

# The Intangible Forefront of Hyperinnovations in Cities



An Epilogue to the Project  
on Urban Innovations



EUROPEAN FOUNDATION

*for the Improvement of Living and Working Conditions*



# The Intangible Forefront of Hyperinnovations in Cities

An Epilogue to the Project  
on Urban Innovations

by

Voula Mega  
Research Manager



**EUROPEAN FOUNDATION**  
**for the Improvement of Living and Working Conditions**

Wyattville Road, Loughlinstown, Co. Dublin, Ireland  
Tel: +353 1 204 3100 Fax: +353 1 282 6456/282 4209  
E-mail: [postmaster@eurofound.ie](mailto:postmaster@eurofound.ie).



## A. IN CITIES, WHEN THE UNBELIEVABLE BECOMES INEVITABLE

"Innovation is a creative destruction". Innovative doctrine exploits radically new ways or beliefs and destroys old, outmoded patterns (Schumpeter 1976). An old world of principles, ideas and practices dies, while a new one is born. The cutting edge is where innovation lies, but it is more a process than an event. Innovation theory starts by distinguishing innovation from invention, at the one end, and transformation, at the other. Innovation involves a dramatic and thorough change that opens up the horizon of capabilities and a catalytic organisational restructuring that allows the new product, concept or idea to bring about the desired transformation. It is the process through which the unbelievable becomes inevitable (Sloterdijk 1997). Invention is often identified with the research and development of a concept, while innovation includes all the politics of its implementation. Their articulation needs planning, foresight and strategic choices. Progress in technology opens up new horizons, since hypermedia create a new global social fabric. In an increasingly digital world, intrinsically scaleable innovations involve all scales of coalitions and transformations.

In organisation theory, innovation implies significant change in an organisation's tasks and incentives. The more complex and diverse an organisation, the greater the number of innovations that will be conceived and proposed, but the fewer the number of innovations that will be adopted (Foster 1997). Any innovation creates the conditions for its own demise. The more established an organisation, the more difficult it is to change. Discipline, hierarchy and conformity are the enemies of change, and resistance increases when innovations touch the core interests or boundaries of institutions. While the adage of bureaucracies is "Never do anything for the first time", innovations involve the birth of new orders. The most challenging (but potentially most effective) innovation is to halt an established practice. However, many organisations look at innovations as an investment rather than as an expenditure. A new discipline can bring about a new freedom. This analysis also applies to cities. There is always, in their history, a moment when the future enters. "We were innovative in products and in services, we are now moving to innovative solutions", states J. Wymack, inventor of the "lean enterprise" concept (MIT 1997).

Tomorrow will be much less like yesterday (CLPN 1988). Geopolitics give the opportunity to many more cities to become part world players, but this global conglomeration might have strong central quarters and weak peripheral ones. Globalisation may trigger a process of change which cannot be influenced by peripheral local communities but which can reshape them against their will. D. Harvey, in a paper entitled "From Place to Space and Back Again", suggests the strengthening of the social place as the best way of meeting the new challenges emerging with globalisation (1991). The interrelated social dimensions of sustainability and globalisation also seem to be of primary importance for European cities, which try to manage change with more determination and understanding of both the competitive pressures and their social implications. An unusual definition for sustainability is that sustainability is a striving for eternal youth, for "equity extended into the future". A more common definition is that sustainability is a careful journey without an end-point, a journey towards Ithaca. It is a continuous invention of new opportunities, resembling youth itself, a capacity for innovation which is a non-depletable resource, a permanent thirst for the unknown. Ancient Greeks always had an altar to celebrate the unknown god (EF 1993a, 1994a, 1996c). Many urban policies have failed, but failure has to be seen as the birth of a new world. It is a yeasty era for innovations.

"There is nothing more difficult to carry out, nor more doubtful of success, nor more dangerous to handle, than to initiate a new order of things" (Machiavelli). Radical innovation is rare and changes the status quo and the flow of power. One should distinguish innovation from pure evolutionary change and adaptive responses to new technologies, within the established rules and procedures. It comprises a managerial and institutional response to the opportunities offered by invention, research and new technology. It implies a radical shift from the creation of something new at the expense of something conventional. It discards old assumptions and looks for new alliances. Its main sources are necessity and choice. Innovations originate from scarcity, pure accident, defence, crisis, creative conflict and strategy. Many world innovations have come out of military defence projects. The Internet, described by J. Attali as the seventh continent, is one of them. Sometimes the source of innovation can become the obstacle to it. Competition can be both the source and the obstacle; it can also be used to export the cost of innovations. Last, but not least, political leadership can be a major source of innovation (MIT 1997).

Innovation becomes a highly political process and governments have a broad spectrum of ways to influence this. Directly, they can promote innovation by supporting R&D activities and by adopting new ideas and products. Even in decreasing budget environments, governments can influence innovation indirectly, through demand (versus supply) subsidies. Creating a utopia (which by definition has no place) in a specific socio-spatial and temporal context requires the art and science of innovative interventions. Each innovation constitutes a dynamic which can be very powerful. It might also be a largely uncontrolled (and possibly uncontrollable) process and leaders trying to harness it are faced with the same difficulties as when attempting to manage an explosion. Innovations are often needed to control the innovation process. However, it is the endless chain of innovations on which the history of civilisation is based. One could be tempted to paraphrase P. Valéry: the value of the world relies on extreme innovations; its stability on average conventional action.

Innovation and sustainability share a common desire for immortality, a quest for eternal youth, in pursuit of perfection. With advancing globalisation, shifts in the economy might be swift and lethal for institutions which do not innovate. Sustainability demands adroitness in maximising minimal environments, chances and skills. Cities, as very complex systems, are, by definition, organisations where many new ideas, concepts and products are created, but where the difficulties of implementation also abound. In European cities, with mythological origins, all forces emulating innovation try to focus on the future (Koolhaas 1995). The future, however, is a moving ground. Should one concentrate on the immediate future and the next generation, or further ahead? All approaches require vision and tactics, design of tools and methods, information and organisation. They need co-operation and concerted action. There has never been a technical invention or gadget capable of changing the face of civilisation to the degree to which strong will and effort by people uniting to enhance their opportunities have.

## **B. APPROACHING THE MOVING FOREFRONT OF INNOVATIONS IN EUROPEAN CITIES**

Cities are pallets of possibilities; huge, untapped reservoirs of ideas, enthusiasm, commitment and labour. They are wholly existential; their being and the sources of their growth lie within them. Cities do not grow as an enlargement of what is essentially already there, but by processes of gradual diversification and differentiation. "Adding new work to older work proceeds vigorously and creates possibilities for change" (Jacobs 1969). The Overview of Urban Innovations in the European Union included the identification and description of 110 creative projects, conducive to urban sustainability, the harmonious co-evolution of environmental, social and economic goals. Organised in two stages, first, in 1993, for the first 12 Member States, and later, in 1996, for Austria, Sweden and Finland, it highlights projects reflecting new perceptions and conceptions on an urban world in transformation; a journey in innovations might be a journey to tomorrow-land. Given the time that has passed since the overview was completed, many of the projects can no longer be called innovations. This is not surprising. It is the very essence of innovation. Each innovation is born to be surpassed (EF 1993a, 1996b, c).

Cities are places where creativity concentrates, since there is no other source of innovation than human brains and hearts. There is no innovation without creative invention, the birth of new ideas, concepts and products. An innovative city is one which can compose a better future out of its people's creativity. This presupposes a recognition of the creativity of every individual actor. From a new idea to its grafting into a mainstream policy, the birth, growth and death of an innovation depend on a city's creative assets and their mobilisation towards solving urban problems and not only adapting to change, but creating the desired transformation. Innovation requires commitment and enthusiasm from the actor that conceives it; it needs confidence that the innovation brings a plausible option, a willingness to accept responsibility. It also needs intelligent, efficient and effective coalitions. Responsibility has to be shared among all actors. Nurturing creativity can be contagious; it can create a climate for mobilising more creative potential. Success of innovations is never a certainty, but not undertaking innovation is certainly a failure. Sterile cities stagnate, fertile cities progress.

Change is inevitable, but the challenge is to manage that change to ensure a beneficial outcome (BURA 1997). Cities must harness the power of new technologies to explore their "truly endless frontiers" (Sapolsky 1995) and optimise their condensed knowledge and information (Mitchell 1995). Very often, established administrative and financial structures nullify the possibility of innovations to extend the limits of the possible. Discrimination is the other major prohibitive factor. It creates flaws; it gives unequal nurturing of creativity; it blocks the access of a fertile field for innovation, generated by non-recognised actors. Innovations are also needed to overcome the obstacles to innovation. Redressing the imbalances and addressing the inflexibility of structures represents a vast field for innovation and change. Each successful innovation is probably the result of various (purposeful) trials and (constructive) errors; it might constitute in itself a less successful stage of a most successful initiative. Imitation seldom requires as much trial and error as innovation does, but it is a shortcut, an economic borrowing (Jacobs 1969). The more innovative an innovation, the more trials required until it is accepted as such.

A city supporting and fulfilling innovations might not be the most efficient in the short term, but this does not mean that innovations are necessarily expensive. Many of the innovations of the overview are linked to a small initial capital and produce considerable innovation. Sometimes, the purposeful and knowledgeable use of capital is impossible unless small sums have first been spent on a multiple of small new departures. The success of each small experiment is an expression of the creativity that fertilised each small sum and of the mechanisms (or absence thereof) that made it happen (Jacobs 1969). Last, but not least, the social significance closely linked to the social acceptance of each innovation is essential, both for the added external social benefit and for the encouragement of innovations by society at large. In resolving the Janus-faced problem: "Urban efficiency versus innovation", social acceptance can play a balancing role (EF 1997c).

Nobody holds the monopoly on innovation. It can come from every individual or collective actor, but it usually needs many more actors to lead it to success. Much depends on the maturity and the cohesion of the community, the quality and commitment of human resources and the political will and resources. A division of labour is not always clear or pre-established. If there is something clear, however, it is that governments, at all levels, become much more enablers than providers, but, equally, are initiators of innovation. By studying problems and options for solutions, they can provide the means for an innovation to address specific problems. They can offer criteria for choosing from a myriad of innovative options. They can inspire innovations elsewhere. The social partners can co-initiate innovations, making them grow, finance unprecedented activities, stimulate other actors, create the social climate for acceptance. They all share the responsibility of making a city proactive.

Efficient but non-creative use of capital or technology in cities can lead to the systematic imitation of innovations that are produced elsewhere, a chronic "import" of creative solutions. Trial is limited in the search for the optimal and most efficient conditions for transplanting innovations. However, over-transplanting innovations may be dangerous. Following Jacobs, one could argue that replacing imported innovations by ones produced locally is a chief cause of urban expansion. Continuous imitation kills the productive seeds and weakens the constructive capacity of cities. No rapid mobilisation of creativity and innovation can take place if there is not a permanent environment for the peaceful incubation of genuinely new ideas and unproven goods and services. Education and research may help enormously in this long-term effort with many cultural dimensions and added value. Innovation might also be the result of a struggle for survival. Crises force people to take a hard look at reality and generate a plethora of new ideas. Complex problems that inhibit innovation often create a sharper need for it. After all "necessity is the mother of invention" and an ancient legend suggests that the God of Innovation is the Son of the God of Scarcity and the Goddess of Beauty in Distress (EF 1997d).



### **C. PROJECTIONS BEYOND THE LIMITS OF THE URBAN PRESENT: LESSONS FROM OUTSIDE THE EUROPEAN UNION**

The Mediterranean Sea was for many centuries the hub of world urban civilisation. According to Braudel, the sea was an obstacle before becoming a bridge between cities and people. After the great discoveries, the centre of gravity progressively moved to the Atlantic. However, many now consider it to be situated in the Pacific. Both American and Asian cities can offer lessons to European cities striving to become sustainable and to reap the fruits of globalisation. Everywhere, creating the cities of the future is a visionary act, only producing prototypes out of the unique cities already inherited (Olsen 1987; Berque 1994). There is a need for European cities to open themselves to the world and learn from other continents. Innovation knows no frontiers. All over the world, urban innovation has the same objective for building Eutopia (Doxiadis 1975). The World Scene teaches much about innovation, its value and ephemeral character.

In the environmental sphere, there are many lessons to be learned from the political economy of the CFC phase-out. For the first time, an entire class of valuable chlorinated chemicals, a one billion dollar a year product, is being eliminated world-wide. Until the early 1970s, CFCs were considered one of the great success stories of the chemical industry, widely used in refrigeration, air conditioning and aerosols. In 1974, a scientific report argued that CFCs might prove a significant source of chlorine in the stratosphere, leading, in the long term, to serious reductions in the stratospheric ozone layer. Industry had already proposed alternative, high-cost products when, in 1977, American regulatory authorities proposed banning the use of CFCs in aerosols. A UK government report on ozone depletion found the reduction in the use of CFCs adequate, pending further research, but the US National Academy of Sciences called for an urgent global ban on the use of CFCs in aerosols. The European Community responded with a symbolic compromise CFC regulation.

The policy stalemate was broken in 1985 with Farman's discovery of a hole in the ozone layer (Benedick 1991). Everybody was alarmed at the image of a hole in the Earth's protective layer, thereby allowing dangerously high levels of UV radiation to reach Earth's surface. The Vienna Convention for the Protection of the Ozone Layer, in 1985, committed the international community to the control of ozone-depleting substances. Industrial research on alternatives to CFCs continued, in parallel with political negotiations, until the signature of the Montreal Protocol in 1990, establishing a timetable for the total phase-out of CFCs by the year 2000. The successful adoption of the Protocol is largely due to the congruence between global regulation and the market, and the concordance of scientific and economic development in an era of a new environmental consciousness (MIT 1997).

In the difficult track of creating new employment opportunities, the QUEST (Quality Employment through Skills Training) project, in San Antonio, Texas, merits attention. It stemmed from a crisis and grew out of a new social compact among employers, workers and the community as a whole. The crisis awakening came in 1990 with the closing down of a Levi Strauss cut-and-sew factory in which a great part of a local population, mainly Mexican-American women, were employed. To help the adjustment of those families affected, San Antonio's Communities Organised for Public Service (COPS) and Metro Alliance engineered a

new scheme of labour market intermediary. The scheme centres on the market empowerment of the worker. It provides training for employment which will be available upon completion of the training period. The mediating institutions brought together the government, the business world and potential employees. For nearly 20 years, they had brought together San Antonio churches and congregations of diverse faiths and ethnic backgrounds in order to improve the quality of life and to reshape San Antonio's political culture. They focused on education, housing, neighbourhood improvement, political transparency and accountability. In 1990, they declared job training and workforce development as top priorities.

San Antonio's job training programmes had failed. They had outdated rules, favouring short-term, low-wage jobs. They were designed for the old economy, included improper incentives and were linked to political favouritism. The mediators listened to people's stories and tried to build positive developments on their anger. Building respect was the first step. QUEST recognises that local people possess talents and abilities, but lack the opportunities to use them. It took hard work to conquer the commitment of the business community. After the formulation of the common vision, the tactical steps were designed. Employers expressed their need for specific jobs and both the unemployed and the under-employed confirmed their willingness to undergo training in order to fulfil the precise skill requirements. The mediators had to carefully intermarry these interests. The principles of QUEST derived from the expressed local wisdom: long-term, job-driven training, integration of all elements into one service, community support and individual training accounts. The Governor of Texas describes the scheme as a way to learn and earn from welfare; not as a hand-out but as a hand-up. The eyes of the whole community have been opened; high-skill, long-term jobs have been created and the economic relationships governing the city were upgraded and enhanced. Three years after the local crisis, the first group of trained people were in employment and 500 people were still in training. QUEST has become a model for the national job training strategy. More recently, President Clinton declared that the revitalisation of cities was a key to employment generation.

In pursuit of innovations for completely pre-planned communities, one should reflect upon the city of Columbia, Maryland. In the early 1960s, J. Rouse unleashed his dream of building a model city. The Rouse Company is responsible for many famous urban developments, such as the Baltimore inner harbour, the renovation of New York city's Fulton fish market and the Riverwalk in New Orleans. Columbia was built according to a "master plan", preconceiving urban villages for a total population of 100,000 inhabitants. The city was built village-by-village over the next 30 years. Each village has a community centre, an array of mixed housing, a swimming pool and an elementary school. The city also established some very important wide-use resources, such as an inter-faith centre (an ecumenical concept for a variety of religious organisations), high schools and athletic facilities, the large Columbia Mall and "downtown" lakefront area and a concert arena. An important element of the success of this planned community was the integration of business with residential activities. Clean industries and services have set up offices in planned business parks and office complexes. While approximately 30% of the local residents work in the community, 30% still commute to Washington and 30% to Baltimore.

In matters of urban governance in 1997, Toronto offers a civic laboratory of institutional change. The regional government of Toronto (Metro) and its six municipal authorities will soon amalgamate in a single, unified city of Toronto. After having benefited from a particularly successful

two-tier governance model for over forty years, the city is currently restructuring itself towards a single-tier model. New challenges emerge for a dynamic balance between solidarity and sustainability. Institutional structures should knit together the urban core and its regions and foster a diverse urban community, economically competitive, socially cohesive and environmentally healthy. It must facilitate the process of active citizen participation. The Board of Trade of Metropolitan Toronto believes that the municipal council to be elected has an unprecedented opportunity to reposition the city for growth. It recommends that the new council adopt policies to create coherent and consistent, fairer tax and planning environments to enhance local accountability and to improve the delivery of municipal services by introducing competition (OECD-Toronto 1997).

Innovations from the "tiger" cities in the Pacific, the location of "Tomorrow-Land" for many, hold many lessons for Europe. The peaceful and productive Asian forces, the bubble urban economies, and the struggle to deal with scarcity of space in a highly urbanised land offer a broad spectrum of innovations (KRIHS 1997). Tokyo, a labyrinth of cities, enjoys limited atmospheric pollution, low unemployment, the world's busiest and safest public transport system and a high life expectancy for its citizens. The design of the Kansai report illustrates human ingenuity and cooperative effort. Created in a typhoon zone three miles offshore, it is a good example of the integration of structure, function and environment with a sense of purpose. Risk has often been the source for innovation. The Kobé earthquake in 1995 provoked a whole range of innovative managerial responses. The plans for the reconstruction of the city include cardinal innovations for the disaster-proof city, a product of the eternal urge to create something eternal. Besides the well-known natural risks that Japan faces, the recent economic downturn after the bursting of the bubble economy has tended towards a rethinking of priorities and tasks.

With hundreds of cities each of a million inhabitants to be created in the near future, China has been attracting considerable admiration for its establishment of model settlements with exemplary urban metabolism, good social conditions and sustained growth of more than 10% per annum. Existing Asian bubble cities are striving to become sustainable. Doubts have been raised as to the manageability of many of the mega-cities now emerging. In East Asia, economic development has become an obsession. Within the cities, the imperative of economic growth has intensified the process of accumulation and the trends of speculation. Although the bubble burst in Tokyo in the early 1990s, it is still growing in Seoul, Taipei and Hong Kong, and many cities are regarded as places of a sharp departure from past tradition. Many question the construction of trust and meaning in urban places and the impact on behavioural norms, social ethos and interpersonal harmony. After three decades of economic "miracles", which generated much social tension, growth does not seem as easily achievable as before and is no longer the sole aim. Many emphasise the need for a paradigm shift in perspective and lifestyle and a need to revise the relationship between state and market and enhance citizen participation (KRIHS 1997).

## **D. PARTICIPATIVE INNOVATION AND THE CULTURE OF EXCELLENCY IN THE INFINITE TIME OF THE CITY**

The Odyssey into urban innovations makes clearer the formulation of a final definition for Urban Innovation:

**Urban Innovation = Creative New Concepts  
+ Coalitions for their Implementations  
=> Transformation and Improvement of Quality of Life in Cities**

It is important to highlight the crucial role of successful coalitions, the catalysts that make each step of the process possible. They are of political, strategic and tactical importance. They are significant politically because they contribute to the redirection of the flow of political power and change the city's political culture. They are strategic tools, because they help formulate a common vision, and tactical instruments, because they redesign the innovative concepts into a concrete form.

The architecture of coalitions is very diverse and challenges general rules. As every wind of change brings its own uncertainties, whether generalised, contingency ones or due to interdependence of components, flexible but strong alliances are needed to create the space and the conditions for the future. Alliances based on agreement, mediation, political manoeuvring and negotiation can best direct the wave of the future. Agreement is much more important than arbitration. It has to go all the way from foreseeing the potential of a concept to understanding politics and making compromises. Consensus and persistent commitment are a necessary front for long-gestation projects where good money (with visible returns) usually follows bad. Some win-win projects might seem no-win projects before finally showing their potential. The same applies as much to coalitions as it does to Europe and cities: it is a matter of survival and effectiveness to have a good balance between diversity and integration.

Models of coalitions that place people at the centre of a genuine, far-reaching development strategy seem to have an unparalleled potential to lead to what J.K. Galbraith calls a good society (1996), a society offering a fulfilling life to everybody. Often, policy analysts are surprised by the major role individuals play in generating and implementing innovations. Charismatic leaders, scientists or simply local citizens/workers are all potential bearers, initiators or adapters of innovations. A common problem or a common perspective often ferments the common ground for the coalition. Otherwise, solutions might look for problems to satisfy. Anticipation of policies might be decisive but it cannot constitute a unique strategy. P. Lévy argues that many businesses that have based their existence on pushing authorities for regulatory innovations favouring their practices, have failed (MIT 1997).

Innovations may be both superb and dangerous at the same time. They may bring impressive leaps out of value-creating activities, in a continuous flow to improve quality. They may also lead to a point of no return and affect the cultural stable equilibrium of a city. They may permanently change a city's sense of what is possible in the relevant time-frame. A strategy of moderation

and co-operation is needed. Adaptation may be difficult. Citizen participation can act as a net, in communicating vision, in sharing the costs and fruits of change and in ensuring that innovation does not become excessive, irreverent to traditions or socially unacceptable. Business participation can act as a net to ensure that costs are kept to a minimum. "One should allow as many voices as possible to be heard and as many values as possible to be represented, but not to allow valuable projects to stop", argues S. Weiner (MIT 1997). The impact of a project on local communities and its acceptance by them are crucial considerations. They constitute an input for the project but, as always, caution for perverse effects is necessary.

"The power to become habituated to his surroundings is a marked characteristic of mankind [...] We assume some of the most peculiar and temporary of our late advantages as natural, permanent and to be dependent on" (Keynes). Conventional organisations resist innovation. They are largely created to replace the uncertain and haphazard activities of voluntary, ad hoc endeavours with the standardisation and stability of organised operating procedures and relationships. A broad consensus is needed to overcome obstacles and adopt new ways of thinking and acting. Sometimes, really the most innovative element is the common front to the future established by various stakeholders whose specific agendas may clash. "The innovation is not what happened, but the fact that it actually happened", has been a common comment on many projects of the EF overview.

## **E. APPROACHING ITHAKA: HIGHLIGHTS FROM THE JOURNEY IN THE EUROPEAN ARCHIPELAGO OF URBAN INNOVATIONS**

P. Hall suggests that "innovative cities at their zenith (Athens, Florence, London, Weimar, Berlin) were cities in transition, out of the known, into new and still unknown modes of organisation" (ACDHRD 1995). Probably the twilight of the 20th century and the dawn of the 21st century is such a period, widening the range of the possible beyond the limits of the known. As this is the final step of our journey in the European archipelago of innovations towards Ithaka, we recall those islands that enriched this search for excellency and sustainability. The poetic words of C.P. Cavafy sound more than true, "Ithaka gave you the marvellous journey. [...] If you find her poor, Ithaka won't have fooled you./ Wise as you have become, so full of experience,/ you'll have understood by then what these Ithakas mean ...".

In the environmental arena, the search for excellency is enriched by plans and charters, expressing collective action for public resources and introducing new principles and methods. Implementing Local Agenda 21 became a noble common objective. In Finland, the Lahti Environmental Forum, established in 1993, tries to bring together the different parts of society in order to essentially promote sustainable development in the Lahti area. Commitment of all is a key concept (EF 1996c). In France, environmental charters constitute contracts between the State and each city. The Charter of Mulhouse is a clear example of the strong will to improve environmental and public health (EF 1993a). In Naples, one of the most seriously threatened urban environments of Europe, citizens signed the Environmental Charter after one year of consultation and mediation (Gillo & Solera 1997).

Sustainability management and tools include sustainability accounting and reporting, indicators, strategic environmental assessments, sustainability appraisals and eco-auditing (EC 1996). The rapidly expanding practices of sustainability management belie this, for they show a complete change in thought patterns, combining the ideals of citizens and community groups with the techniques of the private sector and the participation of public authorities in the implementation phase. Environmental auditing is an important instrument for challenging the environmental performance of cities. From the internal auditing of the municipality to the external auditing of the community, hybrid methodologies offer us examples. Cities and enterprises follow many parallel ways when conducting their environmental auditing. It is essential to have the rigour associated with financial auditing in the process and diagnosis to be followed by prognosis. The environmental balance sheet of Sundsvall with the accounts of stocks and flows of environmental resources, the eco-auditing of all urban activities in Igualada and the richness of the components of environmental auditing in Kirklees offer a horizon of models and lessons at the vanguard of urban eco-auditing (EF 1995a, 1996b).

Cities compete with each other to gain environmental credentials. It is a healthy battle, when translated from words into deeds. Many cities, declared "Green City" or "Sustainable City", promote innovative coalitions, which include all their constituencies and provide an environment that stimulates each actor to initiate further projects towards a common goal. Leicester was the first British city to be given the status of Environment City and is trying to become a national and international model of excellence. Leicester Environment City is assisted by the "Business

Sector Network" to bring together ideas from the city's commercial sector and provide assistance to businesses, while "Environ", a non-profit-making body, has been set up to provide local organisations with access to environmental audits and advice (EF 1993a). The city is also worth mentioning for other achievements: for its solidarity being achieved through the harmonious coexistence of various ethnic groups. Recreating cities as places of culture and civilisation, as well as places to exert citizenship, is at the very heart of sustainability.

Incorporating environmental concerns into a broader framework for the well-being of cities broadens support for and ensures a commitment to their implementation, both in affluent cities and in those facing socio-economic challenges. In The Netherlands, the vision for the city of the future is centred around four axes: the liveable city, the well-ordered city, the affordable city and the sustainable city. In Germany, environmental awareness has often been linked to socio-economic change, first and foremost in the cities which have been the scene of many socio-political transformation processes. With the challenges of unification in the city of Berlin, the ecological restructuring concept, introduced as early as 1984, came into prominence. It advocates a new sustainable symbiosis between economy and ecology in the urban landscape and places the emphasis on environmental preventive policies to tackle the anthropological origins of problems (Hahn 1991). The concept has many points in common with MAB research work on the Resourceful, Liveable City in UNESCO, the first international organisation to use the term "sustainable city" (UNESCO 1988). A European model project linking ecological urban restructuring with Local Agenda 21 was implemented in Leipzig (Hahn 1997).

Ecological innovation tries to radically improve the urban metabolism. In Berlin (often called the "recycled city"), the derelict space adjoining the former wall became, once again, a central space for creation and innovation. In Kreuzberg, "Block 103" is an interesting example, highlighting links between social well-being and environmental upgrading. Former squatters of the block have been given the opportunity to own the space they occupied and, at the same time, they have been trained in converting the houses into ecological modern buildings. Special emphasis has been given to energy, water, green spaces and new materials and techniques. Another complex, "Block 6", has been the field of innovation for alternative water systems emphasising the learning and communication process in which residents are trained to "feel" the process and participate in its monitoring. The system is based on a combination of cleaning techniques for the water, depending on its origin, previous and destination uses. This leads to 50% savings on water and can offer a paradigm for "thirsty cities" (Gelford et al. 1992).

Certain unique European cities ensure not only the birth and implementation of particular innovations, but have pioneered a socio-political environment fostering the continuous generation and development of such practices. Freiburg is the centre of two national and international renewable energy research institutes, the Öko-Institute and the Fraunhofer Institute. Solar water heating, passive solar architecture and photovoltaic systems have been implemented. The city has the oldest active solar demonstration house in Germany (built in 1978). A series of terraced houses, built in 1985, exhibit the traditional principles of optimised passive solar compact buildings. A recently-built commercial solar centre uses photovoltaic cladding. The Freiburg utilities' new tariff structure encourages demand and offers more favourable buy-back rates for photovoltaic energy. The latest developments include the first self-sufficient energy house in Germany that uses the sun as its only energy source. It combines the most advanced solar and energy stor-

age technologies. The virtuous circle of technical demonstration, raising of awareness and participation is well established, thanks to the commitment of the city and its citizens. Innovations in the field of renewable energy sources are urgently needed in order to reduce their still prohibitive cost and open the path to their wider use.

In "waste management", innovation progresses with the elimination of the term and its replacement with "resource management". Reconsideration of the urban metabolism puts much emphasis on waste prevention, i.e., action before the waste is generated, even though investments still concentrate on the recycling end. Once generated, waste has to be considered as a resource. Throughout Europe, many innovative actions are being taken for the prevention of industrial waste and the avoidance, re-use and recycling of domestic waste (EF 1992a, 1993a). Successful projects have included more than information campaigns; they have stimulated active citizen participation. Important in ensuring community support, such techniques are essential when basic changes in individuals' habits are required. Illustrating a complete environmental cycle, including re-utilisation, waste collection, new product development and marketing, is the case of Parma, where plastic waste is being transformed into building material. Innovative combinations in the management of environmental projects can create efficient synergetic effects. In Rimini, Italy, links between waste producers and users of compost have minimised problems associated with waste collection and destruction (EF 1993a).

The hardest innovation is to halt an established practice or dependence. Cities seem dependent on private cars, judged to be the single most dangerous enemy to urban environment. The human leg is the only sustainable transport means. Copenhagen has been a pioneer city in recognising the human face and social value of pedestrian zones. When the main street, Strøget, was pedestrianised in 1962 (one of the very first in Europe) a heated debate ensued. Many believed that the scheme was contrary to the Nordic mentality and culture; however, it was almost an instant success. Pedestrianisation continued over a period of 30 years and the down-town parking policy aimed to remove 2-3% of the parking spaces per year (EF 1995c; Rautsi 1993). The EC research on the "Car-free city" and the related events marked an important step (Municipality of Amsterdam 1994; EF 1995c). Examples abound throughout Europe (Burwitz et al. 1991). Oulu, in Finland, is extending its pedestrian zone, which is proving to be very successful, even in temperatures of  $-30^{\circ}\text{C}$ . In milder climates, Italian cities (Perugia, Bolzano, Spoleto, Rome) have been pioneers in creating pedestrian cultural environments. In Naples, places like Piazza de Plebiscito have rediscovered their former splendour by virtue of the ban on private vehicles in the area. And Venice remains the archetype of a car-free city.

Mobility has long been regarded as a cardinal urban value. Now, accessibility is regarded as a plausible alternative (ALFOZ 1995). The distinction between access and mobility is not a trivial one. Accessibility is linked to proximity, but it does not necessarily eliminate social distance. Unlike sheer mobility, access means not only getting people where they need to go, but also getting to them what they need, and new information technologies may play a major role in this process. The role of cities in assembling and not dividing may be reinforced with the removal of architectonic barriers, mainly due to past heavy transport infrastructures (EF 1995c). Removal of these barriers and the subsequent designation of the recovered space for public purposes undoubtedly represents an action that is both exemplary and transferable. Integral urban accessibility programmes have been developed in the Spanish cities of El Ferrol and Salamanca, pio-



neering developments that allow the optimal use of resources and extended urban access at a minimum cost (EF 1993a).

The use of private cars will never be limited if no provision is made for efficient alternative public transport. Tram systems have been reappearing in European cities, while combined systems using minibuses and electric buses gain ground. Many cities realise that a single authority overseeing public transport and private car parking could more equitably internalise the environmental costs of private motoring and improve public transport. Udine is a good example of such efforts. Attractive cities with fragile ecosystems, a rich historical fabric in need of preservation and wildly fluctuating populations face the most difficult challenges. They often provide the most innovative solutions, reflecting a concern for utilising the morphology of the region and for unifying services. For example, in Orvieto, Italy, whose historic centre on a hilltop is inundated by tourists, all cars will be parked in large car parks at the foot of the Orvieto hills, the funicular railway will take all passengers to the top of the hill and a system of minibuses will take them around the city. This system will be completed with the installation of escalators through the rocky caves and will be managed with electronic payment systems (EF 1993a).

Industrial, technological and business parks are creating "edge cities" in Europe, having turned areas of blight into healthy spaces and areas of positive environmental and economic profit (Castells & Hall 1994). Partnerships between local authorities, developers and other actors can ensure that development programs do not simply entice business investment but will also confer added benefits to the community. Stockley Park, a former derelict rubbish tip within the green belt to the west of London, gives an inspiring example of a partnership transforming such an area into an international business park and public parkland including recreational facilities. In exchange for the right to construct the business park over 36 hectares, the developer guaranteed the reclamation of the whole site (140 hectares), removal of groundwater pollution, environmental enhancement and landscaping. At all stages of the construction of Stockley, local residents were involved in the process through extensive community consultation (EF 1993a).

Flagship renewal projects offer ample ground for innovations, especially in the areas of planning and financing. Ensuring a presentation of all viewpoints and all potential solutions is essential to the completion of such projects. Ensuring mixed financing from various public bodies and attracting the necessary private funds is as crucial as innovating to minimise costs. In Germany, the IBA Emscher Park has been an important pole for urban development and ecological renewal within the northern Ruhr district. Experts are working together with the cities and industries of the Emscher region for the recycling of coal mining settlements, the creation of new housing and the promotion of attractive locations for industry and services. The preservation and re-use of industrial monuments, the landscaping of the Emscher area into a park, the ecological restructuring of the Emscher river and the protection of the water environment are leading to a healthy local environment. New dwellings have been created on fallow land with new environment-friendly materials. High quality locations for industry and services are under constant assessment. Contaminated areas are insulated and re-used. "Working in the park" is possible through the enhancement of the quality and attractiveness of the area (EF 1993a; Municipality of Amsterdam 1994).

The creation of high-quality science and enterprise parks is also expanding in the Mediterranean area. By fostering links between research, technology and production, they are the potential incubators for the development of new enterprises, centres for the promotion and transfer of new technology and enterprising research poles. Their strategic location can prove a powerful tool in the development of peripheral regions and in the creation of networks across the national and European territories. Costs for such projects can be minimised when the research and enterprise poles are designed to provide services desired by businesses and public bodies. The Technopolis of Bari, the IEDA Andalusian Technological Park in Málaga and the network of Science Parks in Greece are promising examples of such efforts (EF 1993a).

Innovations for the conversion of waterfront areas, seashores and riversides for activities of the future were prompted by crisis; city-centre ports have disappeared, leaving behind the husk of an infrastructure in need of a new role. Disused dock buildings are being turned into exhibition halls, shops, craft workshops and centres for cultural activities. Changes in the built fabric transform the social fabric, as areas facing dramatic unemployment levels are creating many new jobs, directly in construction and indirectly through the attraction of businesses. Careful planning with citizen consultation can ensure that waterfront developments are not reserved to luxurious office and leisure areas but become parts of "ordinary towns". Innovation combined with respect for past structures can result in buildings which are both beautiful and functional at the same time (EF 1993a, 1996c).

The Salford Quays development on the Manchester Ship Canal came about by the desire to turn derelict space into the ultimate leisure area, respecting the environment and promoting culture (EF 1993a). The conversion of the old harbour area in Gothenburg, Sweden, into a mixed-use city, after the closing down of the shipyards, transformed the 4 km abandoned area into a multifunctional city through a multi-partnership between the city, the architects, the former ship-building companies and the public. Industrial buildings were given new intelligent functions (EF 1996c). In Turku, Finland, the metamorphosis of an old industry and harbour area into a new cultural centre represents a magnificent mixture of old and new structures in brick, steel and glass. Citizens were invited to vote on what they considered to be the ugliest building in the area. Pinpointing retrograded projects might also be an important starting point for innovations (EF 1996c).

Reinforcing the entrepreneurial capacity of cities and identifying sources of employment needs a chain of innovations in perceptions, education and training. The need is sharp and the achievements not always promising. The EC's report on "Local Development and Employment Initiatives" explored urban fields as potential sources of job creation (EC 1995b). Services improving everyday life and the quality of the environment, as well as services of leisure and tourism, might have an important potential for employment and enterprise creation. Most schemes include training, enhancing the ability for reconversion, professional guidance and orientation (EF 1993a, 1994b). The Swedish case from Rinkeby shows the importance of the merging of social services and the support for "starting working" in a community highly dependent on social welfare. The project includes meaningful training, the establishment of an SMEs incubator for immigrants and the creation of new jobs in activities ranging from crime and drug abuse prevention to theatre performances (EF 1996c).

Innovation often involves looking at familiar surroundings with new eyes, of finding ways to transform what is usually perceived as a liability into a resource. In Kemi, Finland, this "new" resource was snow, leading to creative new jobs in the world's greatest snow castle. Important elements, which many traditional employment schemes do not consider, are the removal of disincentives to education, training and enterprise, quality and the overall improvement of the quality of life of the long-term unemployed. The Dublin Inner City Partnership, a local area-based response to long-term unemployment, includes such targets. The "Argilan" guidance, training and employment project in Vitoria-Gasteiz, Spain, has three specific objectives: regeneration of the economic web of the city through new professions; qualification and requalification of the labour force, adaptation to the requirements of demand; prevention of social exclusion. It offers opportunities to groups with traditionally low employability and focuses on professions with a strong local and regional demand and those with an innovative element. Its follow-up system of the labour itinerary of the participants is also noteworthy (EF 1993a).

Successful innovations in facing the social problems begin by an understanding that support to the affected community is to be offered on their own terms, of helping people help themselves. Recognising the independence and capabilities of homeless people at an initial stage engenders a sense of trust, easing the delivery of support services and counselling. "The Big Issue" magazine in London represented an effort which both increased community awareness of the plight of homelessness and offered a step in its alleviation. This innovation was a low-initial capital investment, which rapidly became self-financing. Launched in 1991, with the support of The Body Shop, the Big Issue quickly became London's fastest growing publication with a circulation of 80,000 copies per issue and 1,000 vendors (EF 1993a).

Liveable cities need sound living cells and housing environments. Mass housing (social and subsidised) has often created social tensions on the urban fringe. It has often been paternalistic, large, remote, uniform, collective, reactive, anonymous, devoid of management. It has failed. In many European cities, housing is now beginning to be self-regulated, local, personal, individualised, proactive, with corporate neighbourhood space and responsive local management. It has to provide proof of vitality of work and enterprise and allow personal identification. Vibrant local communities are replacing void neighbourhoods. Many poorer estates in disadvantaged areas are going through a radical rethinking of the space and social significance (Delft Institute of Technology 1992; OECD 1996a). A new human face is judged necessary in most of those developments built quickly and cheaply after the war, as if they were to house interchangeable people.

Innovations in catering to the housing needs of vulnerable groups, including immigrants and women, are essential. Treating the beneficiaries of housing policies not simply as recipients but as actors shaping the efforts is the key to ensuring the acceptability of both the process and the final outcome. In Finland, the Top Toijala project tried to activate and strengthen tenants' potential and engagement for the improvement of the Rautala housing area. Ambitious renewal has been achieved with a modest budget. A "community theatre" has been created to identify and solve problems and nourish visions and actions. In Sweden, the Athena Housing Project in Örebro, creates high quality housing environments, ecological, safe, functional and beautiful. The project group, consisting only of women for the design, construction and ownership of the housing, insists on the role of participation for making changes inexpensive. In Vienna, the Urban Gürtel Plus project aims at improving living and income conditions in the western Gürtel area,

where 34% of the population are foreigners. The revitalisation of the local economic structures and the creation of 400 new jobs are considered essential (EF 1996c).

Redeveloping housing can be innovatively combined with efforts to renew the entire economic structure of the community in which it is located and, through consultation and employment programs, ensure the lasting support of the residents for the project. The renewal of the Holly Street Estate, which was constructed during the 1960s and 1970s as a series of slab tower blocks to replace the traditional two-storey East London terraced houses, is a good example. The estate became notorious for its state of deprivation, crime and delinquency. The renewal project was initiated in response to the British Government's Comprehensive Estates Initiative, making funding available for the redevelopment of social housing estates whose physical and social decay is so severe that refurbishment is not viable. Pleasant Victorian-style houses replace the tower blocks, giving opportunity for home identification. The employment scheme implemented includes a skills audit of the entire population of the estate and a training programme. Regular consultations with tenants, the establishment of a freephone number to the project director, publication of a regular newsletter, individual home visits and the establishment of a local housing management office all represent innovative efforts to further community involvement (EF 1993a).

At the twilight of the 20th century, the lack of civic spirit among communities has a great negative impact on cities. No city can be sustainable if its people and space are severely attacked. In combating graffiti, innovation comes not only in specific actions but also in their integration, yielding a coherent prevention and cleaning scheme which not only improves the urban environment but has positive ripple effects on employment. Such an approach, developed in Maastricht, includes extra means to trace the offenders, education programmes to improve the skills of the graffiti "artists" and an anti-graffiti bus with formerly unemployed people who specialise in removing graffiti. The city made a wall available to all citizens wishing to express themselves by means of graffiti. Within two years, the damage caused by graffiti pollution decreased dramatically. The result of prevention is always hard to prove, but it is clear that graffiti has decreased considerably in Maastricht. Tracing and conditional or alternative punishment have a noticeable effect on preventing recidivism, while there are former offenders who, after their artistic training, have become famous artists (EF 1993a).

Participation, innovation and strategic planning confront new challenges. Unresolved debates continue on density and intensity, and plans call for "no more sprawl". Strategic plans for sustainability focus upon bringing disused urban land into mixed-use development and seek to restrain peripheral growth to key locations dependent upon public transport. In 1982, Evora was the first Portuguese city to prepare a municipal master plan. The political situation after the 1974 revolution favoured citizen participation and the municipality led a long project of consultation. The common reflection and dialogue allowed the rigorous respect of the plan by all concerned. It trained the collective conscience and favoured participation in all urban activities. The plan, approved by the government in 1985, aimed at creating a viable economic base and improving the environment and living conditions. Ten years later, Evora was the leader of the European network "Strategies for Medium-sized Cities" (EF 1997d). In the evolving world of planning, where many components become unpredictable and uncontrollable, Evora enhances informal input. The preservation of its monumental culture depends on everybody.

Finally, but most importantly, one should highlight the innovations that invest in the cultural sustainability of cities, the "most productive long-term investment". Such concepts as "Euroculture" and "Euroaesthetics" do not exist. European cities, which Braudel called the "greenhouses of civilisation", and Levi-Strauss "objects of nature and subjects of culture", have as many aesthetics, character and culture as the number of ways to understand a city's soul, to appreciate the desires of its citizens and to listen to its heartbeat. The Foundation's study on the aesthetics, functionality and desirability of the sustainable city suggests itineraries that can be metronomes of desire in various cities. From Fornovo di Taro to Poundbury, there is a common quest for urban beauty (EF 1995d). Long rejected as a sign of frivolity and elitism, the search for the beauty of cities, made up of asymmetries, paradoxes and contradictions, is returning to the urban stage (Calvet 1994; Fortier 1995; Sansot 1973).

Public spaces, described by Koolhaas as fortresses of freedom (La Ville 1994b), have great potential as islands of urbanity in the archipelago of the city (Council of Europe 1992; UNESCO 1995). Collective open space should enhance aesthetics and sociability and serve as a place for "negotiating" democracy. Setting up qualitative recommendations for the functional, environmental, cultural and aesthetic character of the spaces, roads and pavements, roadside plantations and public lighting is very important in forging cultural identity, of which process the Manual of Public Spaces in Brussels is a good example. The unification of the archaeological spaces in Athens and their functional and aesthetic links to green spaces is expected to create a public space of high value (EF 1993a).

## **E. ACKNOWLEDGEMENTS**

The research project on Innovations for the Improvement of the Urban Environment has been a long journey towards the urban "Tomorrow-Land". My deepest thanks go to all those who took part in this journey. The young planners who identified and described the urban sites of the future offered the rich background for reflection and dissemination. The authors of the four parts and the synthesis of the "European Tetralogy on the Sustainable City" contributed great insight and ideas, while, at the same time, deepening the debate.

Four more inspiring studies completed the endeavour. They focused on the capacity of urban innovations to generate employment, their contribution to the rethinking of concepts and methods of their evaluation, both from an economic point of view and according to their innovativeness. It has been a difficult but wonderful journey, enriched by the conferences and workshops in Seville, Oviedo and Barolo.

Thank you.

## **REFERENCES**

- ACDHRD (Australian Commonwealth Department of Housing and Regional Development).** 1995. *Urban Futures*. Canberra.
- ALFOZ.** 1995. *La Ciudad accesible*. No. 109. Madrid
- Attali, J.** 1996. *Chemins de sagesse*. Paris: Fayard
- Bagnasco, A. Le Galès, P.** (sous la direction). 1997. *Villes en Europe. Paris: La Découverte* (Recherches)
- Benedick, R.E.** 1991. *Ozone Diplomacy*. Cambridge, MA: Harvard University Press
- Berque, A.** 1994. *La Maîtrise de la Ville*. Paris: éd. de l'EHESS
- BURA.** 1997. *The Future of Cities*. Conference Report. Belfast
- Burwitz et al.** 1991. *Vier Wochen ohne Auto. Bericht über ein freiwilliges städtisches Abenteuer*. University of Bremen
- Calvet, L.J.** 1994. *Voix de la ville*. Paris: Payot
- Castells, M. & Hall, P.** 1994. *Technopoles of the World. The Making of Twenty-first Century Industrial Complexes*. London: Routledge
- CLPN (Conférence des Lauréats du Prix Nobel).** 1988. *Promesses et menaces à l'aube du 21<sup>ème</sup> siècle*. Paris: O. Jacob
- Council of Europe.** 1992. *The European Urban Charter*. Standing Conference of Local and Regional Authorities of Europe. Strasbourg
- Delft Institute of Technology.** 1992. *European Cities: Growth and Decline*. Conference papers
- Doxiadis, C.** 1975. *Building Eutopia*. Athens: Athens Publishing Centre
- European Commission.** 1995b. *Local Development and Employment Initiatives*. Brussels
- European Commission, DG XI.** 1996. *European Sustainable Cities*. Brussels
- European Commission.** 1997a. *L'Europe des villes*. Brussels
- European Commission.** 1997b. *The Future of North-South Relations*. Cahiers of the Forward Studies Unit 1. Brussels
- European Foundation for the Improvement of Living and Working Conditions.** 1992a. *European Workshop on Cities and the Global Environment*. (The Hague, 5-7 December 1990). Proceedings. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1992b. *European Workshop on the Improvement of the Built Environment and Social Integration in Cities*. (Berlin, 9-11 October 1991). Selected papers and conclusions. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1992c. *European Workshop on Land Management and Environmental Improvement in Cities*. (Lisbon, 6-8 May 1992). Proceedings. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1993a. *Innovations for the Improvement of the Urban Environment. A European Overview*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1993b. *L'Impact de la domotique sur les fonctions urbaines*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1993c. *Teletifestyles and Flexicity*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1993d. *Strengthening Citizen Action in the Local Communities*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1994a. *European Conference on Urban Innovations*. Reports. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1994b. *Visions and Actions for Medium-sized Cities*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1994c. *Urban Innovation and Employment Generation*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1995a. *Urban Eco-auditing and Local Authorities in Europe*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1995b. *Les PME dans la revitalisation de la ville européenne*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1995c. *Transport and Public Spaces: the Connective Tissue of the Sustainable City*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1995d. *Esthétique, fonctionnalité et désirabilité de la ville durable*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1996a. *Intermediate Cities in Search of Sustainability*. Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1996b. *What Future for the Urban Environment in Europe: Contribution to HABITAT II*. Dublin

- European Foundation for the Improvement of Living and Working Conditions.** 1996c. *Innovations for the Improvement of the Urban Environment: Austria – Finland – Sweden.* Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1997a. *Perceiving, Conceiving, Achieving the Sustainable City.* Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1997b. *European Cities in Search of Sustainability. A Panorama of Urban Innovations in the European Union.* Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1997c. *Utopias and Realities of Urban Sustainable Development.* Dublin
- European Foundation for the Improvement of Living and Working Conditions.** 1997d. *Towards an Economic Evaluation of Urban Innovations.* Dublin
- Fortier, B.** 1995. *L'Amour des villes.* Liège: Mardaga
- Foster.** 1997. *Invention, Innovation and Transformation.* MIT: Centre for International Studies
- Galbraith, J.K.** 1996. *The Good Society: The Human Agenda.* Boston: Houghton Mufflin Company
- Gelford, P., Jaedicke, W., Winkler, B. & Wollmann, H.** 1992. *Ökologie in den Städten.* Basle-Boston-Berlin: Birkhäuser Verlag
- Gillo, B. & Solera, G. (ed).** 1997. *Sviluppo Sostenibile e Città.* Napoli: Clean Edizioni
- Hahn, E.** 1991. *Ecological Urban Restructuring.* WSB (Science Centre Berlin) Paper FS II 91-402
- Hahn, E.** 1997. *Local Agenda 21 and Ecological Urban Restructuring. A European Model Project in Leipzig.* Berlin: WZB
- Hall, P.** 1995. The European City: Past and Future. In *The European City: Sustaining Urban Quality.* Conference papers. Copenhagen
- Jacobs, J.** 1969. *The Economy of Cities.* New York: Penguin Press
- Koolhaas, R.** 1995. *What Ever Happened to Urbanism?* S.M.L.XL. Rotterdam: 010 Publishers
- KRIHS.** 1997. *Global Sustainable Development and National Strategies.* OECD-Korea Workshop papers. Seoul
- Langlois, R.N. & Robertson, P.L.** 1995. *Firms, Markets and Economic Change: A Dynamic Theory of Business Institutions.* Routledge
- Lefebvre, H.** 1996. *Writings on Cities.* Translated and edited by E. Kofman and E. Lebas. Oxford: Blackwell
- METROPOLIS.** 1996. *Metropolis for the People.* Conference papers. Tokyo
- M.I.T.** 1997. *Promoting Innovation.* Summer Seminar (organised by S. Weiner). Working papers. Cambridge, MA
- Mitchell, W.J.** 1995. *City of Bits.* Cambridge, MA: MIT Press
- Municipality of Amsterdam.** 1994. *Car-Free Cities?* Working papers
- OECD, Group on Urban Affairs.** 1994. *Cities for the 21<sup>st</sup> Century.* Paris
- OECD, Group on Urban Affairs.** 1996a. *Stratégies pour le logement et l'intégration sociale dans les villes.* Paris
- OECD, Group on Urban Affairs.** 1996b. *Innovative Policies for Sustainable Urban Development. The Ecological City.* Paris
- OECD-Toronto Workshop.** 1997. *Better Governance for More Competitive and Liveable Cities.*
- Olsen, D.** 1987. *La città come opera d'arte.* Milano: Sena e Riva
- Rautsi, J.** 1993. *The European City Today.* The Helsinki Round Table on Urban Improvement Strategies. Helsinki Ministry of Environment
- Sansot, P.** 1973. *La poétique de la ville.* Paris: Klincksieck
- Sapolsky, H.M.** 1995. *The Truly Endless Frontier* in Technology Review. Cambridge, MA.
- Schumpeter, J.** 1976. *Capitalism, Socialism and Democracy.* New York: Harper and Row
- Sloterdijk, P.** 1997. *Dans le même bateau.* Paris: Rivages
- Touraine, A.** 1997. *Pourrons-nous vivre ensemble? (Egaux et Différents).* Paris: Fayard
- UNESCO.** 1988. MAB. *Towards the Sustainable City?* Paris
- UNESCO.** 1995. *Les Libertés de la ville.* Passager. Paris
- Vidler, A.** 1992. *The Architectural Uncanny.* London: MIT Press
- (La) Ville.** 1994. *Six Interviews with Architects.* Paris: Le Moniteur
- Womack, J.P. & Jones, D.T.** 1996. *Lean Thinking.* New York: Simon & Schuster
- World Bank.** 1995a. *The Human Face of the Urban Environment.* Washington DC
- World Bank.** 1995b. *The Business of the Sustainable Development.* Washington DC









