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*Dino Borri* Towards a new political reform and social and environmental welfare

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*Franco Migliorini* **Problems, policies, and research**  
Pan-European Corridor V

*Umberto Janin Rivolin* Towards a European territorial government system?

*Mariolina Besio* Looking at the design of living  
Experiences and representations of design for living  
*Daniele Virgilio* Suburbs: from zenith overlook to eye-level view

---

**Projects and implementation**

*edited by Göran Cars, Abdul Khakee*

*Göran Cars, Abdul Khakee*

*Jerker Söderlind*

*Interview of August E. Røsnes,*

*by Christian Hofstad*

*Petter Næss, Arvid Strand*

*Ole Michael Jensen*

*Interview with Tuija Hilding-Rydevik,*

*by Maria Håkansson*

*Interview with Christer Bengs,*

*by Mia Geijer*

The Nordic urban planning

Urban planning in the aftermath of the Nordic welfare state model

Urban challenges in Sweden

Urban planning Nordic style. Implications of public involvement

From Rio to Johannesburg. Environmental concerns, neoliberal climate change and planning in the Nordic countries

Environmental planning in a Nordic context: the case of the Hedebygade Block, Copenhagen

Environmental issues and debate

Integrated conservation in the age of modernism: mission impossible?

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*Francesco Domenico Moccia* **Profiles and practices**

Resisting strategic planning

*Lino Sinibaldi* Notes on Drawn Architecture

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*Francesco Fazio* **Methods and tools**

Archaeology and urban planning

*Maria J. Figueroa* Public participation and environmental integration in transport decision-making

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Received books

## Environmental planning in a Nordic context: the case of the Hedebygade Block, Copenhagen

Ole Michael Jensen

In the Nordic countries there are two competing approaches to environmental planning, two adversaries so to speak. They are urban ecology and environmental management. In short, urban ecology aims to solve all environmental problems in one locality, whereas environmental management aims to solve one environmental problem in all localities. This means that urban ecology places the individual building site at the centre of environmental consideration. In contrast, environmental management focuses on a single environmental aspect. This is the dichotomy between a comprehensive and a goal-oriented approach; design opposed to implementation of new techniques, in short 'place' opposed to 'space'. To show their own excellence in their mutual competition aesthetics and benchmarking, respectively, in short 'face', is important as well. Nevertheless, in most projects the two adversaries are forced to find a *modus vivendi*. A key example is the Hedebygade Block project now to be finished, an environmental urban renewal project of euro 40 million in Copenhagen. Consisting of a block of old five-storey buildings originally built in the 1880s, twelve architect and contractor teams carried out their vision of an environmentally sound renovation, each team connected to a specific building of the block. A single winner cannot be singled out, although it seems clear that the best teams include both urban ecologists and environmental managers.

## Urban ecology and environmental management

Since modern planning was first conceived, two paradigms have fought for dominance of building and renovation of the urban house and the urban body: one dominated by architects following the utopian urban planning tradition and the other dominated by engineers following the techno-hygienic urban planning tradition. Classic examples of these two paradigms are Howard's garden cities, widespread in England, and Haussmann's boulevards cutting through Paris. Howard was attracted by the utopian way of thinking where planning is a process starting from scratch, whereas Haussmann was attracted by the surgical operation where planning is a process starting with a diagnosis of the illness of the already existing town (Benevolo 1980). When environmental topics and the concept of sustainable development became central to urban planning and building in the Nordic countries in the late 1980s, the old planning paradigms had a renaissance as two approaches of environmental planning. The utopian urban planning tradition became urban ecology and the techno-hygienic urban planning tradition became environmental management, and it became clear that the old planning paradigms had their advocates, still. Hence urban ecology has been fighting for the attention of environmental issues departing from the place, focusing on citizens' responsibility, local traditions and heritage. In the same way environmental planning has been fighting for the attention of environmental issues departing from space, focusing on universal

demands, international legislation, and technical standards. Essentially, urban ecology aims to solve all environmental problems in one locality, whereas environmental planning aims to solve one environmental problem in all localities (Jensen 1994). This means that urban ecology places the individual building or individual site at the centre of environmental considerations, while environmental planning, in contrast, focuses on a single environmental aspect. While a solution used in urban ecology is unique, a solution provided by environmental management is general. Unique or general, place or space, nowadays environmental planning cannot perform without a post-modern face radiating beauty and scientific correctness: both actors of environmental planning need to show their excellence. The urban ecology approach displays its excellence by using design and aesthetics, in the approach of environmental planning the excellence is displayed by use of benchmarking and public mention of large scale projects. Each of them has its supporters, on one side residents, non-professionals and architects, on the other administrators and engineering consultants. In the field of green building efforts are made to overcome the conflicting views of the supporters by establishing commonly accepted environmental indicators (Dammann 2004). However, in a Nordic context the two approaches are adversaries and so much the better, as the adversaries are focused on their own advantage. This way all concepts of reflection are in play. Seen from the place, the world is mainly primordial, seen from

the space, the world is mainly conceptualized and seen from the face the world is mainly developing (Jensen 2004a). Place, Space and Face: small narratives of urban ecology belong to the place, a big narrative of environmental management to the space and the wish of promoting your argument to the face.

## Small narratives of urban ecology

In a strictly scientific sense, ecology is the study of living organisms' relation to their external conditions. In the Nordic countries, 'ecology' in the concept of urban ecology is used figuratively in order to emphasize that the city itself can be seen as a living organism depending on external conditions for life. Like wild nature, an urban organism, whether small or large, interacts with its surroundings. Hence it can be studied through the metabolism that links the urban body and the environment. Since the Brundtland Report of 1987 called for sustainable development, the significance of the term 'urban ecology' has become normative, taking into account that the urban metabolism has to be minimized in order to reduce its impact on nature. According to the concept of sustainable urban development, the purpose of these efforts is to give future generations conditions of life comparable to those of the present generation. In principle, reducing the turnover of fossil fuels, water and natural resources can do this. In real life this implies a need to recycle and to reuse and in addition strong efforts to increase the biological diversity in and outside the city. Within the framework of this thinking, urban ecology planners have to combine a number of tested and

untested techniques in new and often creative ways, constantly adapting them to local conditions and considering heritage. Not searching for final solutions, urban ecology is always a matter of finding solutions that open up new perspectives of action. A broad variety of measures are used to reduce the impact of the urban activity. Well known measures are for example planning with respect to solar orientation, a maximum of insulation against the winter climate and use of environmentally sound materials, and furthermore technical appliances such as solar panels, solar cells (photovoltaics) and wind power turbines. What is more, water saving and recycling, waste separation and recycling of refuse are promoted in daily life. But also the planting of greenery in courtyards, on roofs and facades are common measures of urban ecology planning. The list can never be exhaustive, and within each field new technologies are constantly being developed and new initiatives relevant to the subject of urban ecology are being taken. According to the philosophy of urban ecology, it is not sufficient to implement one or more measures to improve the environment. In building it is not enough to take a conventional building concept and add glass facades, solar heating panels or rain-water percolation; the technique and the individual measure need to be adapted to the locality, its architecture, its residents, and the experiences that have been gained in the locality. Ideally, urban ecology is an effort to link global and local environmental requirements based on the dynamics and creative abilities as well as the cultural and natural history of the locality. Urban ecology endeavours to

grasp the locality's character and demands collaboration across environmental themes, vocational disciplines and administrations. The secret is to integrate measures in such a way as to achieve the greatest possible synergetic effect and the greatest possible local backing for the least possible expenditure of resources. As such, urban ecology is an attempt to make the city part of the living world, and the living world part of the city. Moreover is an attempt to promote dynamic rather than static quality. Basically it is a mixture of architecture and tinkering. In practice this means a wide range of urban ecology projects with a high architectural standard at one end and a low standard at the other.

#### **A big narrative of environmental management**

Environmental management is an effort to benefit the environment but apart from that a strategy for avoiding a number of threatening environmental catastrophes. While urban ecology searches for lasting improvements in the state of environment, environmental management is an emergency service for the global society. The Brundtland Commission's message about sustainable development has also made an impression on the environmental management camp. Opposite to urban ecology, where the demand of responsibility to future generations became a normative element of the concept, to environmental management the same demand has become a yardstick for progress in the field of environmental protection. The term 'sustainability' has become the international 'brand label' for environmental management.

The most common instrument used for environmental management is to control through policy levers, although economic instruments are becoming still more and more widely used. Policy levers encompass various forms of injunctions, prohibitions and standards. Injunctions to reduce the loss of energy in buildings have long since been sharpened by the Nordic building regulations. Following this recipe, the European Union recently issued a directive on energy performance of buildings. It includes an energy performance certificate for buildings that also take into account the CO<sub>2</sub> emission. (EU 2002). Most prohibitions concerning the environment address the use of environmentally problematic chemicals, such as CFC gases, which cause ozone depletion of the atmosphere. According to the idea of standards, energy labelling in Denmark has been propagated for white goods and cars and has even become standard for the sale of single family houses. Moreover, it has become compulsory for all owners of large buildings to accept an annual energy advisory linked to a energy certification in order to reduce the energy and water consumption. Economic instruments enable the political sector to enact the broadly based management of energy and resource consumption in society. This is effected through taxes and opposite through economic subsidy schemes. In the Nordic countries, this can be exemplified by subsidies for establishing solar heating units and wind power plants. A new instrument is the trade in the CO<sub>2</sub> quotas, which the energy sector and large energy demanding companies like for instance cement works or tile and

brick works will very soon experience through allotment of quotas. According to their respective EU Directive, these quotas will be allotted in 2004 to take effect on 1st January 2005. Environmental management may be intended to bring about a change in behaviour and result in innovations that in the long term will help to reduce the negative impact on the environment. However, many environmental effects are so complex that they are difficult to tackle with traditional forms of environmental management. To evaluate the total environmental effects on a given product, researchers have developed a life-cycle assessment tool that sums up all effects of a product's entire life-time. Life-cycle assessment (LCA) is also denoted 'cradle-to-grave' analyses. This tool can indeed be used on buildings, although there are many problems associated with the use of the LCA tool for that purpose. A building is a 'product' put together from a large number of components of different technical and geographic origin and it is difficult to predict its life-times as it can pass through several renewals within its life time. Nonetheless, building design can be improved by using LCA-based tools. Such tools have been developed the Scandinavian countries and in UK, Germany, Holland and Canada as well. LCA addresses traditional environmental themes like resource consumption, pollution, and destruction of the environment. Speaking of resources: both energy and non-energy resources are being considered, renewable and non-renewable as well as scarce resources. In dealing with pollution, the topics are the greenhouse effect, the

disintegration of the ozone layer; acidification, eutrophication, and pollution as a result of refuse deposition. The category of environmental destruction focuses partly on degradation of ecosystems, partly on degradation of cultured landscapes. In contrast to the themes addressed in urban ecology, the LCA themes and environmental management as a whole are based on strictly scientific considerations.

### Positioning

As environmental problems are becoming more visible, society's answers to these problems are becoming visible as well. In the late 1960s and the early 1970s, when the first environmental grass-root organisations and the Ministries of Environment were founded, the environmental consequences had slowly become apparent. However, it was the drastic consequences of the 1973 energy crisis that really caused public concern. In the course of a few years, the price of oil quadrupled and rose 16-fold within a decade. After this 'manifestation', both grass-roots activities and governmental initiatives at the national and local levels expanded drastically and became visible in the public landscape. Due to the high energy-prices, building insulation was given high priority, and very soon the first '0-energy house' was introduced. Grass-roots activists, experimenting architects and engineering experts contributed to this development, although in very different ways. It was in this context that the two adversaries entered the environmental planning arena. Urban ecology, a bottom up answer to the environmental problems, found supporters primarily among grassroot organisations and

architects. Environmental management, a top-down answer, established its stronghold mainly among engineers and public administrators. The two environmental planning approaches were launched. Although reacting to the same kind of environmental problems and both heading for sustainability, urban ecology and environmental management did not converge. Very soon it became clear that they belong to two different planning paradigms. So far, they cannot be brought to have a common denominator just as place and space can never be the same. Hence, urban ecology and environmental management will always contrast (see table) and they will continuously need to position themselves in opposition the other. Taking the point of departure in a concrete place, urban ecology follows a comprehensive approach to its problem solving. Taking the point of departure in an abstract space, environmental management would prefer to follow a goal-oriented approach. This basic difference leads directly to numerous oppositions. The first opposition has to do with the problems to be handled. The actor who tries to solve all environmental problems in a specific locality (urban ecology) will be confronted with a 'problem complex' since all possible and impossible proposals for environmental improvements at this specific place have to be weighed against one another. In contrast, the actor who tries to solve a specific environmental problem in all localities (environmental management) will be confronted with a 'complex problem', since the instrument he/she chooses has to be of a type that

works everywhere regardless of human relations and the field of building and urban design. If it comes to some kind of a technical solution the actual work will either consist of the 'adjustment of relevant techniques' or 'the implementation of new techniques' and as a consequence it will be about 'small' versus 'large' scale projects, 'simple technology' versus 'advanced technology', etc. In the meeting between man and technology, urban ecology invites us to take part in 'bottom-up grassroots activities', while environmental management urges 'top-down public participation'. This is why uncertainty about the quality of an ecological building project is best overcome through 'practical experience' in a local context, while uncertainty about the quality of an environmental management project is best overcome through the display of 'demonstration projects' and their evaluation. Thus, urban ecology measures affect a locality's culture and lead to 'cultural development.' In contrast, environmental management generally interferes with social life in a way that requires 'social evaluation'. The ambition for urban ecology is 'to change attitudes', for environmental management the ambition is 'to change behaviour'. In their mutual competition, urban ecology and environmental management fight for control of the situation and to promote their individual excellence. So, when it comes to the showing, to urban ecology, it is obvious to perform by use of aesthetics, to environmental management to perform by use of objective criteria. Accordingly, urban ecology will normally stress the quality of the architectural design, whereas

environmental management will stress the factual environmental gains.

### The Hedebygade Block: a case study

The renewal of the Hedebygade Block has been part of the renewal of Vesterbro, a central district in Copenhagen. Vesterbro was built as a working-class district between 1850 and 1900, indeed one of the first town districts outside the ramparts of the old city. A characteristic of the 1880s, when the Hedebygade Block was built, was very densely built blocks of buildings with both side houses and back houses. But unlike another central districts of Copenhagen, Vesterbro did not go through an urban renewal with large scale demolition of houses as carried out in the 1960s in other parts of Copenhagen. Instead scattered demolition and hollowing out of the blocks became the preferred procedure.

In 1993 the Hedebygade Block was declared worthy of preservation, and the municipal plan included the Hedebygade Block in a major renewal plan for the district. This plan stated that the environment, architecture and social life of existing houses should be preserved.

A board of residents from the block took on the challenge and together with the property owners, the municipality and an urban renewal company formed an 'ecology group'. An objective of this group was to carry out an urban ecology renovation of the Hedebygade Block by means of economic resources. In 1995, the urban renewal company, being part of the ecology group, initiated a proposal for the renewal of Hedebygade Block. At that time environmentally considerations were given much attention, and an

Urban Ecology Action Plan was initiated by the Ministry of Housing.

On this background a co-operation arrangement between the Ministry and the municipality of Copenhagen for the Hedebygade Block was confirmed and the Hedebygade Block renovation was declared an urban ecology demonstration project. High technological performance featuring competitive products and catalysing an international exchange of knowledge was the main objective. Then architects, engineering and manufacturing companies with an interest in environmentally sound building projects were invited to build teams in order to develop project proposals. In each case, the teams were requested to dialogue with the residents, and eventually to establish a fixed cooperation. In 1995, 16 draft projects were submitted of which 12 so-called section projects were selected for execution: 10 was to be carried out on the buildings of the block, one was the implementation of a new community house and one was the renovation of the courtyard. The 12 section projects deal with a large variety of measures and appliances concerning ecological and environmentally sound building.

In 1997 the first section projects were initiated. Four years later, in 2001, the last building project was finished. Finally in 2002 the renovation of the courtyard was finished. Hence in August 2002, the total renovation of the Hedebygade Block was opened in an open air ceremony on the terrace in front of the community house. Measurements of energy and water consumption will continue till 2004. Moreover, a total evaluation of the

Hedebygade project has been prepared (Jensen, 2004b).

The budget of the Hedebygade Block renovation project totalled euro 48 million. Euro 5 million of this amount were dedicated to urban ecology appliances, and to some extent their invention.

#### **A modus vivendi**

Most of the measures employed in the Hedebygade Block project were actually employed in the name of urban ecology. This original predominance reflected the visions of the ecology group presented in the sketches made in the very beginning of the process. In these sketches the block was adorned with solar panels, windmills, greenery on the roofs and glazing along the walls. In the courtyard, rootzone grounds, deer park, kitchen gardens, waste separating facility, a reuse shop and a water playground were thought of as well. Also the vision of a community house dug into the ground was displayed on these first sketches. A common feature presented by the ecology group is an appeal to residents' involvement, and consequently a demand for simple and small scale technology.

When reaching the project-design phase, where architects took over, many original ideas were abandoned. According to the experts they were impossible to carry out because of legislation, lack of space or due to budgetary limits. Still, some were kept, and among these were solar panels, growing herbs, glazed balconies, and open water in the courtyard. Also the idea of a community house dug into the ground was maintained. In addition, some new appliances were presented, some using simple technologies, others more advanced technology.

New 'low tech' appliances were used for environmentally sound kitchen furniture and plants for air cleaning. New advanced technology appliances were the use of a daylight prism and the installation of prefabricated bathrooms combined with new drawn-out glass facades. These high-tech appliances were met by protest among residents. However in some cases an advanced measure made it possible to meet the residents' demands, like prefabricated bathrooms and new drawn out facades. In other cases joined flats were a prerequisite for the use of advanced measure, like the application of a prism to reflect daylight into the flats. Here the joining of flats permitted an old staircase to be used as a light shaft. On the side of the architect teams, special attention was shown to the architectural expression, both the yard-facing facades and the street-facing facades. The yard-facing facades were changed radically with glazing, energy walls, solar cells and plant trellises. Nevertheless, much was done in order to make the new facades fit the old. This was achieved by keeping the old facades on the ground level intact and by a choice of colours for the uncovered facades that on one hand is close to the original expression of 1880s and on the other matches the expression of modern glass and aluminium facades.

Reaching the phase of economic and technical calculations some further ideas were abandoned and once again replaced by new ones. Here standard engineering products were applied, such as the sun walls combining insulation, ventilation and heat production. And as a representative of a typical environmental management

measure a very advanced technique was implemented to take care of the individual measurement of heat, electricity and water consumption: the consumption measurements are transmitted directly from meters and are displayed in each flat. The measurements available on the display show the residents their daily, monthly and annual consumption. Furthermore, the measurements are available for quarterly and annual accounts distributed to the residents, but have also been made available for the evaluation of the renewal of the block. This way it has become possible to evaluate the different techniques applied in order to save energy and water. A judgement about the total series of projects in the Hedebygade renovation can be delivered. In short, this reveals that some of the renewed buildings have achieved levels of heat consumption that correspond to the low consumption of new state-of-the-art buildings. However, regarding CO2 emissions, the total environmental accounting reveals with that much technology installed in order to reduce heat consumption has increased the electricity consumption so that projects with a low heat consumption cannot always boast of their total CO2 emission. Nevertheless, the Hedebygade Block can show key figures of consumption that are at a lower level than those representing the average of Copenhagen. Since the recent conclusion of the Hedebygade Block renovation, the project has received much public attention, mirrored and provoked by extensive media coverage. It has sharpened the feeling among the tenants and among the companies responsible for the section

projects that the Hedebygade renewal has become a success. All the same, the actors may have the impression that they are being promoted. In this showing it once again becomes clear that two adversaries have fought for their vision of environmental planning. One is urban ecology, stemming from the residents' visions, and then transformed into reality by professional designers. The other is environmental management, stemming from experts, and then been turned into reality by entrepreneurs. At the building site the final battle took place between these two representatives of environmental planning. In the case of the Hedebygade Block, this battle has been particularly long drawn-out because of the mere dimension of the project and because of the big number of architects and entrepreneurs involved. In this competition the tenants feel like true losers on the battlefield. Their original ideas have been amputated and foreign appliances have destroyed their houses. In the long term, nonetheless, it is likely that they will feel like winners. The adversaries left the battlefield, and a garden appeared. In a *modus vivendi*, urban ecology and environmental management were mingled, once again.

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