

Farming Productive landscapes

Following the fundamental criteria for sustainability, many of the winning teams' proposals have integrated food, goods, water and energy cycles into our immediate environment. When pieced together, the general strategies and different specific tactics of each project form a new kind of landscape.



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The essay that follows is made up of these extemporaneous fragments, with strands of text from the winning teams' memorandums intertwining to form a common discourse. It has been written to mimic the way landscapes are created, involving widely differing agents with overlapping interests and aims to create a palimpsest on a page that was never blank.

The Datarock team puts it like this: tomorrow's city does not involve an impenetrable partitioning of activities that are inherited from functional town-planning. Nor is it the sum of neatly arranged elements. Tomorrow's city, the sustainable city, is a network of interdependence between activities, uses and contexts, all interacting through more or less complex combinations. Natural cycles are included in this network, and thus like in the project **Intervalos**¹

(p146) in Reus (ES), Nature is not confined, but transformed and inhabited.

Timothy Morton's seminal book 'Ecology without Nature' (2007) compares this evolution with the process of gender equality. Putting something called Nature on a pedestal and admiring it from afar does for the environment what patriarchy does for the figure of Woman. The paradox first described by Simone de Beauvoir, deactivates any possible active role of 'the second sex' by transforming women that exist in real time and place into fetish objects.

Ecology is not about Cities looking after Nature, but about City and Nature being the same thing. Moreover, in this new paradigm, the romantic view of Nature feeding the City and the fetishism of economic exploitation of rural landscape is substituted by an integrated view of an anthropized landscape.

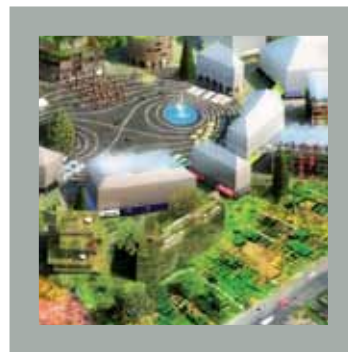
An excerpt from 'View on Color - A World of Folk' (2008) by the visionary and trend-setting thinker Li Edelkoort, is quoted in a proposal for Den Haag. 'Farmers of the future will clothe us, house us, feed us, fuel

us and hopefully even heal us.' (Den Haag (NL), project **Proefituin** (p58). Houses will become farms, not in the traditional way, but by reimagining them around key functions: the supply of basic needs as food, drink, energy and clean water. There will be revelatory developments in agricultural design through using a mixture of recycled and new materials, natural and industrial elements. Cities will not disappear, but by absorbing an agriculture role, they will become greener and take on a natural aspect.

Agriculture

The easiest way to start blurring the border between the rural and the urban is to develop local networks for agricultural production.

For example, locally produced organic vegetables have the potential to provide substantial GHG-savings like in the project in Dietikon (CH) **Urban Composition**^{2/9}(p128) when grown in the right way. Each kg of veg-



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etables from an organic garden could save 0.2-5kg of CO₂eq., the equivalent of driving a car 2-50 km. With potential GHG-savings of this magnitude, it is proposed that a considerable area of available ground be utilized for organic market gardening, organized and operated by the inhabitants, working alongside local schools. The communal organic garden thus has an important, additional social purpose, as a meeting place and as a common project in which people of all ages can participate.

The project **Arable City**³ (p124) in Cabreiro-Cascais (PT) proposes organizing spaces so that they integrate contemporary ways of life with environmental, ecological and sustainability concerns. They should deliver direct, daily experience of greenery, arranged with both functional and aesthetic criteria and yielding corresponding profits and benefits. Green productive spaces articulate the "city", organized into areas of relaxation, leisure and community activities, whilst generating new opportunities for social, environmental, economic and energy development.

Even in extreme climates, like in Vardø (NO) in the project **Repositioning the Remote**⁴ (p24) collective greenhouses can be woven into the residential fabric to encourage Vardø's citizenry to grow their own vegetables.

Production can also develop vertically on the envelopes of buildings. (Reus (ES)/ project **Intervalos** (p146) Built and open areas, public spaces, common green sectors, private areas, cultivated gardens and plantations are linked by a common theme: a productive urban landscape whose winding pathways offer an accessible network of pedestrian pathways.

Animal husbandry

Areas for organic agriculture can also be organized to include animal husbandry. In a project for Graz (AT), **Europ-AE-Park**^{5/10} (p78) a tower-like animal farm houses a redefined pig-city, which combines with cultivation and Green Solar Skin (GSS) technology to create a powerful, productive landmark. It respects the processes of the animal protein cycle, integrates an abattoir with GSS-technology, and re-activates unused railroad tracks to provide livestock and meat transport facilities.



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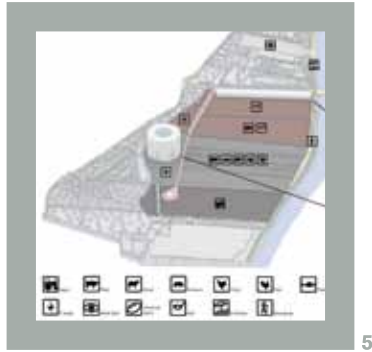


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Wood

At first sight, the **Christina project**^{6/7} (p154) takes a romantic view in Triel-sur-Seine (FR), letting grazing cattle and migrating sheep ramble through the ecological corridor included in the project. However, a number of diagrams explain how the production cycles of animals, water and wood etc, would be integrated *within a space that can no longer be seen as limitless*. Each cycle provides functional opportunities - hunting, spa,

workshops, etc., and fertile combinations are proposed - hotel plus water tower, production plus commercial, etc. Wood is proposed as the main building material, with its production cycle fully integrated into the site's public space network.



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The organization of public space around wood production also forms the leitmotif of the proposal for Tallinn (EE) **Green Cement**⁸ (p88) where differences between various parts of the city are reinforced by filling undefined areas with woodlands. Exactly which urban areas are designated as woodland, and vice versa, will depend on future trends. Thus, the city will have room to expand and contract, all within the same organic system. The woodlands provide the 'Green Cement' that bind together Tallinn's fragmented structure, bringing consistency to the city's urban fabric.

Fish

Tallinn also offers a particularly strong proposal for a productive landscape centred on fish production. It expands gracefully from the waterfront below the medieval city (SD342 Tallinn/Salmon Dance), as a buoyant, fluctuating field of both housing and productive spaces, public areas, walkways and underwater nets, which could even become a major tourist attraction. Its main purpose is to stimulate the development of a non-determined public space, woven in strips that link water and soil. The proposed sustainable aquaculture will provide not only a new seabed ecosystem but a source of life and nourishment for humans. As the user programme weaves itself into various stages of the production cycle, marine life in semi-natural environments will become accessible to visitors, even beneath the waterline.

The Aquafarm in Graz (AT) in the project Europ-AE-Park (p78) is half submerged, with the inner circular area designated as an

"underwater outdoor space". The outer ring works as dike, with various species of fish raised in discrete segments while a building will accommodate a fish restaurant, secondary rooms and technical infrastructure for maintaining the water quality of the dike.

With climate change on the horizon, along with the evolution of the oil economy as world reserves decrease and the resulting change in transportation patterns, the projects for Vardø redefine its northern harbour as a centre for new modes of production, storage and exchange (CW120 Vardø/Repositioning the Remote). In its first stage, an aquarium along the seawall will provide opportunities for aquaculture research and marine preservation via an Arctic Fishbank. Rising sea levels & temperatures will drive aquacultural & hot-house production so that ultimately food self-sufficiency is achieved in this peripheral geography and Vardø will emerge as a centre for ecological preservation, protection and production.



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Water

We have seen that a careful consideration of water cycles can create a number of opportunities for interesting programmes (Triel-Sur-Seine (FR) /Christina (p154)

With water a major concern for most of the proposals we have reviewed, it is relevant to all the previous points.

Water's impact on urban design clearly shows how to bring about the demise of the traditional city-nature dichotomy, and emphasizes the need to integrate purification plants into the design rather than offering them as an infrastructure service. In previous decades the logic was to plan these plants just outside the city but there is no outside anymore. We have now moved way beyond models such as the conquest of the west.

Energy farming

Renewable energy production provides new ways of reading the natural landscape. The force of wind and sun, the flow of water and the heat of the earth are all now made manifest through fields of beautiful machines. We are still learning to appreciate the beauty of white windmills slowly turning their slender, giant arms above the horizon, or the vineyard-like spread of photovoltaic panels over our countryside. But some of the winning teams are now bringing these mesmerizing images into the inhabited landscape of urban parks, or covering proposed buildings with shiny abstract envelopes that can absorb the energy needed to power their murmuring computer systems.



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burning, an almost 100 % renewable hot-water supply can be delivered. By applying relatively new but tested technology, the same panels can be used for cooling in the summer, ensuring year round use.

The GSS Green Solar Skin buildings (Graz (AT)/project Europ-AE-Park (p78), referenced above, redefine the urban image



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Solar energy

The urban quality of the winning proposal for Dietikon (CH) is expressed in the sheer variety of elements with specialized skins and textures in the project Urban Composition (p128).

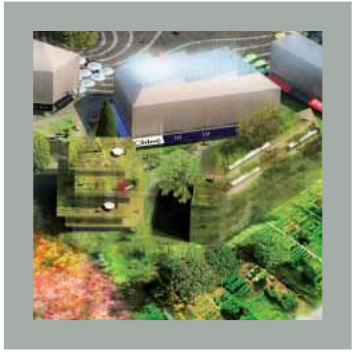
A major feature of this composition is the thermosolar skin used both for heating and for cooling. To use the sun to supply the energy needed for hot water is one of the simplest, cheapest and most efficient renewable energy technologies available today. The principle is to use the sun to pre-heat water for hot water supply and central heating, while a "peakheater" local district-heating system maintains the hot-water temperature the whole year round. Since the district heating is derived from waste

through solar energy production technology and introduce an exemplary sequence - a sort of metabolic chain - into this area of study. The varying functionality of the buildings contrast with their homogenous façade design - a strategy whose strength lies in the ambivalence of function and appearance. While appearance is uniform and function can change, form and spatial expansion are not arbitrary but derive specifically from location and the abstract economy of energy production. This interaction generates a necessary unification of Appearance and Presence but at the same time offers a distinctive element in the respective zonal context. In Deleuze's terms they are unambiguously non-representative repetitions

Co-generation (and free cooling)

A number of teams propose to obtain energy from other production cycles, where it might otherwise be wasted. A frequent strategy involves a biomass generator, using waste from agriculture for the most part. Another strategy involves co-generation, obtaining two or more kinds of energy from the same source, usually recycling heat which would otherwise be wasted. But can co-generation become a driving force in the creation of an urban landscape or a public space?

One example of energy cycles that waste energy involves datacenters in Vardø (NO) is the project **Datarock**¹¹ (p24). Datacenter must maintain its servers at a steady temperature of around 20° C, and without a cooling system, temperatures easily reach 50°C in less than an hour, resulting in overheated servers and breakdown. This is the reason why cooling systems operate continuously. The electricity costs are colossal - all the more so when the datacenter is located



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in a hot region - and need to be reduced. Google is currently considering setting up its datacenters out at sea, so the seawater can be used for cooling while marine currents can generate electricity. Microsoft is considering cold regions like Iceland or Siberia with the same cooling potential in mind and in 2008, Google chose to install a new datacenter in Finland rather than in Spain.

Free cooling involves cooling down premises by using the cold outside air without artificial air-conditioning.

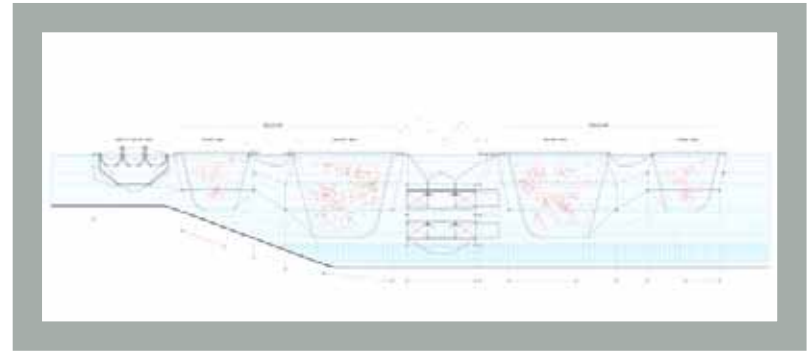
The Datarock team proposes to install datacenters in Vardø - a cold region - and heat public spaces with the warmth produced by the datacenter. Better still, this could transform industrial activity into a tourist attraction with five glass houses, totally glazed indoor public spaces, set on the axis of the existing road network. Sheltered from the wind and elements, these spaces are heated by the datacenter via *geothermal* exchange. Deliberately identical, these strict and majestic glazed spaces stand between existing industrial buildings, right in middle of their obsolete chaos. It is this very accumulation, this historical juxtaposition, that will give birth to the new image of Vardø. Side by side with existing buildings, the glass spaces will host or lead to a range of new programs: a swimming pool, an aquarium, dwellings, etc., allowing outstanding heating performance. They are neither streets nor access halls but urban interstices in the harbour area. Inside, whatever the season, you can enjoy temperate, open-air life.

Wind

We have seen how the Salmon Dance project re-defines a fish farm as a public space, but there is another major element in their reconfiguration of the landscape along Tallinn's waterfront (EE) in the project **Salmon Dance**¹² (p88).

When the wind is the main architectural feature, it generates a new calligraphy of space. The layout and shape of housing blocks are designed to expose the greatest possible surface area on their windward side. The aim is to create two different functional areas: built structures with one wind-gaining surface that also serves to protect public spaces on their leeward side.

The wind-energy devices are the constituents in a parliament of winds, a silent revolution brought about through principles of wind micro turbines. Flying wind farms, like kites rooted to the ground; micro turbines in crevices and nooks; skins: the research centre manages each of those elements and



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is responsible for the upkeep of the wind park, a field trial of prototype micro wind turbines.

1500 km further north of the Baltic on the remote Arctic shores of Vardø, a few decades on from the present (Vardø (NO)/ project **Repositioning the Remote**¹³ (p24)

Norway's post-oil economy will need to establish alternative, localised and diversified modes of production to maintain the qualities of remote urban life afforded in the present through oil production and transport. Energy, generated from the powerful offshore Arctic winds, will sustain local requirements with surplus power distributed south into the European Grid.

tion' is one of the main driving forces behind all these proposals. This is important, as sustainability may well be a question of visualization.

There is a small proportion of the population who still believe that the earth is flat. While the roundness of the earth is not something we can experience directly (as the amusingly ironic members of <http://theflatearthsociety.org> like to point out with their mock-serious approach), the vast quantities of images of a round earth flooding the media every day have convinced the vast majority of a fact which is easy to prove scientifically but is difficult to see with the naked eye.

The effect of carbon emissions is just as difficult to see as the curvature of the horizon, and, similarly, a certain proportion of the population remain in denial of its effect. Even worse: a large number of people are aware of the proofs of the terrible effects of carbon emissions, yet still turn the air conditioning on in the summer.

Visualizing the consequences of our acts must be an absolute priority if we are to change our habits.

One important course of action is to visualize the resources used in our day-to-day lives. In a proposal for Forchheim (DE) **Local Land Art Identity**¹⁴ (p20), a landmark installation in the complex will show the ongoing management of resources (solar energy, geothermal, biomass, wasted water...) so that people are aware of it. Such info-energy landmarks will form new urban and social reference points in Forchheim and the region. It is well known in the automobile world that information on fuel consumption has a direct impact on the choices made by prospective buyers, and when fuel consumption is displayed in the car's dashboard, most drivers develop a natural eco-driving instinct.

Visualizing resources also means bringing to light the "invisible" networks that attempt to

Visualization

All the above examples deal with energy, water, agriculture, fish, pigs, industry... and the beauty of productive landscapes. The classic definition of landscape involves the presence of an observer, a point of view. This combination of 'viewing' plus 'produc-



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create an illusion of Nature, but are in fact built on an ever-growing mesh of ducts, cables and roads. The romantic ideal of the suburban house is conveyed so powerfully in this way that we tend to forget the problems of thousands of engineers, technicians, civil servants, inhabitants and shopkeepers involved in making it possible (Bruno Latour and Emilie Hermant 1998. *Paris ville invisible*). A passive house may not use fossil-fuel energy to stay warm, but it is not sustainable if you need three cars and a road system for the dwellers to reach it every day. (Walter Unterreiner dixit, lecture in June 2009)

Beauty

It is also essential to tackle the aesthetic challenge of sustainability. Most historical architectural languages can be analyzed as a basic response to environmental conditions; from the obvious water-shedding function of a classical building, through the ever changing balance between mass and void in response to natural light, up to modernist statements that proudly proclaim indifference to the weather. We have now learned that we cannot be as indifferent to the climate as the modernists claimed, and a new architectural language must be created to incorporate this new concern.



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A set of technical solutions is already changing our experience of architecture. The skins of contemporary buildings are no longer the terse, abstract planes that modernist architects aimed for, reducing them to thin, specialized, invisible layers and adding air-conditioning. Today's skins are deeply embedded with shading devices and active layers, some even incorporating a communication capability, from simple sensors measuring temperature or humidity that calibrate the required response of the building, to others that take the word communication in the most literal sense.

Le Corbusier, while claiming to pursue the

abstract beauty of mechanical perfection, constructed an extremely plastic architectural language and proposed a definition of architecture on purely visual terms. He took the new building methods of the time, such as monolithic concrete pillar-slab structures,

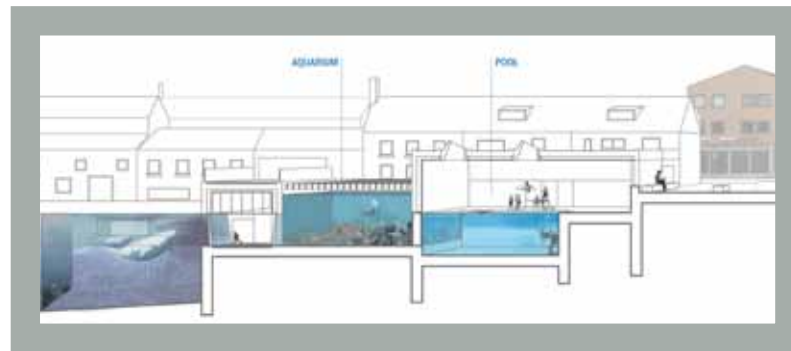
and manipulated them to produce a new aesthetic ideal of beauty (often disguising the real technology in favour of appearance, in a typically baroque approach, as we have pointed out elsewhere). Pritzker Prize laureate Glenn Murcutt earned his reputation by creating an architectural language for small isolated buildings that could adapt to changes in climatic conditions in the extreme context of the Australian outback. The projects we have been reviewing here try to create a new language for our built environment on a grander scale in the complex context of densely populated areas, and with the larger scope of territorial sustainability.

Wealth

The media-friendly sights proposed for Vardø (both award winning projects, Datarock and Repositioning the Remote), Tallinn (both Green Cement and Salmon Dance) or Forchheim, are intended to be triggers, showing what can be done so that others around the world can try equivalent approaches. Some proposals explicitly refer to the tourist potential of productive landscapes and the wealth-generating potential of its beauty. Understanding the popularity of digital culture, the Vardø/Datarock team are now developing digital tourism, and they have even worked on promotional text the city could use in websites and leaflets. In Tallinn, the Salmon Dance team addresses the twofold brief for the city (a fish market and a new waterfront), but also proposes a new kind of tourist attraction - a dance rather different from those the city is famous for.

Power

The dramatic energy features implemented in Graz, Nürnberg and Cáceres, are purposely loaded with iconic value. Electric



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power is celebrated in Graz. Energy fields in Nuremberg are invested with community bonding values. The historic significance of tall buildings is revisited in Cáceres, with the landscape of energy towers holding a dialogue with the defensive towers and church spires of the historic centre.

Development

The exciting "rurban" schemes up for development in Reus, Cabreiro-Cascais or Riga provide new patterns for cities to grow as a part of Nature, not in opposition to Nature. The subtle connection with the environment for Den Haag, Galway or Trierl-Sur-Seine, prove that natural cycles can be a driving force for architectural and urban design, while the new architectural language devised for Dietikon, Dunkerque and again Graz, are part of a necessary effort to re-evaluate the aesthetics of ecology.

All these efforts to integrate elements of sustainable production into everyday life enjoyably, beautifully and profitably, may well have a greater impact on climate change than technical developments or legislation. They are indeed the New Productive Landscapes.

Carlos Arroyo, architect, teacher