solutions more socially acceptable and economically viable, which would otherwise only be appreciated by very motivated small groups (for whom difficult access and – within limits – high financial costs would not constitute a real problem).

Empowered Place

Empowered Place: a place where a particular technical system widens the range of what can be done, or accessed, giving it a totally new character.

1. A place can be described as empowered when endowed with a technical system that 'augments' its properties, generating a particular form of augmented reality which acts like a kind of prosthesis, but extending the possibilities of a place rather than of an individual. The role of place aid can also be, and indeed has been played by more traditional technology: from building technology to the fixed telephone system. However, a new family of technologies (from tele-presence to ambient intelligence) has now appeared which opens new and unexpected possibilities

2. An empowered place is a hybrid place, both physical and virtual, which networks with other places. It is a place where totally new forms of organisation, knowledge and social interaction can occur, with flexible relationships, reversible but potentially stable in that they are rooted in a locality (such as a neighbourhood) and linked to the local network of communities which intermingle there.

In empowered places a variety of complementary activities can be carried out, where different flows of energy and material can merge and different networks (relating to specific issues and the provision of specific services) join to generate multi-functional combinations. They are connoted and connoting places where it is the linking of a particular set of networks and services of special importance that establishes its specific character, contributing to the shaping of its identity on a wider scale.

3. The hypothesis of developing empowered places seems to run counter to the recent dominant trend towards a growing crisis in sense of place, with all that this implies on a social, economic and cultural plane. On the other hand, over the years it has become clear that this dominant tendency has generated, and is still generating, an opposing trend in which the question of a sense of place is taken up and proposed in new ways. The concept of empowered places fits with this line of thinking but unlike some other tendencies towards localisation, does not hold any special nostalgia for the past. The new sense of place this implies would seek to be congruent with the deepest elements of human experience (which is always located experience, set in a well-defined physical and social context), but also to accept the challenge of contemporary life. In this case, that would mean betting that this new sense of place will emerge when new behaviour and new technological potential meet. (☛ also BOX Local Connectors).

- ### Functions, places and behaviour

Let's return to our initial question. The scenario of a sustainable city outlined in the previous chapter can be better understood, in its general features and the possibilities it provides, by considering some daily functions and developing design proposals to answer the questions they raise.

To answer these and to paint a clearer picture of the multi-local city with its possibilities and limits, we present various daily functions as so many multi-service centres relating to those functions and responding to their various requirements.

In the sustainable city, intended as a multi-local system, these centres are service places where meeting the requirements of daily life provides an opportunity for new ways of living and socialising. They become empowered places where new technology makes new forms of organisation, expertise, and socialisation all possible.

The functions associated with these places are the most basic. When seen as macro-themes, daily functions do not change much over time – the preparation of food or the mainte-

Local Connectors

Local Connectors: system organisers which employ connectivity potential to enhance local resources on a global scale and make cosmopolitan service and knowledge systems accessible on a local scale.

1. The local connector is a concept which fits the scenario of a multi-local city, as a technical-organisational platform for the generation of empowered places (☛ BOX *Empowered Place*). It has great potential in terms of its own local context regeneration:
• by linking a variety of local and global networks (associated with various possible production, service, information, use and consumption activities), it enhances the value of local resources (from local to global) and provides high quality services 'in situ' (from global to local),
• by making new forms of localised production possible and facilitating totally new relationships between producers and users, it encourages user participation in the production, distribution and use/consumption systems, thereby increasing system visibility and transparency and promoting new forms of co-operation between different actors within it. It also generates new occupational opportunities associated not only with maintenance activities, but also with production in a stricter sense

2. Local connectors can support particular groups of complementary activities
• **coherent activities**, which one person can happily carry out within a well-defined place and time span;
• **symbiotic activities**, in which the technical systems they are based on can be integrated into a single, wider, and more eco-efficient system (for example, through economies of scale and purpose and a cascaded use of energy and materials);
• **connected activities**, where 'short networks' of local social, economic and environmental resources are linked to 'long networks' of global economy and expertise.

3. Although the local connector proposal is highly innovative, it appears to be a realistic hypothesis because its realisation can be linked to a series of ongoing dynamics, which may aid – though obviously not guarantee – its success:
• **social practicability**: the development of local connectors is linked to the emerging economy of access (in the framework of a network society), to the request for new forms of community (elective communities) and for new forms of localisation (linked localities),
• **technical-economic practicability**: the development of local connectors is based on important technological drivers such as network organisations (in the framework of ICT development and the Internet), the maturation of some aspects of energy technology (such as co-generation and the use of renewable resources) and the possibility of achieving economies of scale and purpose (combining different systems and adopting new forms of organisation).

nance of household objects are ever-present aspects of daily life which must also be dealt with in a sustainable city. However, it should be added that some issues may change in nature and importance over time. For example, energy production and management is an everyday function which has moved from being extremely time and effort-consuming in pre-industrial times (when it was necessary to collect wood and continually stoke up stoves and fires), to a seemingly effortless procedure today. In an urban situation under normally healthy economic conditions, with a functioning energy system, looking after the daily power supply requires no more than pressing a switch when needed. However, in a more sustainable world, this must again become an issue faced on a daily basis.
Something similar can be said for the care of greenery. Cities in the past, surrounded by countryside, were able to value public greenery very differently from great conurbations. In addition, the physical contribution of urban plant-life to the microclimate of built-up areas and the psychological role it plays in citizens' demand for nature, has only recently become apparent.

On the basis of these considerations, the functions chosen and the multi-service centres proposed concern food preparation (What shall we cook? The food atelier); taking care of the house and household objects (How do we look after things? The handyman shop); energy production and management (How do we manage energy? The energy workshop); the organisation of activity networks for work, study, entertainment and socialising (What can we network? The connectivity club), urban mobility (How do we move around the city? The mobility agency); and finally, the creation of urban and non-urban green spaces (How much vegetation is there and how do we look after it? The live-in greenhouse).
Each of these multi-service centres is given a general profile, before describing more specifically three example solutions, corresponding to the three behavioural scenarios presented in chapter 4. In other words, each empowered place mooted can be tested against different kinds of behaviour and service according to consumer preference:

» **Quick** suggesting solutions for those who want to solve a problem quickly, with as little effort as possible and who are prepared to accept limited variety and customisation.

» **Slow** suggesting solutions that help those who are prepared to bring their personal abilities into play and to commit the necessary time and attention to achieve a high level of quality.

» **Co-op** suggesting solutions that help to obtain results based on collaboration between different actors. For this they require personal commitment and especially a spirit of enterprise and organisational capacity.

[EATING?]

How do you prepare food?

THE FOOD ATELIER

The food atelier combines aspects of a corner shop with those of a neighbourhood restaurant.

DELIVERY AREA

A limited area for the temporary storage of goods reserved by clients and a small 'last minute' section of items immediately available.

The various solutions for buying and preparing food are found in a multi-service centre known as a food atelier. It is a place of food not only as a biological necessity, but also as a culture and as a bridge between individual well-being and the systems, natural and social, on which it is based. It is a place which gives full importance to the intrinsic quality of food, but also to where it is prepared and to the production and distribution systems that make it accessible. Questions such as the typicality of a particular product, the naturalness of production methods, and the equity of distribution systems are dealt with here. It is a sort of restaurant, but it also fosters direct relations between consumers and high quality producers. It organises activities for the development of individual skills in cooking and gastronomy. It also offers the services of a restaurateur-cum-dietician whose job it is, when required, to filter and select, offering clients personal baskets of local food products.

COMMUNAL TABLE
A restaurant area consisting of one large, friendly table.

OPEN KITCHEN
A well-equipped, professional kitchen used by cooks but also accessible to clients for their needs.

QUICK

FRESH FOOD OF THE DAY

» The food atelier has a delivery area and a small department for essential products.
» Sam goes there on foot to pick up the shopping he has ordered and sometimes has the dish prepared by the cook.

ECONOMIES OF SCALE IN THE USE OF INDUSTRIAL EQUIPMENT

CUSTOMISED PREPARATION

Every day the manager places a wholesale order and packs ingredients into portions according to single subscriber orders. In some cases he prepares and cooks dishes.

SHOPPING COLLECTION

Sam stops off at the food atelier on his way home from work, to pick up his parcel. It contains 'fresh ingredients for a quick evening meal', as requested. He sometimes completes his shopping with some 'last minute' items.

FOOD SUBSCRIPTION

During the week Sam works until late. With the help of the manager (and an on-line dietician), he chooses a daily food organisation programme for four people.

DECENTRALISED SALES ORGANISATION BROUGHT CLOSE TO THE USER

ADOPTING AN APPROPRIATE ORGANIC DIET

SLOW

FOOD TASTING GROUPS

» The restaurant area of the food atelier is organised around a large, friendly table.
» Yan-Dee organises meetings on organic products and fair trade.

PROMOTING THE CONSUMPTION OF SEASONAL AND ORGANIC FOOD

FOOD TASTING TABLE
Every so often she organises a food tasting evening to sample the characteristic produce of small producers or regional specialities.

DIRECT SALE

She contacts carefully selected co-operative farms and displays samples of products she collects on the big table, for passers-by to taste and order directly.

LOCAL PURCHASING GROUPS

The evening ends with other enthusiasts like her sampling the best products and comparing producers' environmental performance. They then select suppliers to invite into the food atelier network.

SAFEGUARDING BIODIVERSITY

ORGANISED FAIR-TRADE NETWORK

CO-OP

KITCHEN CLUB

» The food atelier is equipped with a professional kitchen at clients' disposal. Viviane cooks here – at home she only has to heat up the dishes she has prepared.

SHARED EQUIPMENT

COOKING TOGETHER
Viviane is an excellent cook and often spends the afternoon at the food atelier in the company of other food enthusiasts.

PROFESSIONAL ASSISTANCE

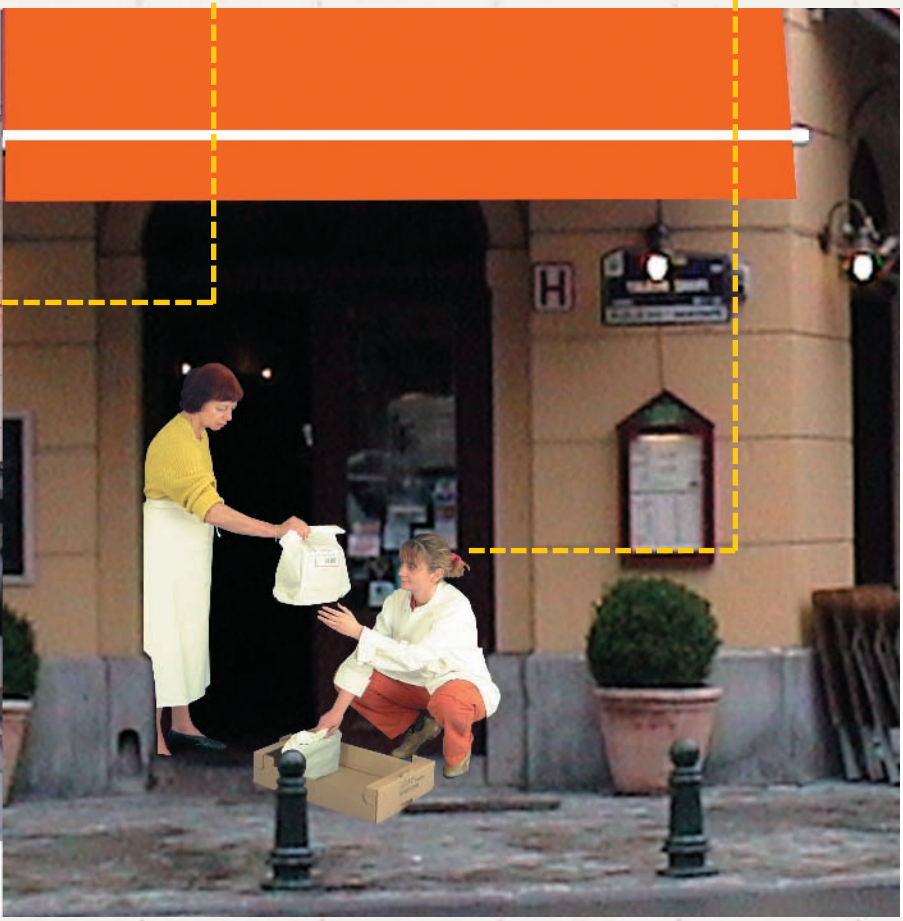
The kitchen is large and fully equipped. As well as demonstrating her recipes and learning other people's, Viviane takes advantage of advice from the chef, present at the meetings.

HOME-PRODUCTION

They cook together all afternoon, taste other people's specialities, and judge the best dishes. The food atelier makes ingredients available and sells some of the dishes produced, so that the kitchen club contributes directly to the ready-made dishes on offer.

ENHANCING PERSONAL SKILLS

QUALIFIED DISTRIBUTED PRODUCTION



[THINGS?]

How do you take care of things and the house?

Handyman Shop

The handyman shop combines aspects of a neighbourhood convenience store and a do-it-yourself shop.

SERVICE COUNTER

One counter offers a complete list of customised services for ordinary domestic jobs such as clothes maintenance.

The various solutions for taking care of things and the house are carried out by a second multi-service centre known as a handyman shop. This is the place where you can find what you need. A super-shop where products, tools and services are available 24 hours a day, 7 days a week, to solve practical and administrative everyday problems. It is a place that promotes individual skills, neighbourhood co-operation and new relationships between user and producer. Local System Organisers facilitate co-operation and the exchange of services, give advice and find experts when necessary. They are also able to tackle certain problems directly by offering tailor-made solutions when required.

OPEN WORKSHOP
One area offers all the tools and technical assistance for the maintenance of domestic appliances and do-it-yourself jobs that require space.

VIRTUAL SECTION
A virtual section enables users to carry out research and order any items not currently available in the shop, or to look up help in the area via the databank.

QUICK

WARDROBE SERVICE

» The handyman shop offers tailor-made services for domestic chores.
» Sam has found a household linen hire-maintenance formula which reduces the impact on the environment.

ORGANISED EXCHANGE NETWORK

CLOTHES LEASING

Organised into a network, the handyman shop also offers an exchange service for children's and second-hand clothing, facilitating the circulation of clothes among users.

NON-STOP MAINTENANCE

Twice a week he deposits and picks up linen for all the family. The 'wardrobe service' includes bed linen, towels and clothing. It ensures items are sorted into commodity groups and laundered regularly in a specialised centre, optimising the management of water and electricity consumption.

AS GOOD AS NEW

He can also make use of tailor and dressmaking services to mend or substitute worn parts, extending the life of clothing.

ECONOMIES OF SCALE IN THE USE OF INDUSTRIAL EQUIPMENT

EXTENDING PRODUCT LIFE

SLOW

OBJECT CLINIC

» The handyman shop includes an area equipped for the maintenance of objects, and do-it-yourself activities.
» Yan-Dee goes there to carry out repairs.

SHARED EQUIPMENT

REPAIR KIT
She has reserved a place to service her video system. The technician gives her the parts she ordered, and the necessary tools, then shows her to a free table.

INTERACTIVE SUPPORT

Yan-Dee opens the housing and instructions appear on the screen: how to take the various components apart, what precautions to take, what options there are for personalising use.

She slowly learns the technical operations and begins to understand the workings of the machine.

ENHANCING VALUE

After putting it all back together and checking everything, she gives leftover parts to the technician so they can be sent back to the manufacturer and reused.

STRENGTHENING PERSONAL CAPACITY

REDUCING WASTE

CO-OP

MUTUAL HELP GROUPS

» The handyman shop helps you find your way in domestic do-it-yourself.
» Viviane also finds willing and competent neighbours here, who are able to give her a hand and lend her tools.

ENHANCING PERSONAL SKILLS

DO-IT-YOURSELFSUPPORT
She has decided to redecorate her flat.
She asks for advice on which paints to order and which materials to buy.

SKILL CERTIFICATES

However, she is unable to carry out all the work alone, so she asks for 'neighbourhood assistance'. She enters her address on the screen and looks for a competent neighbour prepared to lend her tools and help with the painting.

DIRECT RELATIONS

She checks the list of suggestions in the shop databank, contacts the people available, discusses the work to be done, asks for good advice, compares time availability and finally comes to an agreement with Veronique who will come and help her the following week.

ORGANISED HELP NETWORK

SHARED EQUIPMENT

[WORK?]

How do you work and how do you study?

THE CONNECTIVITY CLUB

The connectivity club is based on a small neighbourhood library that provides workstations for its members.

TELE-COTTAGE

An area of workstations for individual use, or reserved on request.

It is a place for people to meet and exchange information. It is a window on the world, which links the local, where it is physically situated, with the global to which it is connected. It offers individual and shared instruments for work, training, information and entertainment activities both distant and in the area. It is particularly concerned with issues of work transformation, ongoing training and innovative forms of participatory democracy. A Knowledge Manager facilitates all these activities, supplying up-to-date instruments, helping with their use and co-ordinating the offer of specific contents and services.

CONFERENCE ROOM
A multi-service room equipped for teleconferencing.

TEA ROOM
An informal work area for small group meetings that facilitates 'improvised work meetings' between customers.

QUICK

THE NEIGHBOURHOOD OFFICE

» The connectivity club includes an area dedicated to workstations for distance working.
» Yan-Dee goes there on foot instead of going to her firm every day.

BRINGING PEOPLE CLOSE
TO THE WORKPLACE

CUSTOMISED WORK STATION

Most of her work can be done at a distance. Yan-Dee finds a fully equipped workstation and reserves it, when necessary, at her company's expense.

NEIGHBOURHOOD MEDIA LIBRARY

During their free time she and her neighbours take advantage of access to the library, take part in cultural activities and, with their families, make use of all the media available.

DISTANCE LEARNING

The other offices are occupied by people who also do distance work, but for different companies. Although they do not carry out the same professional activities, they meet together during breaks and share ongoing training activities.

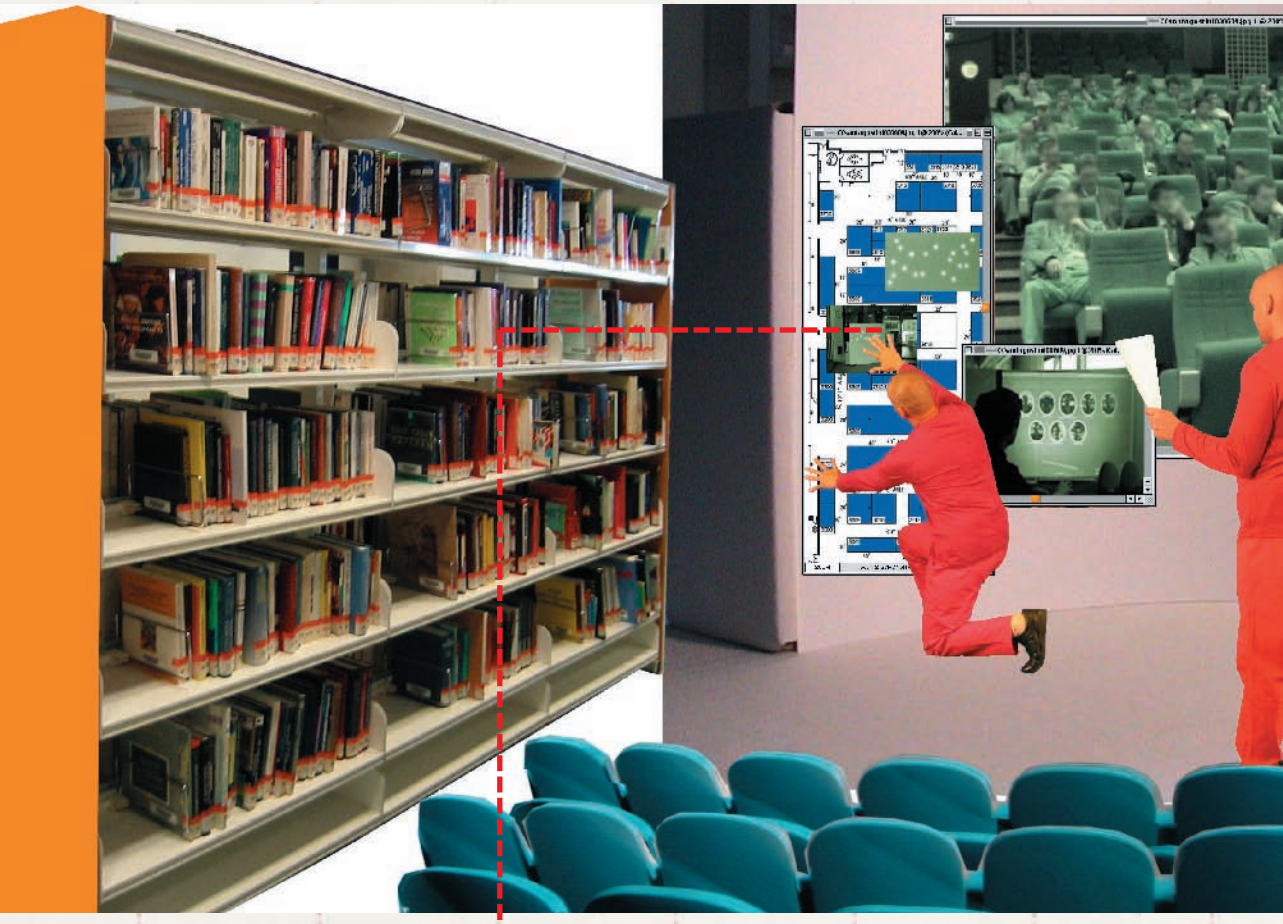
SHARED EQUIPMENT

OPTIMISING PRODUCT USE

SLOW

LOCAL TELE-OFFICE

» The connectivity club is equipped with sophisticated teleconference equipment
» Whenever he can, Sam uses it to avoid unnecessary business travel and trips abroad.



SHARED EQUIPMENT

SIMULATED VISIT

Sam is the manager of a franchise shop in the area. He only goes to the connectivity club to use the distance communication equipment. Several times a year he also visits professional fairs in his sector.

TELECONFERENCE
In the same way he follows conferences and participates in conventions, where he is sometimes asked to make an active contribution.

TEAMWORK
He also regularly uses the equipment to take part in co-ordinating meetings with the parent company and to exchange experiences with other sub-sidiaries.

REDUCING TRAVEL

DISTANCE COMMUNICATION

CO-OP

PARTICIPATION BOARD

» The connectivity club has a zone available for meetings and informal work.
» Viviane uses it, and the equipment, when they are not being used by the office staff who work there.

OPTIMISING USE OF EQUIPMENT

USE OF INFRASTRUCTURE
As well as a meeting space, she also has access to free workstations outside office hours and can carry out administrative work at lower cost to the association.

NEIGHBOURHOOD NETWORKS

Viviane does not use the connectivity club regularly but she goes there to take part in local association meetings. With other residents in the neighbourhood, she organises education support activities and helps elderly people.

PARTICIPATORY DEMOCRACY

Among other things she helps co-ordinate various local associations to discuss city policies and participate in city planning decisions.

ORGANISED MUTUAL HELP NETWORK

ORGANISED LOCAL MANAGEMENT NETWORK

[CITIES?]

How do you move around the city?

MOBILITY AGENCY

The mobility agency offers various places of contact, especially in areas of limited traffic.

SERVICE BOOTH
Booths distributed throughout the city permit access to the different mobility services.

This manages a complex system of transport, providing different means for different mobility needs. It is a system that favours light vehicles and collective services. It counts on an efficient system of fast public transport that links areas easily crossed on foot, by bicycle or other means of light transport. The aim is to offer solutions for mobility that enable residents to carry out their activities without resorting to private cars, or at least using them collectively. It is an extension of the concept of Mobility Management.

INTERACTIVE STREET MAPS
These are link points with the network – city street maps on interactive screens.

PLANNING OFFICE
A central agency for each neighbourhood provides access to individual advice.

QUICK

A CAR ON REQUEST

» The mobility agency has a kiosk where you can buy different mobility services.
»Viviane finds solutions there that are more flexible and fit her needs better than an individual car.

SHARED EQUIPMENT

CUSTOM-MADE SERVICE

She takes out a subscription there for a custom-made service, which the person in charge downloads onto her electronic agenda: Viviane can find a ride in a car or bus anywhere in the city.

BUS ON REQUEST

In real time the databank offers her other customised public transport solutions – in this case the nearest minibus will make a slight diversion to pick her up.

ASSISTED HITCHING

Viviane enters her destination into her agenda and sends the request. The mobility agency looks through the individual vehicles going in that direction for one available to take her.

FACILITATING RELATIONS BETWEEN USERS AND SERVICE SYSTEMS

ORGANISED MUTUAL HELP NETWORK

SLOW

THE CARFREE NEIGHBOURHOOD

» The mobility agency has interactive street plans all over the city.
» Yan-Dee uses them to organise her travel when she cannot go on foot or by bicycle.

INCREASED NATURAL SPACE

BICYCLE NETWORKS
She lives in an area of limited traffic which encourages her to use non-polluting means of transport.

MOBILITY ORGANISERS

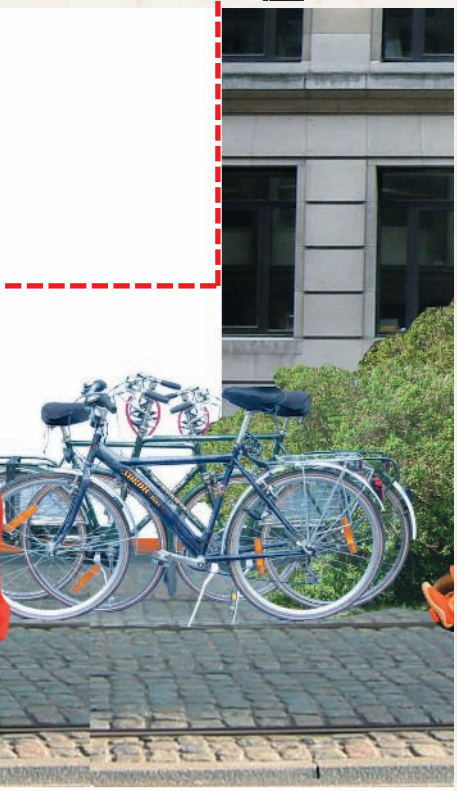
When she has to move outside her neighbourhood, she uses an interactive street plan to find an instant solution to all her non-routine travel.
She finds the most suitable connections, depending on the traffic conditions in the city, and pays for the journey on the Internet.

CAR SHARING

She reserves one of the shared vehicles in a nearby neighbourhood. She hires it for the time needed and then simply leaves it in a free car park when she has finished with it.

FACILITATING RELATIONS BETWEEN USERS AND SERVICE SYSTEMS

SHARED EQUIPMENT



CO-OP

SHARED MOBILITY NETWORKS

» The mobility agency helps users who need customised advice.
» Sam finds neighbours willing to share particular transport solutions with him.

ORGANISED MUTUAL HELP NETWORK

OCCASIONAL BABY-SITTER
When he is stuck in a meeting, he needs someone he can trust to look after his daughter after school.

OCCASIONAL TRIPS

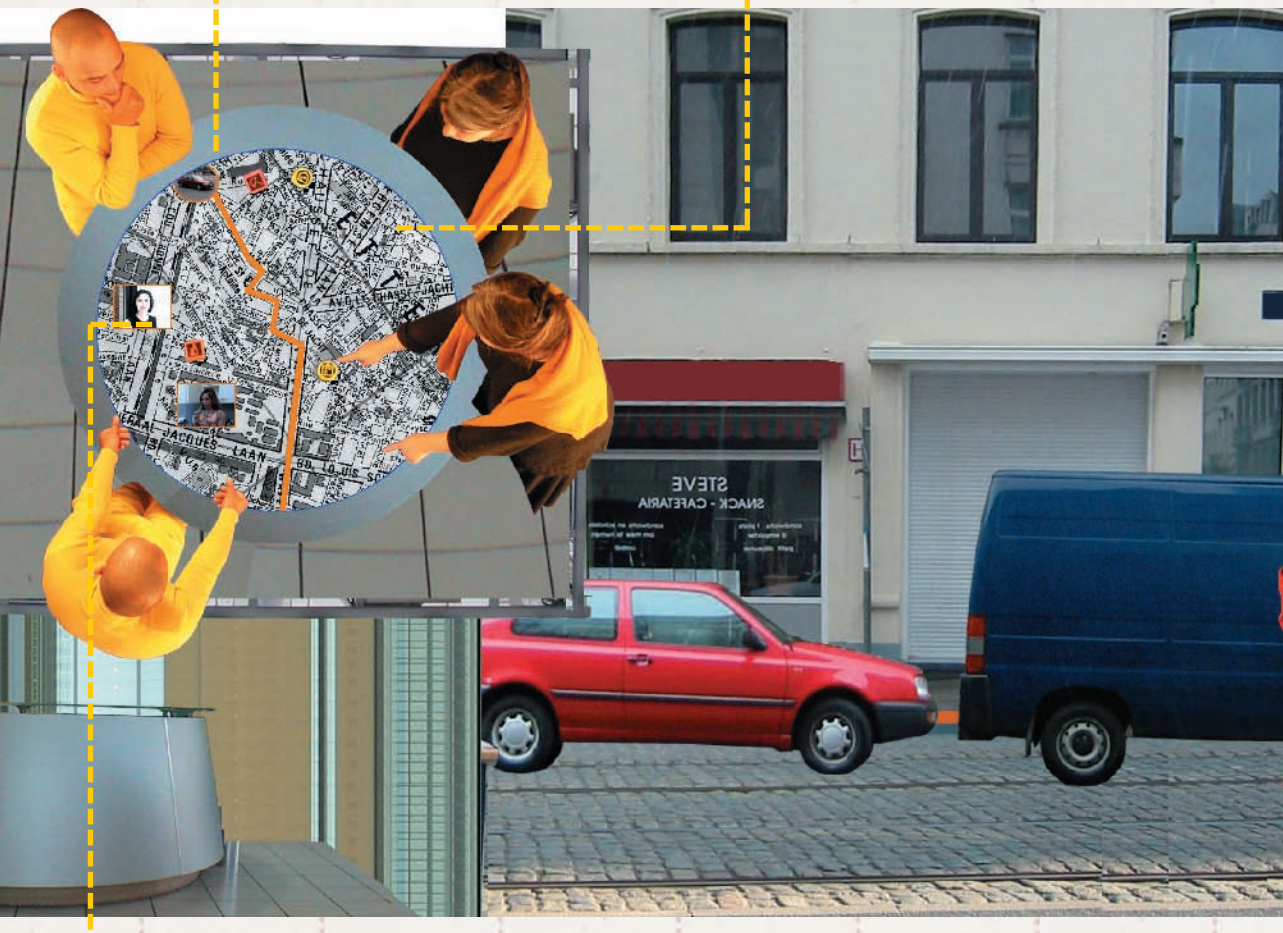
He goes to the agency to find useful contacts in the databank. He usually moves around by bicycle to take his daughter to school, go to work and do the shopping. However, when it rains he needs someone he can count on to come and pick them up by car.

PRIVATE CAR HIRE

If he wants to travel at weekends, he can find private cars that are mainly in use during the week. Once all the data has been collected, he enters it in his electronic agenda to have it to hand when he needs it.

OPTIMISING USE OF EQUIPMENT

CAR SHARING



[ENERGY?]

How do you produce and use energy?

ENERGY WORKSHOP

This combines a permanent exhibition on bioclimatic housing and a personalised helpdesk.

CONSULTATION ROOM
An office for accommodating clients and giving individual advice.

It is the central nervous system that orients, manages and optimises the energy system people's daily lives are based on. It is also a place that promotes energy saving, any auto-production and the use of locally available renewable sources. Any modifications to the building structure or the heating, lighting or water systems are planned here (such as bioclimatic modifications). These technical, managerial and planning activities are supplemented by a neighbourhood engineer who gives advice, makes contact with specialised agencies for specific services, and suggests technological improvements. In addition, the Workshop develops individual skills in the management of energy systems, neighbourhood co-operation and new forms of relationship with the large energy managers (including the sale of any surplus energy produced locally).

DEMONSTRATION AREA
A model house equipped with the latest technological innovations, dedicated to individual demonstrations.

TECHNICAL DEPARTMENT
A support laboratory for the production of local energy, providing materials and checking tele-management and neighbourhood plant.

QUICK

THE THERMAL CONTRACT

» The energy workshop carries out energy check-ups on a building.
» Sam goes to find a technician to optimise his domestic equipment.

PASSIVE DOMESTIC AIR-CONDITIONING

BIOCLIMATIC ADAPTATION
In order to limit expenditure the technician suggests laying insulators and solar panels that will be adjusted according to the season.

INSTALLATION MANAGEMENT

Sam and his wife would like to draw up a full energy contract. The technician analyses their dwelling and offers supply and maintenance of heating, air-conditioning and lighting at a fixed monthly rate.

REGULATION OF INDIVIDUAL USE

He also recommends the use of an automatic temperature and lighting regulation system that will help them modify their habits and reduce energy consumption.

Once established, the modification work needed will be included in the thermal contract.

OPTIMISING THE USE OF SYSTEMS

ENHANCING PERSONAL SKILLS

SLOW

DEALING WITH ENERGY

» The energy laboratory demonstrates different ways of economising on energy use.
» Viviane comes to learn correct everyday practices and the new support systems for domestic management.

REDUCING CONSUMPTION
OF NON-RENEWABLE RESOURCES

AUTOMATIC CONTROL DEVICE
The technician shows how sensors, able to detect the presence of a person, allow for individual use of lighting and heating.

CONSUMPTION MONITORING
She goes to a demonstration. The technician shows little indicators for each appliance which assess and regulate its energy consumption.

INCREASED AWARENESS OF CONSUMPTION

TRAINING IN CORRECT PRACTICES
He also shows her how all the information collected can sketch a consumer profile of domestic consumption thanks to which the source of any leaks can be identified and repaired.

ENHANCED SELF-MANAGEMENT CAPACITY

CO-OP

CO-OPERATIVE ENERGY GENERATION

» The energy workshop offers assistance in energy management on a neighbourhood scale.
» Yan-Dee comes to find out about local production technology.

ENERGY MANAGEMENT TRAINING

MANAGEMENT TRAINING
She co-ordinates the neighbourhood management team. Together with other delegates she studies the different systems based on renewable resources and co-generative equipment which they will be responsible for supervising.

PLANNING ASSISTANCE

With the technician's help, they simulate the various production sources possible at the scale of a neighbourhood, to compare their output and co-ordinate the investment options among interested neighbours.

NETWORK ENERGY

The energy workshop also provides management support for local energy production in relation to the needs of the residents, companies and other neighbourhood activities to regulate the supply and purchase of energy on the national network.

SHARED LOCAL PRODUCTION PLANT

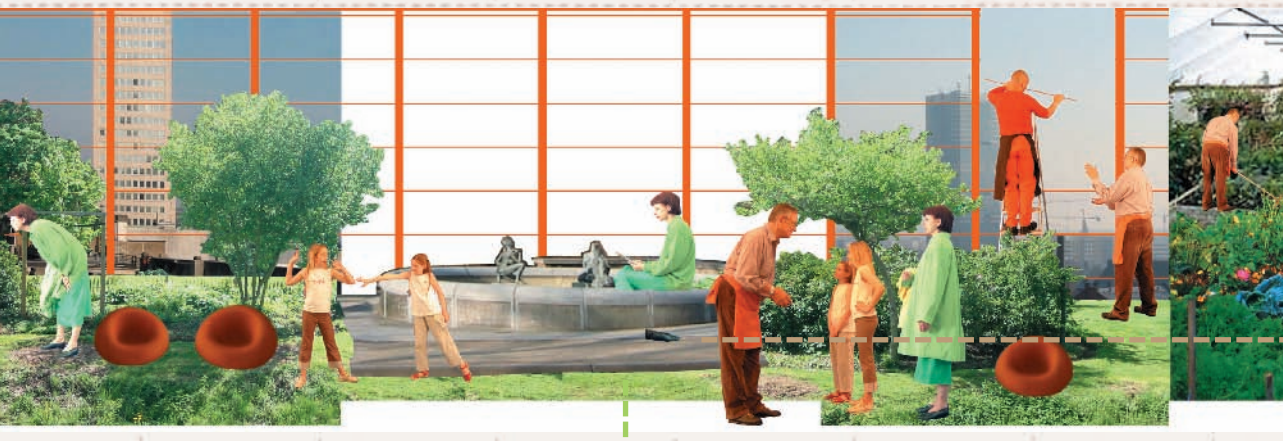
LOCAL ENERGY MANAGEMENT SUPPORT NETWORK

[VEGETATION?]

How much vegetation is there and how do you look after it?

MICROCLIMATIC GREENHOUSE

The microclimatic greenhouse is a small rooftop garden in the city centre, protected by a greenhouse that ensures a certain degree of natural air-conditioning.



PUBLIC GARDEN
A garden dedicated to leisure and relaxation in a natural environment.

This is the area for daily contact with nature, a sort of green island in the city. It accommodates leisure activities in a covered garden that offers some degree of natural 'air-conditioning'. It functions like a public garden that makes 'nature bubbles' available to the inhabitants of every building. Like the vegetable gardens of the suburbs, it gives garden enthusiasts in the area somewhere to 'get their hands dirty', while also ensuring a small supply of fruit and vegetables. It is the best place to gain a greater awareness of nature and a sensitivity to ecological problems in general. A local manager coordinates all these activities and supervises the care of all the green areas in the neighbourhood.

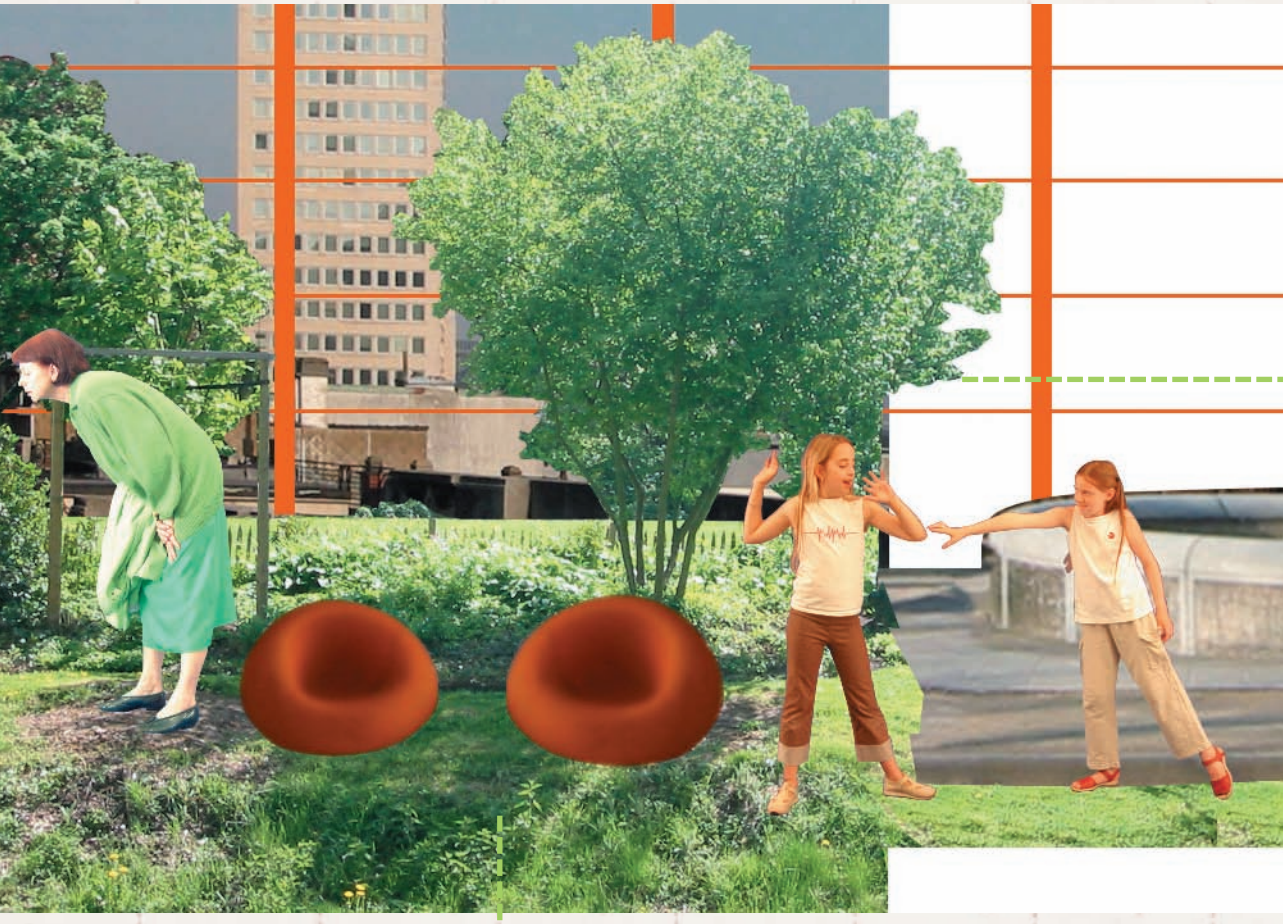
FRUIT AND VEGETABLE GREENHOUSE
An area dedicated to the cultivation of fruit and vegetables, flowers and herbs.

NURSERIES
An area reserved for the cultivation of plants for the green areas in the neighbourhood. There is also space for storing gardening equipment.

QUICK

THE AIR-CONDITIONED GARDEN

» The microclimatic greenhouse is a little covered rooftop garden.
» Viviane goes there to spend a few minutes close to nature, near where she lives and accessible all year round.



INCREASED NATURAL SPACE

PUBLIC GARDENS
Viviane makes the most of it in winter, to go for a walk and rest with her feet in the water of the fountain.

PLAYING IN THE GREENERY

When she has the chance or if the weather is bad, she books it for two hours and goes there with her grandchildren to stretch their legs.

NATURE SCHOOL AND SCHOOL OF ECOLOGY

The children do not leave her alone for long, but there is often some entertainment organised near the vegetable garden. They learn to recognise plants, play at gardening and take an interest in the workings of the air-conditioned garden. They spend a moment of 'green recreation' away from the city atmosphere.

VALUING NATURAL SYSTEMS

SPREADING AWARENESS OF NATURE

SLOW

THE URBAN VEGETABLE GARDEN

» The microclimatic greenhouse offers an area for the cultivation of vegetables, flowers and herbs.
» Sam grows tomatoes there for his personal consumption.

RE-NATURALISING FOOD

SEASONAL ADAPTATION
He is going to grow vegetables and flowers for his own pleasure and to recreate a touch of nature in the city.

ELECTRONIC GARDENING

The greenhouse is equipped with a series of sensors that facilitate cultivation in an artificial environment and the sharing of plant care.

ORGANIC HOME GARDENING

He is a member of a gardening club which uses the greenhouse to guarantee a small neighbourhood vegetable crop throughout the year.

SPREADING AWARENESS OF NATURE

FACILITATED LOCAL HOME-PRODUCTION

CO-OP

THE GREEN CITY

» The microclimatic greenhouse organises the care of urban vegetation.
» Yan-Dee enjoys gardening as a hobby and for the pleasure of living in the greenest neighbourhood in the city.

SPREADING AN AWARENESS OF NATURE

GARDENING TRAINING

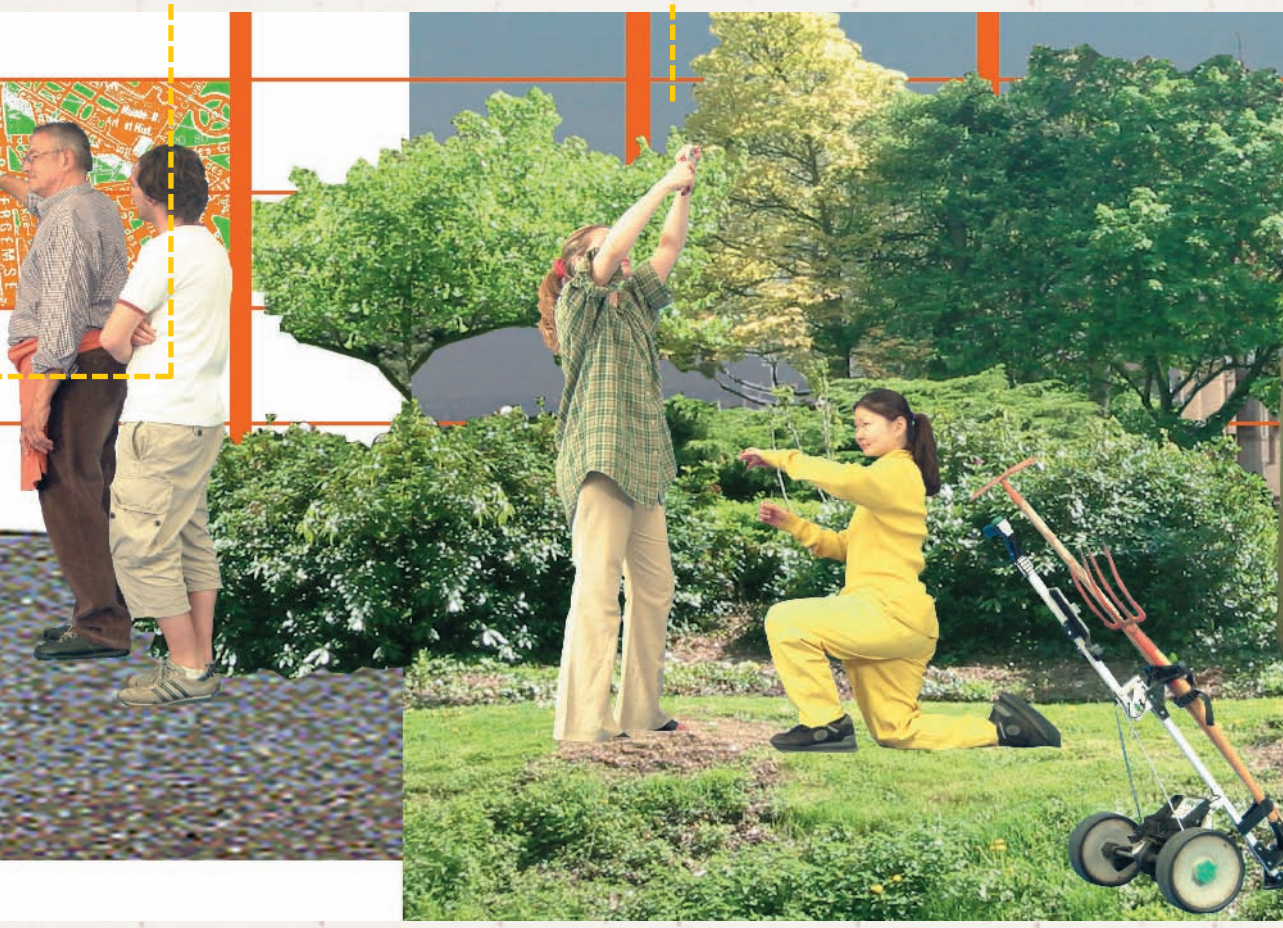
Once a week, she meets some friends and with the help of a professional gardener they spend time looking after the plants.

ASSISTED MANAGEMENT
Starting with an interactive card, they supervise all the green areas in the neighbourhood and co-ordinate their maintenance with volunteer gardeners.

CARE OF VEGETATION
They set off with their tools to go to the public garden or the green space in a neighbouring street, little by little contributing to the greening of the city while carrying out a relaxing activity.

VALUING AND TAKING CARE OF GREEN SPACES

ORGANISED LOCAL INTEREST NETWORK



To be continued ...
(a research programme)

•

The multi-local city of emblematic places and ways of acting, comprise the conclusion to this book, but they are not the end of the journey and do not claim to presage the future. They should rather be taken as a stimulus for discussion about what the future might be like. However, it is our hope they will also indicate some possible lines of research and design action, as long as designers can recognise their potential contribution to the social learning process in which, designers or not, we are all immersed.

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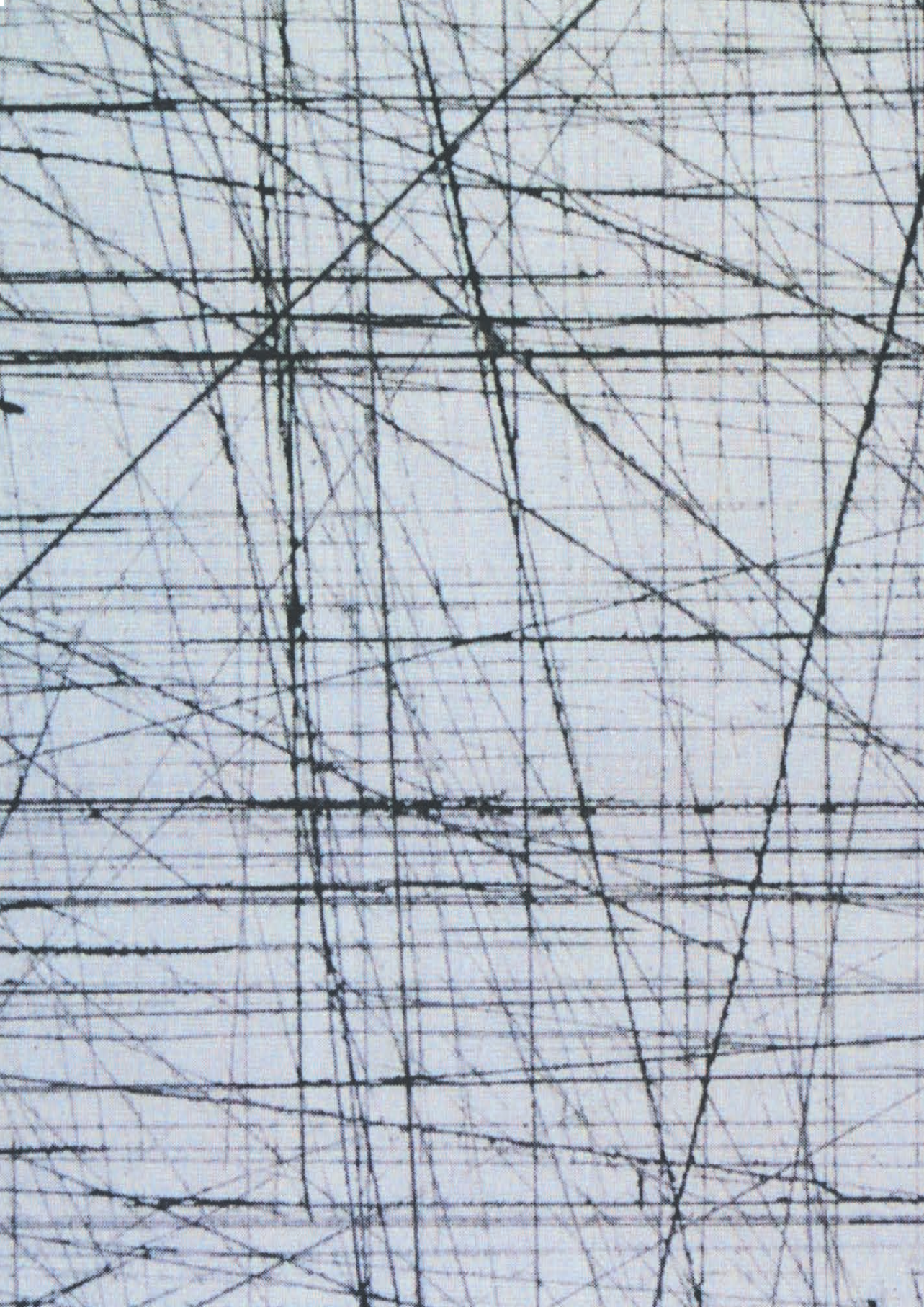
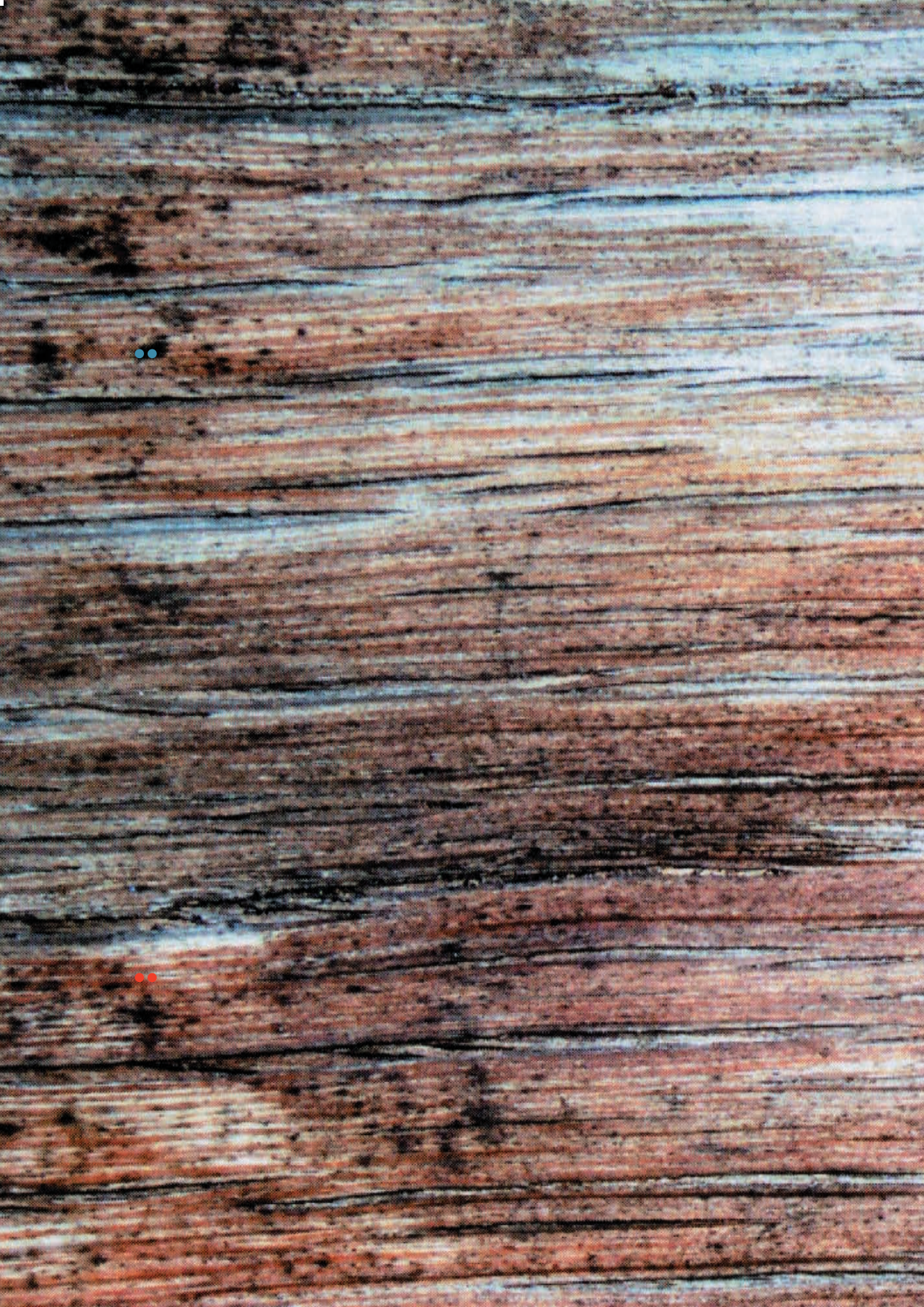


Cosmopolitan ideas:
planning for a virtuous cycle

The worldwide metropolis is also a great laboratory of ideas and innovations to do with everyday life; ways of being and doing that express society's capacity to formulate new questions and find new answers. Among these, some seem promising from a sustainability perspective. They are stimulating ideas about how we can follow different paths from the dominant, unsustainable ones of today. Sometimes these ideas and innovations are of a profoundly local nature and are not possible outside their own contexts. However, other times they have the potential to widen their range of action and stimulate new ideas and proposals in other places, and thereby facilitate the social learning process we are immersed in.

Identifying and consolidating these ideas and socially produced innovations, highlighting their interesting characteristics and then re-introducing them into society through an effective mode of communication is a self-reinforcing sequence. It is a virtuous circle between social innovation (the generation of new ideas and solutions), design ability (to recognise, reinforce and communicate ideas and socially produced solutions) and an individual and collective inclination to listen (to take up these ideas and, as a consequence, re-work and redirect choices).

Potentially, design activity has an important role to play in this model. Obviously, it cannot generate this virtuous circle alone, but it can encourage its development by using the instruments it has available; firstly to recognise promising cases and ideas more easily, and secondly, to give them substance by turning them into tangible proposals and scenarios with clear implications. Finally, it can ensure that these proposals and scenarios are highly communicative (and actually communicated), by adopting the most effective strategies and contemporary communication techniques.



Multi-local cities:
planning for a new sense of place

What current cosmopolitan ideas on sustainable everyday life show us is the prospect of a *multi-local city*: a network of interconnected places in a densely populated context, simultaneously open and localised. Open in that it is effectively linked to, and crossed by, the global flow of information. Localised in that it has its own identity, its own production and service system, and is characterised by the existence of lively neighbourhood communities.

However, although this multi-local city emerges from the catalogue of cosmopolitan ideas available today, it is by no means dominant. Instead, the general rule in contemporary cities is a progressive loss of sense of place, the disappearance of those public spaces that have always been the most important indication of locality in a city, and a weakening of those neighbourhood communities that were its dynamic, vital element.

In order to give multi-local cities a greater chance of existence it is necessary to promote a new sense of place. This in turn implies a new planning capacity: the ability to connect 'long global networks' with 'short local networks' and to establish local-global connecting systems able to provide support to organisational forms and production and service systems based on the subsidiarity principle. In other words, doing on a larger scale only what cannot be done on a smaller scale at a local level.

A fluid everyday life:
planning to travel light

One emerging characteristic of contemporary society is its *fluidity*, as its organisations become plastic and its members mobile, their lives flexible and their options reversible. Like it or not, this is the spirit of our times and the transition towards sustainability must take it into account.

The multi-local city can be the habitat for societies that are both *fluid and sustainable*. It can engender modes of daily life that are flexible, reversible and environmentally light. However, to do so, it will need arrival points equipped with suitable facilities: new types of services that operate as support platforms for the quasi-nomadic subjects of contemporary life.

At present these platforms do not exist, or rather they exist but are culturally, materially and economically hardly accessible. Either they are too remote from current mindsets, or they are culturally accessible but materially difficult to find. Or they may be culturally and materially accessible but their services simply too expensive. Technological innovation and design ability, steered appropriately, can reduce each of these barriers and so enable a growing number of people to 'travel light', to walk life's pathways freely, leaving a light trail on the ground.

Empowered places:
planning new types of service

We can imagine a new type of multi-service centre emerging, able to support various lifestyles in a fluid society that wants and knows how to be sustainable. These centres could be empowered places, enriched by special prostheses that, as in the case of *ambient intelligence* and *tele-presence*, lend them more and different properties than those traditionally attributed to a place, thereby moving them in the direction of what is technically known as 'augmented reality'. Planning these empowered places is an enormous design challenge, not only because they are enabling systems for totally new forms of activity and organisation, but also because they could form the initial nucleus for the construction of a new kind of place.

Given the complex, hybrid nature of these local-global, real-virtual services, they could in fact become catalysers for other, wider phenomena. Particularly in the perspective of a multi-local city, they could be engines for a strategy of 'bottom-up' change where, by operating on a neighbourhood scale while being highly connected on a global scale, they could activate new dynamics in the economic and social fields, leading to the generation of new forms of community and identity. In short, if appropriately planned, they could contribute to the birth of a new sense of place and consequently to a new idea of the city.

Possible worlds:
planning for a social conversation about the future

The scenario of a possible world emerges from this train of thought; one of the infinite futures the present could generate. We may ask ourselves what such a world could actually achieve. Put like this there is no answer, not only because nobody is in a position to know how things will turn out, but also because the question itself is badly formulated. The visions and proposals associated with this possible world were not intended to be realised as such, but to be discussed and maybe to generate new ideas. Their success is not to be measured by their capacity to 'go into production', but by their capacity to channel people's imagination, expectations and consequently their behaviour.

The building of scenarios, which we shall call *orientation scenarios*, is to all intents and purposes a planning activity. As with any project, the visions and proposals produced must be socially plausible, technically feasible and tenable in both their rationale and implications. Yet let us remember that they have been generated not to be realised, but to encourage discussion between various social actors as to what to do, how to do it, and why. In short, they are design activities to encourage a social *conversation about the future*; to increase the probability that some of the ideas they put forward may influence what will be 'tomorrow's present', that is, the future. In conclusion, they are design actions that generate visions for the future (rather than of the future): visions of the-world-as-it-could-be; a possible world, which could become probable if we wanted it to, and acted accordingly.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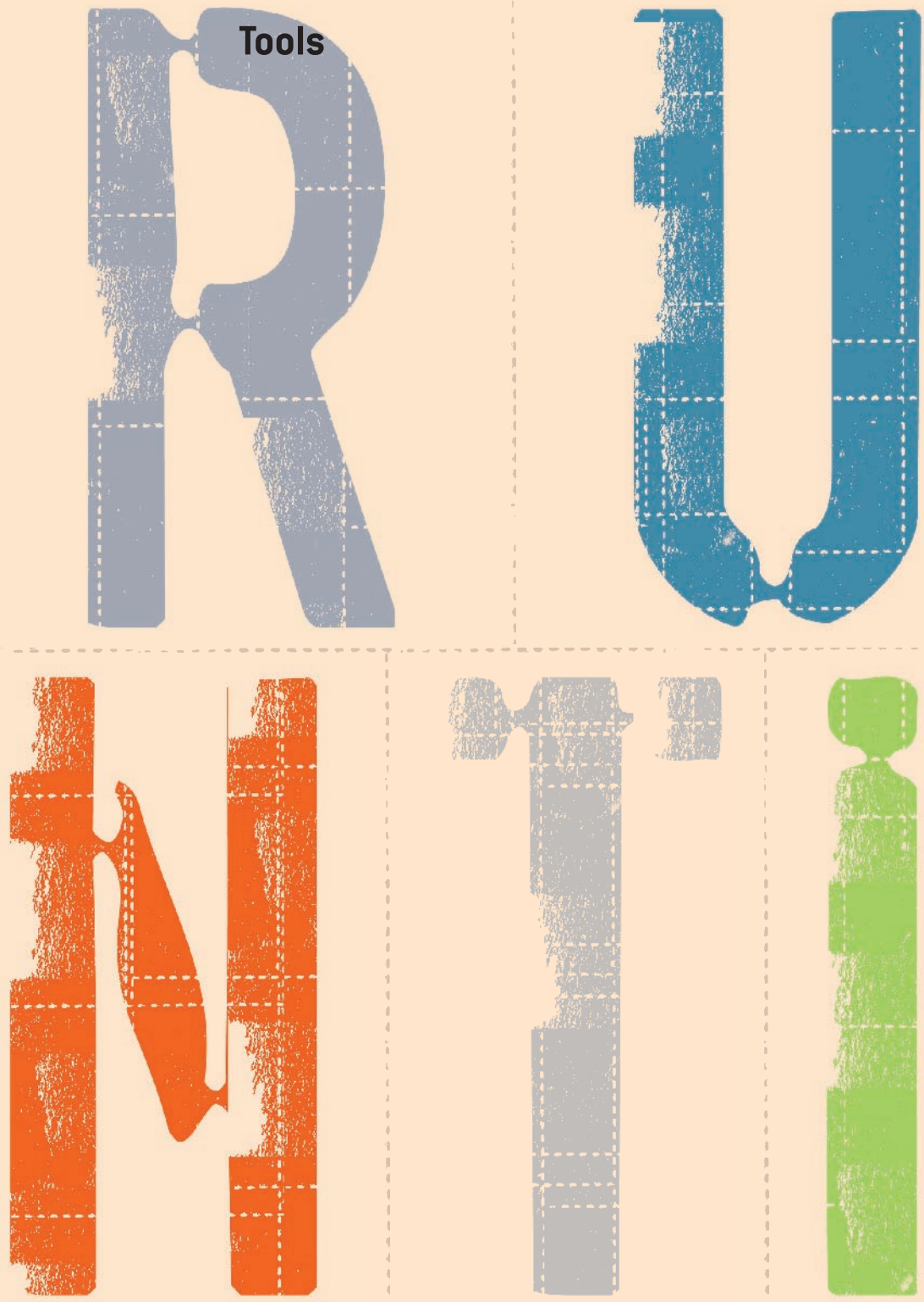

Tools

Backstage

Strategic Design for Sustainability: instruments for radically oriented innovation

Ezio Manzini

In this book we have presented the outcome of a research project that, in view of its intentions and modality, should be considered as an exercise in Design for Sustainability (DfS). By this we mean a design activity that aims to encourage radical innovation oriented towards sustainability, steering the development of social-technical systems towards low material and energy intensity and high regenerative potential (see chapter 2).
On the other hand, the specific application of design for sustainability described here was brought about by using mainly strategic design tools. So, to be precise, we should refer to this type of exercise as strategic design for sustainability.

'Ipso facto' and 'intentional' design

As often happens in design activities which are really interesting and innovative, strategic design has up to now rarely been recognised as a 'design' activity, whether directed towards sustainability or not. The best tangible cases where it can be recognised (like most of those presented in Chapter 3) are examples of 'ipso facto' design: activities carried out by people who are not designers and who are often not even aware they are planning something.
The problem with this unintentional strategic design is that although it can achieve extremely interesting results, its capacity to consolidate experiences and make them reproducible is intrinsically weak. Since it is prevalently the result of implicit knowledge, it is unable to express itself in a way that is easily comprehensible or rationalised, it does not generate operative instruments and has difficulty in transmitting what it has learnt to others. Overcoming this significant difficulty means moving from implicit to explicit knowledge. It means clearly identifying that set of concepts and operational tools which, together, enable us to speak of a (new) discipline and (new) professional skills.
It should be underlined that what we are saying here does not specifically refer to strategic design for sustainability. This is not in itself a discipline and does not require us to imagine special 'sustainability designer' skills. As previously stated, design for sustainability in the form we are dealing with is a directed, focused, strategic design application. Consequently, in disciplinary terms, its problems, its limited visibility and its difficulty in pinpointing its own instruments actually stem from the vague nature of strategic design. In other words, they arise because strategic design itself is still at an embryonic stage where the relative abundance of situations in which we can recognise 'ipso fact' strategic design does not meet with a sufficient awareness of its nature as a design activity, and of the tools which could consequently be used or which should be developed.

Design for sustainability and oriented radical innovation

In order to arrive at design for sustainability it is necessary to work through strategic design and its characteristics, aims and ways of operating. This is not the appropriate place to enter into the merits of all the different forms which strategic design may take. Suffice it to say that they have in common the fact of being planning activities whose project-objective is a system, consisting of products, services and communication, defined as a product-system. This definition includes widely differing activities: ranging from those involved in defining the identity of a line of products and services (even that of an entire company), to those relating to the re-shaping of a company's activities (such as the re-orientation of a previously product-orientated company towards services; innovative use of the Internet to define new forms of relationship with clients and/or suppliers), to those which lead to offering solutions and, for this reason, attempt to bring together the various actors necessary to achieve a result.

Design for sustainability may pass through any of these areas, but it has one particular characteristic: the product-system it is applied to must relate to an oriented radical innovation, that is, it must encourage, facilitate and be part of a process of systematic change. This implies a break in continuity with the initial situation and an outcome consistent with the fundamental criteria for sustainability (see chapter 2).

This definition of the field of action for sustainability design brings with it some significant implications: it is unlikely that the radical innovation we are referring can be traced back to a purely technical dimension. It always requires us to consider a system in its entire social, technological and natural complexity. In addition, it is unlikely that decisions relating to such a system can be taken by one single actor protagonist (as we can refer to a single producer and/or manager, when talking about a product or service). In this case, the innovation involves a number of different actors (producers, service providers, institutions, and various organisations, whether they are an expression of society in general or of single groups of potential users). Consequently the innovation that interests us here is a social occurrence, or rather, the social dimension of the phenomenon is greater than we are normally used to when talking about innovation and design.

Designers and diffuse design ability

When talking about design for sustainability we are referring to designers who operate on complex social-technical systems by encouraging innovation. Such innovation, in turn, is more social than technological. It rises from the bottom rather than filtering down from the top. It is done by a multiplicity of actors rather than being made in a laboratory or design centre.

Put this way, the professional profile of a designer appears rather different from the historically consolidated form we are used to. The classic idea of a designer is of an operator who, case by case, refers his activities to a final user, working for or with a firm. In the new scenario, the designer tends to become an operator who acts within a more complex network of actors (that may certainly include firms but not exclusively) where his main interlocutor, his actual client, may be an institution, a local authority or any other social actor.

If we remember what was said about the transition towards sustainability being a learning process and arena for diffuse design ability (see the Introduction to this book and Chapter 2), the designer increasingly takes on the role of facilitator in the learning process, and of providing support for diffuse design skills. In other words, his field of action moves further and further away from the figure of a traditional designer towards that of an actor making oriented events happen and making sure interested subjects partici-

pate, and do so creatively. He becomes a process facilitator who acts with design tools by generating ideas on possible solutions, visualising them, arguing them through, placing them in wide, multi-faceted scenarios presented in concise, visual and potentially participatory forms.
As we gradually move towards this area of activity, the designer is faced with the question of new skills and new tools, or rather of skills and tools that in principle have always been present in the bag and baggage of strategic design, but which have never appeared particularly important until now.

Solutions, scenarios, participatory processes

Strategic design, by definition, deals with complex artefacts. If these artefacts are also sustainable solutions this complexity can only increase (since their entire life cycle must be taken into account, along with their relationship to specific contexts of production and use). Every solution and especially sustainable solution, brings a complex system of relationships into play with new forms of collaboration between the various actors involved and/or interested. These forms of collaboration are not easy. In general, they do not come about spontaneously, but are the result of conscious action.
In the face of this statement, one of the most important issues in the development of sustainable solutions is precisely that of co-operation and partnership: how can we bring a multiplicity of actors to focus on one objective? How can we facilitate the generation of shared visions? How can these visions actually trigger their energies?
To answer these questions the designer must put himself forward as an operator who can facilitate shared vision building by generating and proposing possible scenarios and solutions. To play this role however, he must have a new generation of conceptual and operational tools at his disposal: a toolbox that contains everything he needs to conceptualise, visualise and develop scenarios and sustainable solutions in the framework of the wide, articulated processes of co-planning that characterise the innovation of contemporary social-technical systems.
These tools exist in part and must partly be developed and consolidated. This book in general, and the next few parts of this chapter in particular, contribute to this.

Tools for design in a limited, complex, fluid world

We shall draw these notes to a conclusion with a consideration of a more general nature, which we believe is useful in clarifying what has been said so far. The transformations occurring on a worldwide scale challenge the cultural background and field of activity of industrial design (as they do any profession). In this shifting reality, the world of industrial design, meaning the community of operators interested in the themes of 'industrial product' design, is having to redesign itself. This is primarily because the object of industrial activity, and so the very object of its design projects, is and has been changing (this is the theme of 'product' as product system and as artefact network which is constantly varying according to specific user and context characteristics). But also because, with the increasing degree of connectivity in socio-technical systems, the modes, timing, actors and the roles of design processes applied to them are also changing rapidly – this is the theme of constant interaction between designers and users, of project oriented partnerships and, in the end, of diffuse planning.

Design was born, and developed its conceptual and operational tools, in a world that looked simple, solid and limitless. This triad has been swept away by the force of new

phenomena: the discovery of system complexity, the need to learn how to navigate in the fluidity of events and, today, with reference to the transition towards sustainability, the emergence of limits. It is this new complex, fluid, limited world that design must face today.

Depicting solutions: tools and techniques for describing services

Anna Meroni

Although in the field of design much has been done, discussed and understood about how to present, or rather portray, product designs, the same cannot be said for 'solutions', by which we mean complex artefacts which can be fundamentally assimilated into services. Given the variety of ideas this book presents, it offers an ideal opportunity to reflect on an array of widely applicable communicative instruments whose relevance and effectiveness have already been partially put to the test.

Clearly, the need to carry out a series of design workshops in different countries all over the world, and produce comparable results, in itself needed some thought as to how to report back on the design proposals. The exercise produced a vast selection of examples – already a testimony to the effectiveness of the process.

In addition, the successive elaboration of this material into scenarios and their realisation in multi-service centres has obliged us to consider how to portray not just one, but a whole multiplicity of services provided by a single organisational system; and then decide how to communicate this in a way that could be easily and immediately grasped by anybody – the layman, the man in the street, and a possible user of the proposed services.

Subject to be depicted

The first thing we must do is to specify that the 'subjects to be depicted', in this case, are solution proposals in progress, not finished ideas. We should add that presenting a solution means, above all, telling a story or recounting a series of episodes or events with a shared meaning, and a beginning, middle and end. A solution also occurs in time and space, where various actors perform in one or more contexts, using different artefacts and giving rise to different situations. The solution is everything subjects do or undergo in order to achieve a desired result, and so put an end to the initial problem or task. A story with an ending requires all of this to occur logically, the actors and situations to be realistic, and conditions to be different (and hopefully better) at the end from the beginning. So a solution that gives rise to a story with an ending is already a promising solution in terms of coherence.

What conceptual image can we use to portray all this? What kind of communicative substitute can at least partly convey its important qualities? The narrative model of a story seem the most appropriate because although it simplifies the complexity of the real world, potentially it does not sacrifice its nature as a system or process. Much depends on the criteria adopted when operating this simplification and identifying the key characteristics of the service. It is difficult to simplify. Knowing what to subtract means knowing how to recognise and actually communicate the essence of what is being said. Consequently, it entails generating an effective, communication artefact, easily comprehensible to most people. In the experiments reported in this book, the main criteria followed when building the story are pregnancy and concision: once the salient features of a solution were identified, pregnancy led us to focus on conceptually dense and meaningful images, since concision fosters clarity and informative

essentiality. So, when faced with the complexity of the content, our search for effective means of communication took a minimalist turn.
One last important consideration concerning the subject to be portrayed has to do with the theme of the solutions presented – everyday life – making simplicity and a certain sense of familiarity appear as positive values in the ideas put forward. Solutions perceived in this way are more likely to be deemed realistic and the scenarios depicting them more likely to seem not merely acceptable but even desirable. The message is that by making a reasonable effort to adapt our everyday behaviour, we could, all things considered, do a lot to safeguard and regenerate the environment.
Therefore the communication mode should easily allow observers to see themselves in the consumer's shoes and express his opinion. This is the declared aim of the ideas put forward: to set up an extended focus group, oriented towards encouraging shared planning. It is here that the designer tests his prefigurative ability to put forward solutions that are not only effective, but also desirable. For this reason it is inevitable that the depiction techniques chosen will be of a covertly 'pop' nature, a more or less explicit reference to certain forms of communication that are widely popular such as comics, video-clips and picture stories - all very visual and with a distinct semantic affinity to issues of everyday life.

Language and message

One of the numerous Andy Warhol aphorisms is, 'I never read, I only look at the pictures' – the exasperation of contemporary popular culture with anything in-depth. If it is true that we are more or less living in a prevalently 'visual' dimension, the designer is undoubtedly in a strong position to profit from this. He has the disciplinary skills to be in command of the realm of images, and the motivation to visualise the world 'as it could be if…'. In this case he finds himself describing possible solutions to a culturally heterogeneous audience who are not necessarily experts.
In consequence, the what to describe, and the how to describe it depend strictly on this field orientation. For this reason, apart from the general theoretical framework, most of the content of this book presents solutions through their user-perceived aspects, and describes them using narrative forms that are principally based on visual language. They are services described from the user's point of view. Very little is said about what he does not see, about what lies backstage, about everything the system must organise to put them into action. The only partial exception to this is the use of an annotation system, which intervenes to underline important across-the-board aspects such as consistency with the guidelines for sustainable design, or the type of service. However, even in this case, it does not talk about the organisational system, but only about functional and environmental quality.
An aspect common to all the representational techniques described is the high level of integration between image and text. Speech or writing always complete the evocative capacity of the pictures (the ability to arouse emotions and evoke an atmosphere) with a descriptive component, the purpose of which is to give precise information about what is happening in them. It also aims to create pauses in the enjoyment of the visual sequence (sometimes these are real picture-stops) that stimulate a critical spirit in the spectator, through an instant of emotional detachment.
Finally, before moving on to an analysis of the representational techniques, it is worth noting that they have been chosen to allow for different reading levels of the content and therefore differing levels of concentration required by the observer. The communication context and the corresponding level of commitment the viewer is presumed to be willing to invest will vary according to the reading level chosen.

Story-board

What:

The story-board is the translation of an event which takes place in space and time, into a sequence of static images associated with a written text. Traditionally it is used in the cinema to plan and visualise scenes that are later filmed. In view of the need to depict services broken down into solutions, this is an effective, polymorphous instrument, able to match environmental details to narrative aspects in telling the story.

How:

If the objective is to describe a solution, the story-board focuses on the interaction between the user and the system, describing the experience from the user's point of view in an explicitly subjective way. In a limited picture sequence, five in our case, it visualises the principal service situations and resulting advantages, briefly commenting on what the user is doing and why.

The pregnancy criterion is particularly important here. In the most successful cases, the picture visualises the main action against a succinctly outlined background context. Only elements useful to depicting the atmosphere and reinforcing the situation are indicated. This allows for only limited investigation and requires modest commitment by the reader. It may be accompanied by a concise description and a system of targeted annotations.

Question and concise description

What:

Title, subtitle and description correspond to the classic written form of a story presentation. The title evocatively summarises the idea behind the solution; the subtitle offers a first, succinct description, which is then amplified in the wider text. The question is a rhetorical stratagem that indicates to the reader, from the outset, the need that triggered the idea and which the solution aims to answer.

How:

The solution title and subtitle should be equivalent, in evocative capacity and descriptive succinctness, to those of a cinema production. This is the analogy that most immediately explains its rhetorical function.

The question, which introduces them, declares and frames the designer's motivation and indirectly clarifies the aim of the solution.

The brief description recounts the objective aspects of the organisation and its workings: it should mention the basic 'drivers', the main actors and the reference contexts. It makes for a deeper level of understanding than the summary expression of a solution proposal, that is, of a general idea. It supplements the story-board with technical and organisational information so that together, they create an initial, concise but complete communication of the solution.

Poster

What:

The poster, as we use it, is a catchy image that depicts a story in a concise and emotive way. It uses the evocative capacity of the visual image and the descriptive capacity of the title to sketch the topic and atmosphere of a story.

How:

If the objective is to portray a solution in an extremely succinct way, the poster is the most effective communication tool. It forces one to pinpoint the solution's basic concept and to identify a key image to depict it, halfway between realistic and symbolic. It is a promise of

what the service has to offer and also a promotional image for publicity.
It structurally integrates the visual with the written message, so that the complex graphic image prefigures some of the content characteristics. At its most successful, it consists of realistic images that outline precise situations without losing sight of the more abstract overall dimensions of the service.
It is the most concise, targeted, communicative tool of those proposed, aiming at instant understanding by the viewer.

Sketch

What:

Video-sketches are video-clips that explain the workings of a service in a schematic but stimulating way. They are the first stage of a film translation of a story-board.
If they can be produced in various ways from a technical point of view, there is always the underlying intention of delivering an unfinished, in progress communicative product – a sketch that hints at reality while maintaining that imperfect nature which facilitates discussion between designers and consumers. In the video-sketches, the artificial aspect links the means of expression to the character of the message; the technical roughness matches the concept of proposal, of the unpolished idea.

How:

If the aim is to recount solutions, the video-sketch visualises the service as it is lived by the user. In this case too, it is a communication tool with an extra, promotional dimension: a sort of preview of a possible advertising clip.
In order to understand more easily the workings of a multi-service centre that supplies solutions for users with different requirements and attitudes, we have used a colour code. Users wear different colours in the video-clips according to the way they behave – red, yellow or green to signify whether their action strategies are Slow, Co-op or Quick.
These video-sketches have been made using the chroma-key technique. This is a system able to link an action and a totally artificial setting built ad hoc according to schematic principles of space organisation. In addition, a background voice narrates what is happening in the film. A system of picture-stops with clarifying texts and a series of targeted annotations aid comprehension of the story.

Panoramic picture

What:

A panoramic picture is a video-clip translated into a single static picture that recapitulates the actions of the subject-actor in a given context. It is in some ways a concentrated story-board, where the main actions of the protagonist are printed against a single background, accompanied by a commentary. The method is not unlike that of a photo-story, but the logic of a time sequence is flattened into a simultaneous image. In addition, unlike a traditional story-board, it does not serve to plan a filmed sequence but to create a summarising picture.

How:

A panoramic picture summarises a series of complex sequences that recount a service in a simultaneous image. It is integrated with a text that describes the service, because the time and space synthesis worked by the visualisation cannot adequately communicate the solution.
However, it conveys the overall atmosphere, preserving the deliberate approximation that also characterises the video-sketch.
It produces summarising pictures that require the attention of the observer and a willingness to examine them more closely.

The examples in this book have been achieved by photographing subject-actors using the chroma-key technique and setting the images against a background.

Targeted annotation

What:

The targeted annotation, as used here, takes the form of visual and written notes that enrich the chosen methods of portraying solutions, based on narrative structures such as story-boards and video-sketches, with schematic comments. These consist of a system of arrows and reference symbols, linking images to concepts and comments that aid and hasten comprehension.

How:

Targeted annotation is used to aid and enhance understanding of a solution, thanks to comments which refer back to the original principles (such as the guidelines for sustainability), to the summary of its underlying concept (by means of a system of concise definitions), and to the nature of the intended user (alluding to the manner of being and doing required). It does this in a concise way, allowing the viewer to read the service at different levels, helping him to elaborate and grasp the salient elements, and in so doing stimulate critical attention. This lends itself to a fast 'visual' reading level.


MOON BEE JEWELLERY
3 DOZEN CLOTHES PEGS
SMOOTH FINISH

Design workshop: a methodology for generating new ideas, and catalysing existing ones

Ezio Manzini

In the toolbox for strategic design, and also for design for sustainability, the generation of new ideas through the organisation of design workshops is a commonly used methodology. These are usually short term, intensive exercises, carried out by people interested, but not necessarily expert, in the theme. Their main objective is to stimulate a multiplicity of ideas that are both original and capable of producing a picture of what 'fresh minds' can think up and put forward on a given theme.

Workshops and design research

As we have said earlier (see Introduction and Chapter 3), the research this book is based on[1] used the same design workshop methodology, although distinct from other applications in two important ways:

» The first concerns the specific details of the project requirements – participants were asked to put forward sustainable solutions for an urban environment, giving precedence to those which seemed more sensible and/or interesting (rather than to those which, in abstract, might seem newer). This meant that the young designers involved acted like antennae receptive to ideas already circulating; like catalysers to those that seemed to them more interesting. They thought them through, adapting them to the specific characteristics of the place, enriching them with new possibilities and, finally, translating them into concise, communicable proposals.

» The second distinguishing feature is both qualitative and quantitative. Fifteen workshops were set up in the course of this exercise. Altogether, 400 people of ten different nationalities were involved. We feel that in this case, quantity has generated a new quality: if a design exercise on a given theme is proposed with these characteristics, involving so many and so many different kinds of people, then its results can be seen as an enormous, multi-faceted enquiry into what has been thought of to date, and internationally, about the issues of everyday life, the city and sustainability.

In other words, these distinctions together make it possible for the results of these workshops to be read in two registers: one, as a catalogue of cosmopolitan ideas, which presents 72 promising solutions for sustainable everyday life; and the other, as a description of the state-of-the-art on this theme: the point we have reached in the social learning process towards sustainability.

Operational details

The workshops were carried out between the summer of 2001 and the autumn of 2002. They took place in China, Korea, Japan, Canada, the USA, Brazil, India, France, Finland and Italy. They all had the same theme, the same structure, and the same format as far as the results are concerned. Namely:

1 This research programme was set up by INDACO, first in collaboration with the Hong Kong Polytechnic University ('Hong kong - Mainland China Network on Design for Sustainability': a research project funded by the Hong Kong Polytechnic University. Research activity began in 2001 and has been developed in the framework of a joint programme with DIS-INDACO, Politecnico di Milano, Italy, and with Hunan University in Changsa, China) and later with other design schools throughout the world (A global network for sustainability: an ongoing programme of activities promoted by the DIS-INDACO, Politecnico di Milano).

» The common theme was, ‘Sustainable solutions for everyday urban life’. The outline of this theme was presented with some reference to local characteristics, but without ever presenting the results of similar workshops.
» The structure was of an intensive workshop lasting 2-3 days (plus the time necessary to complete the visualisation of results and edit the written parts). Each of these saw the participation of 25-30 young designers (students, researchers and, sometimes, professionals outside the university) divided into five groups.
» The results were presented in a format common to all: a poster giving a succinct vision of the solution (presenting it in a single written-graphic image), a story-board of the solution itself and a card with a concise description. The description included the question to which the solution should be the response, the main characteristics of the solution itself, its motivating factors, and the advantage it could generate for the user, for society, for the environment and for its promoters.

Participatory scenario building

François Jégou, Joëlle Liberman

AN INTERACTIVE PROCESS

The work presented here describes the application of a methodology of interaction with users which can be described in its entirety as participatory scenario building. This contribution, in particular, deals with how to 'stage' solutions and test them with (potential) users. This activity constituted an important part of the building of the sustainable city scenarios presented in this book and the associated exhibition. Specifically, the six multi-service centres and the related solutions proposed in chapter 5 were discussed with a selected group of interlocutors.

Participatory design and scenario building

Starting with a first showing of some of the scenarios, a process of participatory design was begun, both to elaborate on the scenarios viewed with the users and, at the same time, assess the impact they might have on a wider public.

This was carried out in two stages. First, four users discussed one multi-service centre (see chapter 5), then eight users in four different cities (Chicago, Hong Kong, Brussels and Milan) together discussed and analysed the six multi-service centres put forward.

The aim of the first stage was above all to understand whether and how users were able to imagine

Figure 1. A process of on-line conversation with eight users situated in four different cities enabled us to verify how the proposed solutions were perceived by people with different socio-cultural profiles. Technically speaking, a system of webcam and shared screens allowed us establish contact with users at a distance, to discuss the proposals and observe their reactions.

externalising some domestic functions to a neighbourhood service centre and, following on from this, to stimulate reflection on their own current living habits.
To this end, a dialogue procedure was set up which invited users first to explore and reconstruct their own behaviour patterns; for example, how they organised food preparation, shopping, family meals, meal preparation and so on. Given this framework of consolidated activities, they were shown a series of sequences presenting the proposed solution. In our example case this was the food atelier. They were encouraged to go in, explore the various services offered and imagine how they themselves would be able to use them.
In the second stage, each of the six service centres were considered in different socio-cultural contexts (Chicago, Hong Kong, Brussels and Milan). During a dialogue at a distance, lasting about two hours, users were able to 'visit' each of the six proposed centres and choose from the solutions offered. Then they were asked to imagine how their own everyday lives could be reorganised.

A travelling international *focus group*

The dialogue described here expresses the essence of the exhibition Sustainable Everyday, to which it also contributed. Indeed, this discussion of the scenarios and their respective solutions constitutes the first step in the wider dialogue that will take place with the public at the exhibition. The activity of participatory design described here somehow anticipates the visitor's progress through the promising solutions he is shown, to be revised as he likes, giving rise to personalised stories.
In this sense, the moment when solutions are presented to the public at the exhibition prolongs the initial participatory design activity. It generates a sort of enlarged focus group in which vast numbers of people (in theory all the visitors to the exhibition) will be able to express their opinions on the proposed solutions and on the ways of life they imply, while

Figure 2. Processes of participatory design are based on more sophisticated models of dialogue with users than those carried out in traditional market research procedures. In this case we find a triangular dialogue between a client/user, a facilitator/interviewer and a promoter/designer of the proposed solution. The dialogue takes place according to a fixed procedure: first the promoter 'sells' the service to his potential client, then the way the service is provided is discussed with the facilitator and finally the user and his ideas are noted (by means of his own personal story board).

taking into account their own individuality and the characteristics of their particular living context. All these contextualised opinions put together, considering the future itinerant nature of the exhibition, may in time constitute an interesting source of information on the social acceptability of this sustainability scenario and its possible variations.

THE USER POINT OF VIEW, AND ITS DEVELOPMENT

The co-elaboration of the scenarios traced here cannot in itself be considered a methodology for the evaluation of the scenarios themselves (the user sample was not sufficiently representative in number or type to constitute a real base for qualitative examination) – it should simply be considered a process of participatory design. In this framework, the users involved are not seen as the expression of a group, but as individuals, with their own individual makeup. In other words, this is closer to ethnographic studies than to those of a statistical nature usually used in marketing.

Each subject is considered in relation to how, given his individual characteristics, his behaviour could be influenced by the proposed solutions (rather than in relation to how representative he is of other users). By comparing normal user behaviour with his own projection into the scenarios he is shown (with a sort of 'subtraction' to filter his observations of the part most closely tied to his personal context, and bring out the more general aspects) he can tell us something about the quality of the scenario considered and its internal consistency, and from here start evolving it towards new, more solid forms.

'Projections' into new scenarios

To begin with, it is necessary to introduce the context of this participatory design project (especially with respect to the way the scenarios have been portrayed) and to the profiles of the users interviewed (especially their level of environmental awareness and the differences in their living contexts).

Food atelier ı Food subscription

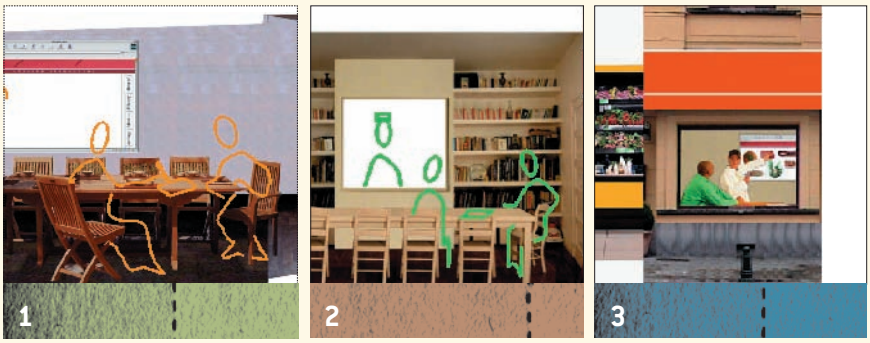


Figure 3.
The scenarios and the solutions which form them take material shape through their visual representation. This is the central objective of the participatory design process we are referring to: an exploratory process that moves interactively from the visual scenes offered, to user reaction and the modification of the visual representation itself. Particular techniques of storyboard and video sketches combine the proposals' considerable 'ability to stimulate', with their necessary 'flexibility of representation', that is, the need for them to be modified easily in response to suggestions by those interviewed. In the pictures, the food atelier offers a 'food subscription' based on a specific programme for each client (version 1). At first the solution also offered the advice of a dietician (version 2), but later this particular proposal was abandoned, on the grounds that it gave the solution itself a distinctly medical slant (version 3).

[1] A localisation process similar to the one proposed here has already been put in action by many service societies (like electricity, telephone and public transport companies) that tend to open commercial spaces to appear more visibly on the market and make their service offers to clients more concrete.

Models of scenario presentation/portrayal

The scenario proposed is of a sustainable city, seen as a multi-local system and presented through solutions provided by six neighbourhood multi-service centres (see chapters 4 and 5).

The nature of each centre and the set of solutions they offer are different. Just as different are the modifications they call for to a given way of life. The food atelier and the handyman shop, for example, appear as externalisations of functions associated with food preparation and do-it-yourself, now normally carried out in the domestic space. On the other hand, the connectivity club and the microclimatic greenhouse propose bringing some activities, now normally carried out at a distance from home, such as work, or certain leisure activities, nearer to home. As for the energy workshop and the mobility agency, they introduce into the domestic sphere new questions of energy saving and the optimisation of transport in the city.

Finally, some centres look original: hybrid places appearing as a new mix of situations already familiar to the user. The food atelier combines a small corner shop with the functionality of a supermarket, a cookery school and a neighbourhood restaurant. At the other extreme, the energy workshop, which is the realisation of energy saving in a commercial space, does not recall anything familiar. It looks more like the development of a series of functionalities collected into one space to make them more visible (but which could also be accessible at a distance)[1]. The use made of each centre reflects this diversity. The energy workshop becomes useful thanks to its check-up, demonstration and training functions, whereas the food atelier suggests various uses of its own as a physical place endowed with its own particular liveability.

Perceptions of the environmental dimension

The proposed scenarios are presented as alternatives which aim to reduce environmental impact and regenerate the social environment. The users, who generally accepted that environmental pressure is negatively influencing their everyday lives, tended to react to the solutions proposed by referring them to their own present living contexts. More specifically, the changes that could be required by the environmental question are perceived and motivated by the users themselves in three ways: the possibility of economising financially, of obtaining additional

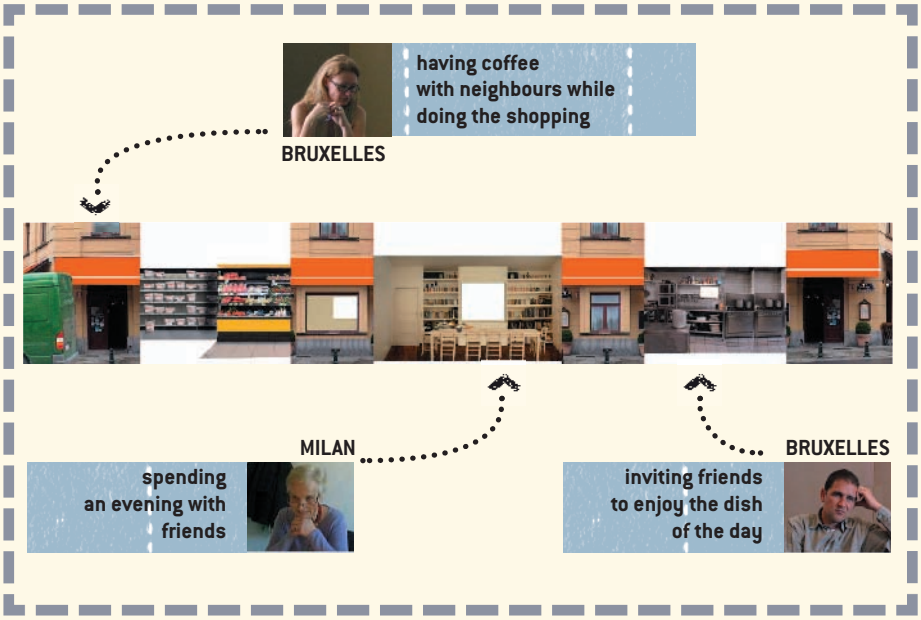


Figura 4.
The food atelier is a hybrid place which stimulated interviewees to imagine their own possible actions there, as often as not different from the three solutions illustrated.

benefit, or of returning to what is considered to be 'traditional common sense'. For example:
» The question of energy immediately makes the users think of the progressive rise in prices over the last decade, and the solutions put forward by the energy workshop are above all seen as a way of saving.
» The intensified use of a commodity and the use of a previously little or badly-used resource is seen as added value. This applies to the connectivity club that offers work stations for use by humanitarian associations after office hours. The 'regular' users of these stations see this as an added social and environmental benefit that does not reduce the quality of the office's normal use.
» All the proposals that go against excessive consumerism are favourably perceived. For example, the handyman shop is regarded positively when it puts users in a position to repair objects. It is a reaction against a sort of saturation in a throwaway world. This is quite apart from the fact that it could effectively introduce new methods of object maintenance.
The common element of these positions is an attempt to discover how can we achieve the same level of performance in the most environment-friendly and least costly way possible? In this framework, the projection of users into the suggested three basic behaviour patterns (Quick, Slow and Co-op) shows different possible mechanisms.
In the Quick model, the environmental dimension is hardly perceptible because it is bound to effects of scale and product system reorganisation which do not come into the user's everyday experience. Such solutions are consequently perceived as 'complete solutions' in an economic sense: is the offer right for me? If so how much does it cost?
In the Slow model, the environmental dimension is an integral part of the search for quality

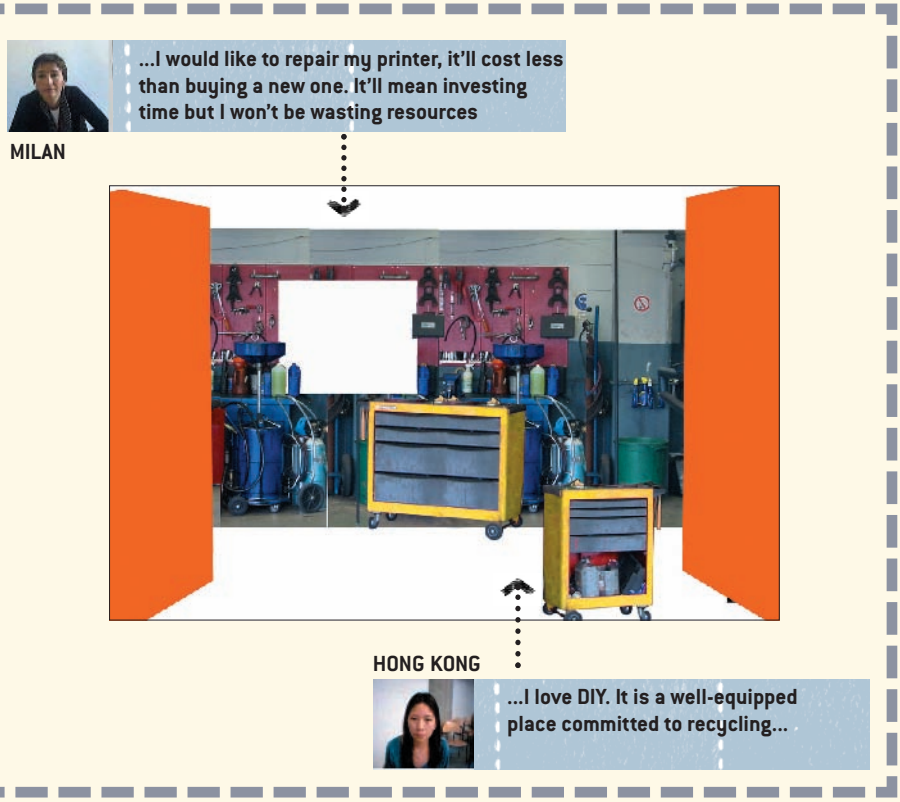


Figure 5.
The reactions awakened by the 'object clinic' in the handyman shop are typical of the attitude of many users interviewed when faced with growing environmental demands: they appreciate being in a position to intervene in their own domestic environment (re-appropriation), to have access to better equipment than is normally available for domestic do-it-yourself (sharing), and to benefit from individual assistance if and when necessary (dedicated service).

that the model proposes: the Slow solutions are made for enthusiasts who dedicate time in order to achieve quality results from their own precise choice. The environmental dimension naturally fits into this search for quality without requiring any particular behavioural changes.

Finally, in the Co-op model, the social regeneration effect it highlights echoes the lack of socialisation in our hyper-individualistic society. The solutions associated with this model are therefore perceived above all as opportunities for meeting people and making friends. This is quite apart from the benefits in terms of sharing and exchange which they can bring.

Different perceptions for different urban contexts

The solutions put forward in the multi-local city scenario focus on the environmental problems of a densely populated urban centre. In this framework, the differences of context between Hong Kong, Chicago, Milan and Brussels affect the reactions of the users interviewed, and sometimes in a significant way.

The solutions put forward by the mobility agency appear closer to the expectations of mobility in suburban areas, where public transport is not sufficiently dense to be efficient, and where above ground circulation is fluid but not fully exploited. In this case, some hybrid solutions of personalised collective means of transport with shared private cars, seem potentially more attractive.

The microclimatic greenhouse is the proposal most sensitive to the type of urbanisation and especially to the extension of green spaces inside the city. Its existence is important in contexts which are characterised by medium height, vertical building where collective green spaces are quite rare: here the number of inhabitants who could benefit from the new proposal is compatible with the limited dimensions of a roof garden. According to the availability of green spaces, this proposal is perceived as an extension of a private balcony or as a green urban area, able to provide symbolical contact with nature.

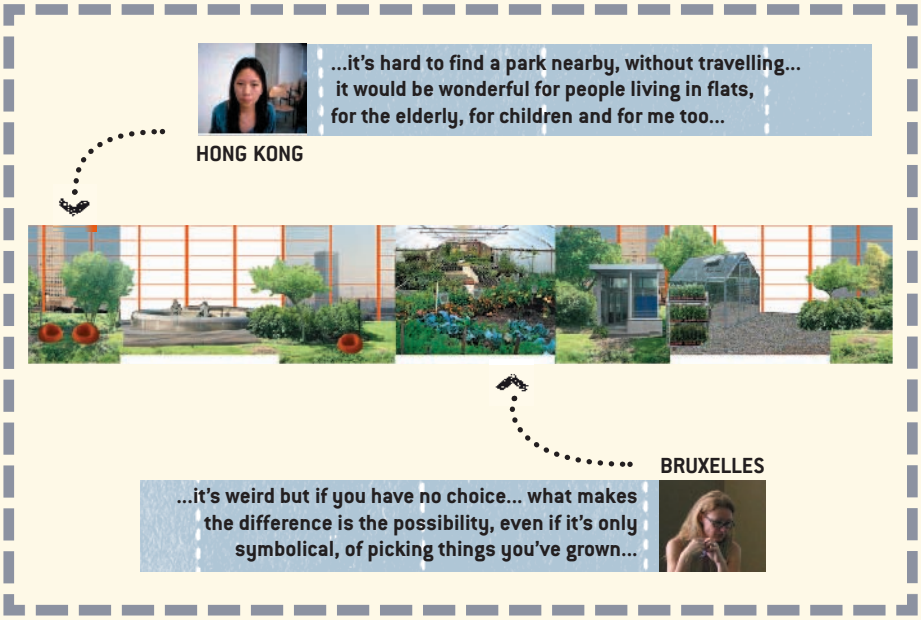


Figure 6.
The microclimatic greenhouse proposal depends, more than in other cases, on its urban context. It was seen as a possibility for contact with nature in Hong Kong, as a pleasant semi-public place in Chicago and as a psychological expedient in Brussels. It responds, therefore, to a more general expectation of symbolic re-appropriation of nature, as well as to a widespread lack of public greenery.

The recomposition of personal life scenarios

The last part of this contribution highlights the way interviewees tend to recompose their own life scenarios from the proposed solutions. In particular, what is perceived as close or distant from their present way of life; what changes they would make first and most easily; and from here, what image of the multi-local city scenario emerges.

Technical-organisational context

Presented with the proposed solutions, two issues emerge particularly clearly: the extension of the domestic space and control over everyday life.

The very nature of the extended home scenario, which leads to the concept of neighbourhood multi-service centres, induces a redefinition of domestic space. It is not simply a question of meeting the needs of everyday life by using a service centre and then taking everything home. It is a question of how we can feel at home in these places. Or at least, of how we can transfer part of our domestic lives to them.

The present dichotomy between private, domestic space and external, public space is clearly delineated and sometimes strongly vindicated. However, the idea of an intermediate space, which we can appropriate for a time, is gaining consensus among users. In this way the handyman shop can become the place for the work we cannot do at home. The food atelier can accommodate parties and large family reunions. The microclimatic greenhouse and the connectivity club can become the places where friends or families can be together for leisure or study evenings.

On the other hand, taking the environmental issue seriously makes us think it necessary to face the greater complexity of the systems our everyday lives are based on; and so, the idea that we need minute organisation, an almost obsessive control over the domestic space. The reactions stimulated by the energy workshop, for example, are characterised by this ever

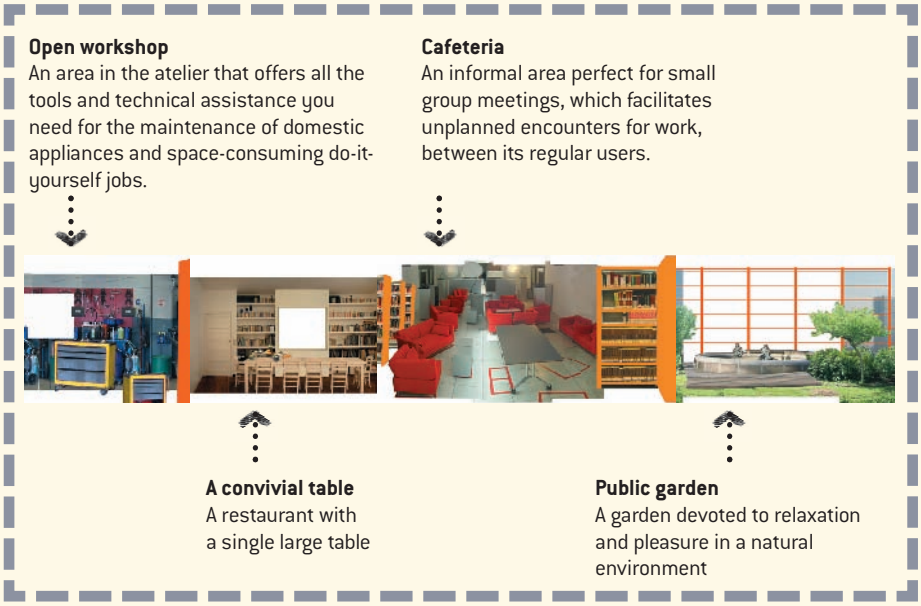


Figure 7.
Among the various multi-service centres, seen as places where domestic activities are externalised, some seem more readily accepted than others. They are: the handyman shop for do-it-yourself when there is not enough space at home, the food atelier for organising parties and meetings with friends, the microclimatic greenhouse and the connectivity club for spending an evening with the family.

present demand for efficiency. The smallest action in our daily lives is questioned – the possible energy consumption of every window, light-bulb and domestic appliance is considered. The same latent worries appear in the mobility agency related to movement around the city, or in the handyman shop for the maintenance of the house and objects.

Social context

All solutions that have a socialising element meet with approval. It is highly likely this is due to a desire to counterbalance the predominant individualism, mixed with a sort of nostalgia for forms of socialisation found in traditional societies. In any case, the type of socialisation that emerges from dialogues with users is based on two fundamental conditions: a mediation of interpersonal relations and a clear identification of personal benefit within a collective benefit.

» the solutions based on exchange and sharing send us back to the question of the trustworthiness in interpersonal relations. Starting from a basic orientation towards efficiency of service, users expect solutions that work: if I count on my neighbour to get to work every day, will I be able to count on his punctuality? If he falls ill, how would I respond? Do I have another alternative? Behind these questions there is clearly a demand for a 'professionalisation' of social exchanges. The multi-service centres could respond to this demand in an important way by organising informal exchanges in a professional-style service framework. For example, the handyman shop certifies skills in the neighbourly interventions it mediates. The mobility agency organises transport systems, based on mutual help, but immediately substituted by professional services when necessary.
» the involvement of individuals in collective actions is conceivable when the personal benefit is clearly identifiable. In a service exchange or in the sharing of resources, the transaction

Figure 8.
The acceptability of the Co-op model sends us back to the lack of socialisation. In this framework it depends heavily on the possibility of managing informal relations as if they were professional: the handyman shop must guarantee the trustworthiness of the 'neighbourhood help' it promotes; the mobility service must provide alternatives if the car sharing system fails.

must be clear. For each action requested there must be a corresponding reciprocal one. This model of exchange is appreciated more if and when some third entity administers its equity.
Conversely, investment in collective action without a direct personal return is seen as more difficult to accept. The proposal for a direct relationship with producers inside the food atelier is highly appreciated, while involvement in local purchasing groups is considered by the users as beyond their current interests. In the same way, energy saving gives individual and collective benefits which seem to vanish with the prospect of being involved in the organisation of activities on a neighbourhood scale.
Furthermore, the organisation of local purchasing groups for the food atelier or of a management committee for the auto-production of energy, inside the energy workshop, seem to call more for professional activity than to the personal involvement of volunteers.

CONCLUSION, IN PROGRESS...

» How is the proposed change perceived? How is it realised?
In general, those interviewed reacted favourably to the proposed solutions. They rather expect them to be alternatives already available on the current market. In particular, if proposals are complementary to what already exists (the food atelier as an 'empowerment'/extension of my kitchen…) or as solutions oriented towards specific groups of users (the mobility agency for tourists, or for the elderly...), they are not perceived as particularly disturbing and appear wholly conceivable even in the near future.

» How can we turn domestic space into something like the 'extended home'?
The personal story-boards devised by interviewees show a certain nomadism between the various multi-service centres (they move from one to another during the day). Clearly the need for a familiar, reassuring place to fall back on remains ever present, but certain typically domestic situations are moved to other places (the evening spent in the semi-private garden or in the kitchen club around the food tasting table).

» Under what conditions do these solutions become acceptable?
A great fluidity of access is required for the services proposed. In particular, solutions are viewed positively when they maintain a personal relationship with the manager. When this is not given, for example, because the number of clients has increased, the multi-service centres seem to lose their attraction.

We need to develop enabling technology that makes a quasi-professional organisation possible. Environmental pressure requires the systems on which we base our daily lives to be minutely controlled so, in order to be manageable by the user, these systems must be well-sup-

ported by appropriate technology.
The economy-time-work relationship needs to be redefined. Interviewees think in terms of a relationship between work time, free time and remuneration that is, explicitly or implicitly, prevalent today: either I am working (and I am paid for it) or I am enjoying my free time (and, if anything, I will pay to be entertained). This binary concept of the value of one's own time makes it difficult to see the value produced by some forms of co-operative and voluntary activity where useful work, ethically motivated activity and entertainment are intertwined in different, original ways.

Figure 9.
The personal story-boards devised by interviewees show a certain nomadism between the various multi-service centres.

A participatory exhibition

Paolo Rosa for Studio Azzurro

In the age of virtual worlds, media systems and immaterial objects, proposing an exhibition as a vehicle of knowledge – with all its physicality, bulk, clutter and machinery – not only makes sense, it is a necessity. It is a real 'place' where the spectator 'enters' into content, explores, investigates; where the physical, relational part of him comes into play; where he can see the issues, sharing and discussing them with other participants. If we compare this specific quality with other modern instruments of communication, we soon realise that few of them have the same property of 'sociability', or offer the same opportunity for direct, participatory exchange. Far more often it is individuality that is called for and encouraged, if not actually exalted; an individuality that often slips into media solitude, into the weakness of an idea that is never challenged.

It therefore seemed to us that in the case of Sustainable Everyday, it was necessary not only to give a sense of these imaginary scenarios by portraying them physically, through real dimensions of space and time, but above all to underline those elements that engender levels of interaction and participation; elements of exchange and dialogue that place the public, as far as possible, in the position of 'actors' rather than 'spectators'. These are options which can turn the fixed, defined scenario, as usually 'put on display' in an exhibition, into an open, flexible discussion arena, even though based on established guidelines. They offer a chance to measure your everyday actions with a system of balance and possibilities, where you can add your smallest contribution or your most elaborate idea; where you can place your working tools and your thoughts beside those of many others who have been working with sensitivity and awareness on the same issue all over the world.

Technological tools inevitably come into play, when we talk of interaction. Not only do they become indispensable when setting up the dialogue inside the exhibition, but they are also the metaphor for wider, and in some ways, more worrying dynamics. These systems now regulate our everyday lives and form a horizon where more and more often you are called

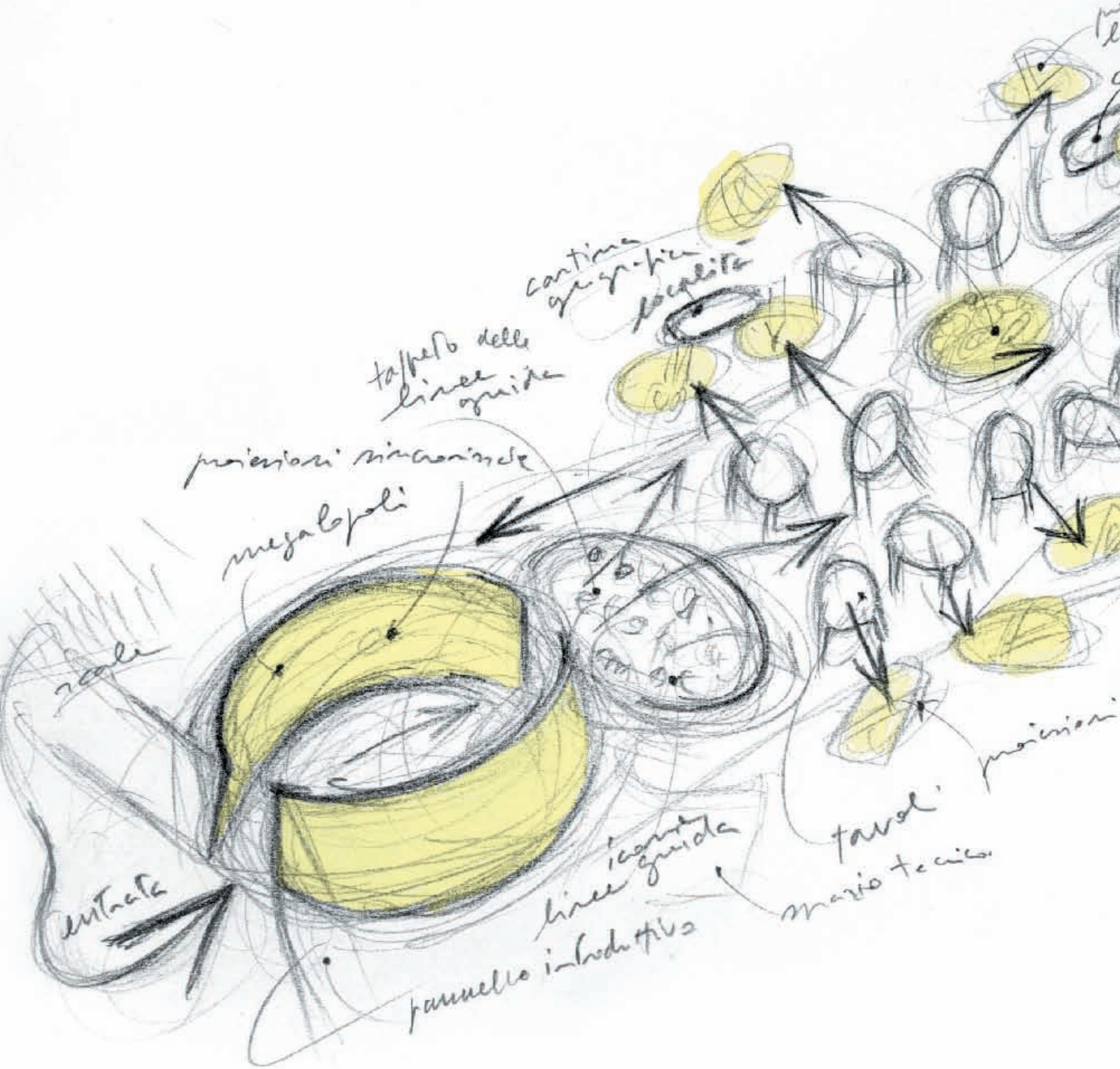
upon to decide, choose and mark out your path interactively. We are increasingly required to turn ourselves into information producers, bits, which as we know are the raw material of our age. In our everyday existence we become consumers of goods, materials, images, even producers of data, impulses, approval ratings and desires that persist, build up and are in turn used (how and by whom deserves further reflection). We can imagine just how much responsibility, how much awareness, is required to play the role of producers in a sustainable world.

So this exhibition attempts to focus on this level as well as the more obvious ones associated with the research project carried out by Ezio Manzini and François Jégou. It is a kind of metatext, or simply an extra chapter in the discussion: enacted, not written.

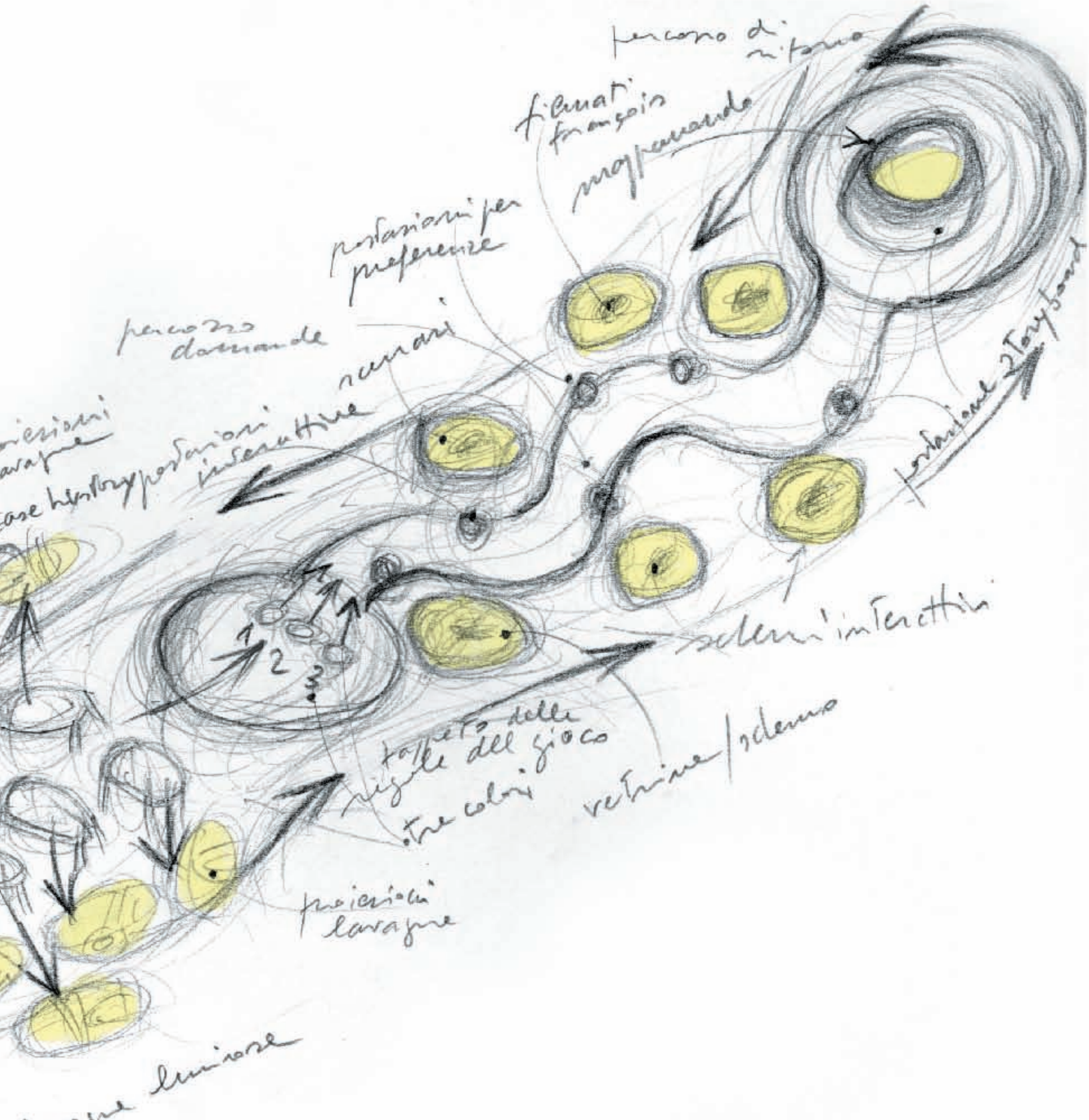
These rapid considerations were made in answer to a question which has accompanied us obsessively throughout the planning of this initiative: how can an exhibition dealing with scenarios of sustainability be itself sustainable?

Of course we set out by eliminating the superfluous; by thinking of a light, economical, ductile, essential, moveable and re-useable display set up; doing without plasterboards and chipboards, plaster fillers and decorations; encouraging the use of friendly, non-invasive materials. All this probably counts, but above all we saw the answer in the shared, participatory quality of the exhibition: in staging the way we arrived at the hypotheses, and in looking at the recently abandoned workbench rather than the framed work of art; in the exhibition's capacity to invite dialogue with the public, encouraging personal reflection, and taking the opinions of the public into account; in collecting and activating them, not for a static use, but to stimulate the more meaningful, more unpredictable parts to which each of us can contribute. Finally, in being an exhibition that also talks about itself and its own ways of communicating, so that it can make a contribution consistent with the rest.

This was our approach. As Studio Azzurro, the attempt has undoubtedly taken us to the heart of our work, which has for some time been based on the more social, behavioural dimensions of interactivity. Strongly bound to the idea of poetic space, it does not lose sight of its more immediate, communicative 'applications' such as those of a thematic exhibition.



cartina geografica
tappeto delle linee guida
proiezioni sincroniche
megalopoli
scale
entrata
icona linee guida
pannello introduttivo
tavoli
proiezioni



percorso di ritorno
filmati françois
mappamondo
postazioni per preferenze
percorso domande
numeri
postazioni interattive
postazione storyboard
schermi interattivi
tappeto delle regole del gioco
tre colori
vetrine/schermo
proiezioni lavagne
lavagne luminose

Compiling a bibliography and list of websites for Sustainable Everyday is a complex enterprise: when, as in this case, the theme of the book straddles normally separate problem areas (technical, social and cultural issues) and widely differing approaches (theoretical, project and operational), we seriously risk being overwhelmed by information. To avoid this we have to make our way through this borderless universe of possible references by adopting, here too, a 'project attitude'. In other words we have to set ourselves an objective and draw up guidelines to achieve it.

In our case, the objective was to offer the reader a reference system, to help him understand where the ideas this book puts forward actually come from, and a work tool, to help him go forward, should he wish, in the research to which this book contributes.

The main aim of the guidelines we used in selecting which texts and websites to include was to reduce the number (by defining filters) and increase understanding (by introducing sections that place the books and websites in an intelligible context).

As far as books are concerned, we chose to indicate only those potentially more accessible (articles, working materials and technical documentation, though important in compiling the book have not been included), and relatively recent (with the exception of certain 'classics' which for various reasons we wanted to name). As we said, the titles are organised into sections, each of which outlines a potential reading line.

Although some of the works could have been included in more than one section, here we have linked them only to the section with which they have been principally linked when compiling Sustainable Everyday. It is obviously not an exhaustive list (the section 'Reading the present' especially is only an indication of texts that, more than others, have stimulated and directed the authors).

As far as websites are concerned, the overall considerations are the same as for the book, with the additional problem of an even greater number and time variability. This sphere of reference has also been organised into sections. To be precise, into two large sections (Organisations and Actors and Information and Instruments), each divided into important sub-sections. Here too, some sites could have been included in more than one section, but we only put them in the one which seemed most representative. Those included deal with general issues and /or can act as links with other more specifically oriented sites.

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- Cities: places, communities and urban sustainability
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- Looking at the present: ideas for the changing world

Towards sustainability: an overall picture

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Website list

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- Newsletters
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ORGANISATIONS AND ACTORS

International organisations and institutions

www.un.org - United Nations (UN)
www.un.org/esa/sustdev - United Nations, Division for Sustainable Development (UNDSD)
www.uneptie.org - United Nations Environment Programme, Division of Technology, Industry and Economics (UNEP DTIE)
www.unesco.org - United Nations Educational, Scientific and Cultural Organisation (UNESCO)
www.undp.org - United Nations Development Programme (UNDP)
www.wri.org - World Resource Institute (WRI)
www.wbcsd.org - World Business Council for Sustainable Development (WBCSD)

Environmentally focused institutions and research centres

www.polimi.it - Politecnico di Milano, I
www.wupperinst.org - Wuppertal Institut, D
www.insead.fr - INSEAD, F
www.shu.ac.uk - Sheffield Hallam University (SHU), UK
www.grat.tuwien.ac.at - GrAT, A
www.tno.nl - The Netherlands Organisation, NL
www.cranfield.ac.uk - Cranfield University, UK
www.ineti.pt - Istituto Nacional de Engenharia e Tecnologia Industrial (INETI), P
www.jrc.es - Joint Research Center – Institute for Prospective Technological Studies (JRC-IPTS), E
www.iiiee.lu.se - International Institute for Industrial Environmental Economics (IIIEE), S
www.seri.at - Sustainable Europe Research Institute, O
www.io.tudelft.nl/research/dfs - Design for Sustainability of TU Delft, NL
www.fms.ecology.su.se - The Environmental Strategies Research Group, S
www.cirps.it - Centro Interuniversitario di Ricerca per lo Sviluppo Sostenibile, I
www.sei.se - Stockholm Environmental Institute, S
www.seib.org - Stockholm Environmental Institute Boston Centre, USA
www.product-life.org - The Product Life Institute

Design focused institutions, research centres and organisations

www.dis.polimi.it - Design e Innovazione per la Sostenibilità (DIS), Dipartimento INDACO, Politecnico di Milano
www.polimi.it/rapirete - Laboratorio di Requisiti Ambientali dei Prodotti Industriali, Dipartimento INDACO, Politecnico di Milano
www.cfsd.org.uk - Centre for Sustainable Design, Surrey Institute of Art and Design
www.slowfood.it - Slow Food
www.todomundo.org - Todomundo
www.triennale.it - Triennale di Milano
www.doorsofperception.com - Doors of Perception
www.eternally-yours.org - Eternally Yours
www.o2.org - O2 International Network for Sustainable Design
www.greenmap.org - Greenmap System
www.econcept.org - Econcept
www.design.philips.com - Philips Design

www.interaction-ivrea.it - Interaction Design Institute di Ivrea
www.solutioning-design.net - Solutioning
www.piudesign.net - Più Design

Environmental and consumer associations

www.wwf.org - WWF
www.greenpeace.org - Greenpeace
www.legambiente.it - Legambiente
www.sifo.no - SIFO (National Institute for Consumer Research)
www.cuts.org - Consumer Unity and Trust Society
www.acu.it - Associazione Consumatori Utenti
www.consumer-aec.org - Association of European Consumers
www.consumersinternational.org - Consumers International: the global voice for consumers

Design schools (network under construction)

www.indaco.polimi.it - Department of Industrial Design, Arts, Comunication and Fashion (INDACO), Politecnico di Milano
www.polidesign.net/mds - Master in Strategic Design (MDS), POLI.design, Consortium of Politecnico di Milano
www.dfschinanet.org - Chinese Network on Design for Sustainability
www.sd.polyu.edu.hk - School of Design – The Hong Kong Polytechnic University, Hong Kong
www.hunu.edu.cn - Hunan University, Changsha, China
www.tsinghua.edu.cn - Tsinghua University, Beijing, China
www.zokei.ac.jp - Tokyo Zokei University, Tokyo, Japan
www.ualberta.ca/ARTDESIGN/ID.html - Department of Art and Design – University of Alberta, Edmonton, Canada
www.artic.edu/saic - The School of the Art Institute of Chicago, Chicago, United States
www.uiah.fi - University of Art and Design (UIAH), Helsinki, Finland
www.design.polimi.it - Facoltà del Design - Politecnico di Milano, Milan, Italy
www.domusacademy.it - Domus Academy, Milan, Italy
www.isdnapoli.it - Istituto Superiore di Design (ISD), Naples, Italy
www.nid.edu - National Institute of Design, Ahmedabad, India
www.esdi.uerj.br - Escola Superior de Desenho Industrial (ESDI/UERJ), Rio, Brasil
www.ensci.com - Ecole Nationale Supérieure de Création Industrielle (ENSCI), Paris, France
www.idas.ac.kr - International Design School for Advanced Studies (IDAS), Seoul, Korea
www.ceu.hu - Central European University (CEU), Budapest, Hungary
www.ds.fh-koeln.de - School of Design - University of Applied Sciences, Cologne, Germany
www.gsa.ac.uk - Glasgow School of Arts, Glasgow, Scotland
www.avu.cz - Academy of Arts, Architecture and Design in Prague, Prague, Czech Republic
http://asp.krakow.pl - Academy of Arts in Cracov, Cracow, Poland
www.artun.ee - Estonian Academy of Arts, Tallinn, Estonia
www.iitd.ernet.in - Indian Institute of Technology, Delhi, India
www2.usp.br - Universidad do Sao Paulo, Sao Paolo, Brasil
www.itu.edu.tr - Istanbul Technical University, Istanbul, Turkey

INFORMATION AND INSTRUMENTS

Databases

www.eaue.de/winuwd - SURBAN - database on Sustainable Urban Development in Europe
www3.iclei.org/iclei/casestud.htm - ICLEI (International Council for Local Environmental Initiatives) case studies
http://europa.eu.int/comm/urban - Database on Good Practice in Urban Management and Sustainability
www.epe.be/workbooks/tcui/part2contents.html - Practical examples from the European Partners for the Environment
www.bestpractices.org - Best Practices Database of UN HABITAT and the Together Foundation
www.bestpractices.at - Best Practices of the City of Vienna
www.agrifood-forum.net/practices/case.asp - Good Practices of the Sustainable Agri-food Production and Consumption Forum
www.sustainable-cities.org/cprojs.html - Sustainable Cities & Towns Campaign Projects
www.codif.it/life99patto/casi_esemplari.htm - Case studies from the Life Project
www.wbcsd.org/templates/TemplateWBCSD2/layout.asp?type=p&MenuId=MTY3&doOpen=1&ClickMenu=LeftMenu - WBCSD case studies under the section sustainable livelihoods

On-line newspapers

www.ourplanet.com - Our Planet
www.ekwo.org - EKWO, environnements, phénomènes & attitudes
www.boiler.it - BOILER, journal of science, innovation and environment
http://wholeearthmag.com - Whole Earth
www.cfsd.org.uk/journal - Journal of Sustainable Product Design

Research programmes and projects

www.hicsproject.org - Highly Customerised Solutions (HICS)
www.pss-info.com/html/st_index.php - Methodology of Product-Service Systems (MEPSS)
fp6.cordis.lu/fp6 - Sixth European Framework Programme
www.cordis.lu/fp5 - Fifth European Framework Programme
www.ihdp.uni-bonn.de - International Human Dimensions Programme on Global Environmental Change (IHDP)
www.suspronet.org - Suspronet: The Product Service Design Network
www.prepare-net.org - PREPARE (Preventing Environmental Protection Approaches in Europe)
www.sdcn.org - Sustainable Development Communications Network
www.fabrikderzukunft.at - Factory of Tomorrow
www.managenergy.net - ManagEnergy

Newsletters

www.uneptie.org/pc/sustain/sc-net/sc-net.htm - Sc.net (UNEP DTIE)
cuts.org/Economsumer-index.htm - Eco-Consumer (CUTS)
www.sustainable.ie/ebulletin - Sustainable Ireland Network Bulletin
www.seri.at/infomail - SERI Infomail
www.ihdp.uni-bonn.de/html/publications/update/IHDPUpdate02_03.html - UPDATE (IHDP)
www.eeeee.net/sd06000.htm - Sustainability Review (Five E's)

On-line services

www.edizioniambiente.it - Edizioni Ambiente, Milan
www.reteambiente.it - Reteambiente, Italy
www.cordis.lu - Community Research & Development Information Service
www.demi.org.uk - Demi: guide to design for sustainability
http://sdgateway.net - Sustainable Development Gateway
www.penrose-press.com/IDD/edu/ricerca.html - International Directory of Design
www.greenconsumerguide.com - Green Consumer Guide
www.sustdev.org - Sustainable Development International
www.e-consapevoli.net - E-Consapevoli
www.eltis.org - European Local Transport Information Service
www.greenprices.com/eu/index.asp - Greenprices

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Istituto Superiore di Design (ISD)
Naples, Italy
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Les Ateliers / ENSCI Ecole Nationale Supérieure de Création Industrielle
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Politecnico di Milano Facoltà del Design Dipartimento INDACO (Industrial Design)
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The School of the Art Institute of Chicago
Chicago (Illinois), United States
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Designers: students taking part in the course held by Prof. Garret Eakin and Prof. Carlos Martinez in 2002z

Tokyo Zokei University
Tokyo, Japan
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Tsinghua University Department of Industrial Design, Academy of Arts & Design
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University of Art and Design (UIAH) Department of Product and Strategic Design
Helsinki, Finland
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sustainable everyday
scenarios of urban life

Ezio Manzini, François Jégou

What might everyday life be like in a sustainable society?
How do you take care of yourself and other people?
How do you work, study, move around? How do you cultivate a network of personal and social relationships and create an undistorted relationship with the environment?
What do the sustainable societies we are able to imagine today have in common?
How wide a range of options do we have open to us on the basis of these common elements?

Sustainable Everyday offers us a state-of-the-art picture based on the answers we are in a position to give to these questions today. It goes on to outline possible scenarios and workable alternatives applicable in the wide, though not all inclusive, field of the *everyday dimension of existence* (the world as we, its inhabitants, see it). Particular reference is made to *the urban environment* (whether historical cities or the up-and-coming new conurbations). It deals with the *future of our domestic lives*, but it does so in a very different perspective from the many examples of "future homes" we are used to imagining. The focus is not on the technology which is to reshape traditional functions, but rather on emerging "living strategies" which are becoming possible and, at least for some, desirable today; different ways of living that arise more from social and systemic innovation than from technological development.
The book, which is also the catalogue for an exhibition of the same name, is the result of an international research programme and a series of 15 design workshops in 10 different countries. They lay out a detailed scenario of sustainable everyday life: a scenario which sets limits and opens possibilities; which raises new questions, offers new solutions and reveals possible, different ways of living. It leaves the reader, and the visitor to the exhibition, space to form his own opinion and make his own choices.

Sustainable Everyday talks about the future using the tools of design: design which, in this case, does not prefigure tomorrow but takes part in shaping it.

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