PermaCity

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Changes

CHAPTERS

Discussing the changes in society and social conditions, the role of modernity and the effects on urban planning

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PermaCity

When almost 30 years ago Bill Mollison and David Holmgren introduced the idea of *Permaculture*, they initially pointed at the development of a stable agriculture, based on the principles of sustainable ecological systems.[1] However, very soon the idea expanded into a more general approach for the design of human habitat and community building. In the meantime *Permaculture* has elaborated into a complex design system, carefully observing the nature and natural systems, analyzing the ecological principles of sustainability within these systems and applying them to the design of human settlements and human societal systems.

Permaculture has become a worldwide movement. All over the world ecological settlements have been developed, either as new buildings/construction or as renewal projects of existing settlements, where people live together in conformance with the principles of *Permaculture*. In these settlements, people not only apply sustainable environmental technologies to reduce the exploitation of natural resources and to limit pollution, they also try to develop sustainable communities and sustainable economies capable of surviving without the exploitation of other societies or future generations. The idea is to create productive and sustainable ways of living which are based on the principles of global equity, which states that every human being has the equal right for clean water, pure air, an adequate amount of energy as well as the right to stable and sustainable living conditions.

However, contrary to the *Permaculture* communities the realities of present urban societies are not characterized by a *common sense* of values and behavior, but by contradictory interests, conflicting behavior patterns and different ideological orientations. In place of global equity we find growing segregation and competition on all levels of spatial organization: between different districts within the city, between the core city and its suburbs, between urbanized and rural areas as well as between different agglomerations, countries and continents. Competition exists throughout the exploitation of natural resources and the abatement of production costs on the one hand. It appears, however, also in regard to services, living conditions, technical and social infrastructure on the other.

In comparison to these large scale developments the small community approach of the *Permaculture* movement appears almost irrelevant and sometimes even ridiculous. However, modern societies are taking exceptions to their limits on an almost daily basis. When, in 1986, Ulrich Beck presented the idea of a *risk society*[2], he not only warned against the destruction of the environment and the exploitation of natural resources, but also emphasized the dependency of a world society that is mutually connected by global risks which no longer can be shifted onto nature, other continents or onto future generations. The world society as a whole has to face the risks and must conquer them. Otherwise it will not survive. For its survival – in the words of Beck – a *reflexive modernization* is necessary, i.e. a self-transformation of the modern society that continuously reflects its own conditions.[3] The question remains to what extent the urbanized

1 Bill Mollison & David Holmgren (1978), Permaculture One, Transworld Publishers (Australia).

2 Ulrich Beck (1986), Risikogesellschaft, Frankfurt/Main.

3 Ulrich Beck (1993), Die Erfindung des Politischen, Frankfurt/Main.

society will be able to reflexively modernize and transform itself into a sustainable form of cohabitation that no longer undermines and destroys the conditions for its own existence. Or alternatively, will the urbanized world society become an ephemeral phenomenon that inevitably is heading towards its own demise? What can we learn in this framework from the community approach of the *Permaculture* movement? Is it possible to generate a comparable model of sustainability also for the urban society, a model of PermaCity?

URBANIZATION

Urbanization is a key issue of our time. Never before has the human society gone through a comparable process of urbanization, nor have cities expanded as rapidly as today. On the other hand, urbanization remains a rather new phenomenon. A first wave of urbanization commenced in Europe and North America during the 18th century reaching its peak during the 19th and the beginning of the 20th century. As a result more than 70 % of the population within Europe and more than 80 % in North America are presently living in urban areas.

Succeeding the first phase of urbanization, a second wave commenced in the 20th century. This wave is still going on and affects mainly developing countries in Latin America, Asia and Africa. The effects of this wave are much stronger and much more radical in comparison to those of the first, as the following data show. The urban population increased worldwide from 220 million, in 1900, to 2,84 billion in 2000.[4] It is estimated that 2008 will become a milestone with an estimated 3,3 billion people – half of the world population – living in cities. This tendency will continue as the urban population is expected to reach 4,9 billion by 2030.

Yet, the strongest urbanization is predicted to occur in Asia and Africa where the urban population is set to double between 2000 and 2030. In contrary to the assumptions of many people the urban growth in these continents not primarily arises as a result of migration, from rural to urban areas, but is brought forth as a result of decreasing mortality. The increasing population originates from both the cities and the rural areas. However, the capacity of rural areas is limited, they cannot accommodate (and feed) the growing number of people. Thus, migration and the concentration of people in the cities is an inevitable process, even if the population numbers in rural areas will keep stable on the global scale.

The most recognized and most sensational results of recent urbanization processes are the new mega-cities (of more than 10 million inhabitants) and even meta-cities (of more than 20 million inhabitants) that are presently confronting the world with new urban cultures, with increasing social contradictions and with new and unknown environmental threats. Although these *super-agglomerations* seem to dominate the front pages of the urbanism debate, their impact is less dominant with only 9 % of the global – urban – population residing in cities of more than 10 million inhabitants. Of greater importance, from this position, are the smaller and middle-sized cities (of up to 500.000 inhabitants) responsible for the accommodation of more than half of the world's urban population. According to the *United Nations Population Fund*, these cities will become catchments regions for the majority of the future population growth.[5]

According to the United Nations Report a major problem within countries of rapid urbanization – and something which should be avoided at all costs –seems to be that planners and decision makers identify urban growth as an 'evil' phenomenon. As a consequence, urban strategies at best concentrate on the present and immediate shortages of shelter. Long term strategies, implemented to face future growth, remain scarce and underdeveloped. In many cases there seems to be no strategy at all.[6] The Authors of the UN Report blame political decision makers who neglect and continuously reject the inevitable growth in developing places, thus cutting short the implementation of a proactive policy for future development.

As for industrialized countries, and in particular in North America and in Europe, cities appear to be confronted with an opposite problem. Instead of appearing to grow cities appear to be losing their population due to an outward spread or diffuse sprawl.[7] In many cases the process of suburbanization is connected with strong trends of segregation. In particular, higher income groups leave core cities, settling within the more comfortable, better secured and often gated communities of the suburbs. The impact of this selective exodus remains disastrous for the core cities themselves. On the one hand, the departure of higher income groups has lead to a slump in the demand for facilities, goods and services by more affluent residents; whilst by contrast, core cities are confronted with a concentration of social problem groups and rising social costs. In this way, core cities are losing their ability to fulfill their function as 'engines' of the regional economy.[8]

In many European regions (and also in Japan) the urban exodus is addition-

4 UNFPA (2007), State of the world population 2007. Unleashing the Potential of urban Growth, p. 7.

5 UNFPA (2007), p. 10.

6 UNFPA (2007), p. 40.

7 This process barely can be described as de-urbanization. The lifestyle, the living conditions and the conditions of labor in the suburbs still suits more or less with that of the urban population. Due to the transportation and communication facilities, the division between rural and urban became increasingly artificial in advanced societies.

8 The dependencies between suburbanization, segregation and economical decrease of metropolitan areas are more detailed elaborated in: David Rusk (1995), Cities without Suburbs. Second Edition, Baltimore.

ally amplified by the fact that the population in general is decreasing within these regions. Shrinking cities have therefore become an entirely new problem category, presenting a new challenge for the discipline of urban planning which has historically developed under the conditions of growth and expansion. Therefore new instruments and new concepts are required to guide the processes of shrinking in both cities and regions.

POVERTY AND SEGREGATION

Strongly connected with the process of urbanization in developing countries is the concentration of poverty. The UNFPA Report estimates that on a global scale 1 billion people reside in slums, of which 90 % is to be found in developing countries.[9] China and India collectively have 37 % of the word's slums. Worldwide, slum dwellers are confronted with a variety of issues of which poverty remains but one of their burdens. Other aspects of importance are: poor and overcrowded shelters in sometimes large areas, teemed with violence and criminality, the lack of public services and infrastructure, limited accessibility to education, unhealthy environments and insecure land tenure. Moreover, the increasing risks from environmental hazards disproportionately affect poor people in vulnerable areas.

Slum dwellers are imprisoned in a double way, based on their housing and working situations. On the one hand, dwellers are limited in their mobility on the housing market; as they are being forced to stay within the confines of their slum due to a lack or inaccessibility or unavailability of alternatives. These limitations even apply to those situations where the slum dwellers are owners of their house or plot. Dwellers are unable to escape due to the inability to sell the property, in particular if their ownership is based on a loan or mortgage.[10]

On the other hand, slum dwellers are captured in their position on the labor market. As Manuel Castells brought to light, the socially divided city is primarily based on a divided labor market. The first labor market relates to the formal economy, with official jobs in (more or less) secured labor conditions; whilst a secondary labor market relates to the grey or informal economy, with unsecured labor conditions and instable income, in many cases also without any social network or insurance.[11] Similar to the housing markets, the labor markets are characterized by strong mobility limitations, limited in the form of an upward mobility, implying that slum dwellers barely have a chance to penetrate into the formal labor market.

9 UNFPA (2007), p. 16.

10 See Ana Sugranyes (2007), Social housing policy in Chile. Actors and products, Dissertation, TU Delft. In the case study about social housing areas in Santiago di Chile Sugranyes demonstrates the limited mobility even under the conditions of (social) owner occupied housing.

11 See u.m. Manuel Castells (1989), The informational city, Oxford.

We have become accustomed to the idea that urban poverty is mainly regarded as a problem of fast growing cities in developing countries. However, dual cities can simultaneously be found in developed countries. In many industrialized countries the distinction between rich and poor has increased during the last decennia. The reasons for this distinction are based on economical transformations, in particular, the loss of employment in the industrial sector, and the dismantlement of the welfare state, caused by the attempt to reduce public expenditures. As a result, the economical segregation within the city and between city and suburbs is on the increase, in many cases additionally amplified by growing ethnical contradictions. The slogan of the Third World, *coming back to the First*, indicates the problems many cities in 'developed' countries, are confronted with.

ECOLOGICAL THREATS

In view of the evident effects of recent climate changes it seems almost superfluous to stress the ecological threats of urban development. The limited energy resources, greenhouse effects, rising sea levels, floods caused by melting glaciers and the bareness caused by shifting climate zones are subjects of many international conferences and numerous debates between scientists and professionals. Technical innovations and solutions to reduce the energy consumption, to make use of renewable energy resources and to recycle and refresh water and air are not only available, but also have become more and more affordable from an economical point of view.

All the more it remains a startling fact that '*reflexive modernization*' is barely recognized within architectural and urban design projects within recent years. Only a few projects have demonstrated integrated ecological design solutions as part of the design process. As an example, climatic conditions have always had a strong impact on the design of the built environment. However, the conditions of globalization and the belief in technical omnipotence tend to support generic design approaches, regardless of the natural conditions. Disregard of basic rules of bioclimatic design results in increased energy consumption, caused in warm climates by the generation of urban heat islands and its growing needs for cooling, whereas in cold climates, the disregard results in heat losses and energy waste.[12] Comparable argumentations can be developed for almost all forms of environmental pollution and for the exploitation of all natural resources. Considering the strong impact of urbanization on the environment a radical re-orientation of urban planning and design approaches seems to be inevitable.

12 See John Martin Evans (2007), The comfort triangles. A new tool for bioclimatic design, Dissertation, TU Delft.

URBAN COMPETITIVENESS AND FRAGMENTATION

A major effect of globalization is the increasing competition between cities and regions on national and international level. Modern economies, in particular the new ICT based service economies, have become almost independent from natural resources and from natural conditions of a respective site. Within these new economies an enterprise has become 'footloose': it easily can be moved from one city to another, from one country to the next or even, between continents. New criteria for locating enterprises, in a general sense, have become 'man-made'. Besides socio-economic criteria such as the cost of labor, the availability of qualified workers and present political stability, there remain a number of criteria directly related to urban planning and design: the integration into national and international mobility networks, the local accessibility, availability of qualified infrastructure and facilities, as well as attractive housing areas in particular for qualified employees and attractive business sites. Last but not least, the image and the charisma of the city at all play an important role when companies choose a site for their enterprise. All these characteristics too can be influenced and improved through design interventions.

To facilitate economic development cities are more-or-less forced to make themselves attractive for investors and enterprises by investing into infrastructure, facilities and the development of attractive sites for new business development. An important role in this framework is taken by the so-called Large Urban Projects (LUP) – *Grandes Projets* – that are often realized through the reconstruction of urban wasteland, former industrial plants, old harbor areas etc., usually located on central sites in the city and in particular suitable for the development of new business activities. A general attribute of these projects is that they are not developed as mono-functional business districts. In most cases Large Urban Projects combine offices with housing, shopping, restaurants, cultural facilities and attractive public spaces, in this way generating a new type of (multifunctional) urbanity. They, too, combine public and private functions, and thus are often developed as public private partnership (PPP). The Centre Pompidou area in Paris, the London Docklands and Battery Park City in New York have been pioneers of this new type of projects. In the meantime, almost every self-respecting city in the world developed these kind of projects to promote city branding and to participate in the growing competition.

Although projects as these play an important role for the economical development of cities they also have a reverse side-effect in regard to urban sustainability. Projects as these demand substantial portions of public means, concentrated only on a few areas – or islands – within the city, in this way supporting fragmentation and segregation and in many cases resulting in an unbalanced over-all development of the city at large. Moreover, the dominance of commercial interests brings about that there is hardly any space or means available for social and/or environmental aims. The majority of the projects is and remains socially exclusive, while focusing on the solvent demand, and reinforcing the idea that environmental issues only play a role if they contribute to the image forming and branding of the site.

THE IDEA OF PERMACITY

At first glance, cities seem to embody all threats of modern civilization: the environmental damage, the concentration of poverty, the fragmentation of space and society. Is there any alternative, is there any chance for a more sustainable urban culture? In order to discuss the sustainability of cities we have to clarify the meaning and the bearing of sustainability itself. In this framework it is possible to revert to a long debate and thus to a great number of competing, sometimes contradictory, definitions. Of the most broadly applicable and often quoted definitions is the one created in 1987 by the Brundtland Commission regarding sustainable development. Sustainable development (according to the commission) ... 'meets the needs of the present without compromising the abilities of future generations to meet their own needs.'[13] This definition not only refers to the longevity of human support systems, it simultaneously implies a strong ethical claim that the concept of sustainability is primarily based on respect for the rights of future generations and is striving for solidarity with them.

In succession of the Brundtland Report a number of definitions have been developed which attempts to concretize the aims of sustainable development as well as to render these aims operational for daily practice. Most of them are focusing on the maintenance of the environment as an ecological system and address the steps required to halt exploitation and consumption of nature whilst introducing renewable principles. A well-known and suitable realization of environmental demands are the rules developed by Herman Daly: [14]

- Renewable resources such as fish, soil, and groundwater must be used not faster than the rate at which they regenerate.
- Nonrenewable resources such as minerals and fossil fuels must be used not faster than renewable substitutes for them can be put into place.
- Pollution and wastes must be emitted no faster than natural systems can absorb them, recycle them, or render them harmless.

Further elaborations on the criteria for sustainability have led to the development of a variety of methods set to measure and assess sustainability performances.

13 United Nations (1987), Report of the World Commission on Environment and Development. General Assembly Resolution 42/187.

14 Herman Daly (1996), Beyond Growth: The Economics of Sustainable Development, Boston.

Exemplarily two widely known and used methods should be mentioned: the Life Cycle Assessment to analyze the environmental performances of products and services through all phases of their life cycle, and the Ecological Footprint Analyses, calculating the amount of land area that is needed to match the current resource consumption and pollution by sustainable and renewable resource production and waste assimilation.

All the aforementioned definitions and approaches have a common focus: the concentration on environmental sustainability. However, although the preservation of the environment is an important issue, it does not sufficiently reflect the conditions of reproduction of an urban society and its dynamic. From this point of view, the *Permaculture* movement has made, already at a very early stage, an important advance towards a more comprehensive definition of sustainability. By placing the idea of a sustainable culture in front, the movement not only emphasizes the protection of natural resources, but also is integrating the social, economical and cultural reproduction of the community with all its dimensions.

In the same way the idea of PermaCity can be seen as an integrated approach towards urban sustainability, covering all dimensions of the urban society. Environmental sustainability is a basic requirement of a sustainable city, of the PermaCity. Without a sustainable environment the urban society cannot survive. However environmental sustainability in an urban context remains dependant on a sustainable economy. Without economical sustainability the environment remains under threat whilst without a sustainable environment the economy can run the risk of being destroyed (at least in the long run). Economical sustainability remains dependant on a sustainable society, on a social sustainability. Without a sustainable society the economy cannot survive as well as without a sustainable economy the society cannot survive. Last but not least, cultural development is a necessary condition of a sustainable society.

The utopia of PermaCity seems to be far away from the reality of cities in our time. However, cities also represent the best – and perhaps only – hope to overcome the threats of the modern society. 'With a world population at 6,7 billion people in 2007 and growing at over 75 million a year (...) the protection of rural ecosystems ultimately requires that population be concentrated in non-primary sector activities and densely populated areas.'[15] Further urbanization not only is inevitable, it also '... offers significant opportunities to reduce poverty and gender inequality, as well as to promote sustainable development.'[16] The United Nations Population Fund (UNFPA) underpins this statement with a number of arguments:

- 'Although urban concentration increases the visibility and political volatility of poverty, it has definite advantages over dispersion. These advantages are economic, social and environmental as well as demographic.
- Economic competition is increasingly globalized; cities are better able to take advantage of globalization's opportunities and to generate jobs and income for a larger number of people.
- Cities are in a better position to provide education and health care – as well as other services and amenities – simply because of their advantages of scale and proximity (...).
- Urbanization helps to hold back environmental degradation by offering an outlet for rural population growth that would otherwise encroach upon natural habitats and areas of biodiversity (...).
- From a demographic standpoint, urbanization accelerates the decline of fertility by facilitating the exercise of reproductive health rights. In urban areas, new social aspirations, the empowerment of women, changes in gender relations, the improvement of social conditions, higher-quality reproductive health services and better access to them, all favor rapid fertility reduction.'[17]

Although urbanization may be a necessity, it still remains an insufficient condition for a sustainable society. The decisive question here is no longer focused on *if* urbanization will continue. Primary questions are aimed at the aspects which *steer and shape* the process of urbanization. To elaborate, questions address the development of cities which attempt to adhere to greater sustainability; they question how to generate new urban cultures that combine social integration, a healthy economy and respect for the environment. They also question the kind of economy to be developed which is no longer based on the exploitation of nature and/or on social contradictions, and conclusively, to question the direction required in order to adjust the urban society and physical form of the city for it to become sustainable.

In essence, it remains the responsibility of decision makers, urban planners, architects and users of the built environment, to question and seek design principles capable of shaping sustainable cities and regions and conclusively to generate the conditions to secure the PermaCity.

ABOUT THIS BOOK

This book aims at investigating the conditions and possibilities of urban sustainability. To do so, it traverses and undermines boundaries between different disciplines and stresses interconnections between urban sociology, social geography, ecology, urban planning, design and management. It is not the aim to develop a consistent argumentation, but to explore the field with different

15 UNFPA (2007), p. 46.

16 UNFPA (2007), p. 67.

17 UNFPA (2007), p. 69.

approaches, from distinctive standpoints. Authors from different disciplines and from different parts of the world have been invited to reflect upon the idea of PermaCity from their respective point of view. The contributions are clustered in five sections:

Section I

Changes discusses the present changes in society and social conditions, as well as their effects on urban form. In a fundamental article François Ascher analyses the process of metropolization under the conditions of the Third Modernity. He comes to the conclusion that environmental issues will not revolutionize the form of the city, but will change the design. 'Technologies do not develop independently of fundamental social forces.' David Rusk reflects on the USA as a multicultural – global – society and thus as a model for future societies. Henco Bekkering discusses the origins of the concept of historical continuity in urban design and the role of 'meaning' within this framework. Edward Hulsbergen and Cecilia Marengo analyze in different articles the problems of deprivation, social inequity and vulnerability, both in the case of Dutch cities and in the case of Cordoba, Argentina. Finally, Hui Xiaoxi demonstrates how the decline of public housing in Beijing amplifies the social problems in the city.

Section II

Concepts introduces different (historical and contemporary) concepts and models for urban development and transformation. On the case of the Randstad Holland, Han Meyer reflects on the shift from urban to regional planning and the role of the city in this process. Wu Liangyong analyzes the pattern of traditional town development in the Yangtze River Delta in China. Liane Lefaivre and Alexander Tzonis introduce Lewis Mumford with his (failing) plan for Honolulu as the first critical regionalist in urban planning. Johannes Widodo presents the Southeast Asian coastal cities with their ancient trade tradition and their varied cultural influences as examples for permacultural societies. Frank van der Hoeven, Gerhard Bruyns, Remon Rooij and Jeroen van Schaik focuses on the question of mobility and the model of the network city. Qu Lei presents sustainable urban models for the development of Beijing and Mohammadreza Parvizi shows how ancient water systems (so-called qanats) are structuring historical settlements in Iran.

Section III

Strategies presents different strategies, approaches and methods of urban planning and design in view of sustainability. Joaquin Sabaté and Manuel Tironi criticize the competition oriented urban ranking systems as guidance for urban transformations and are emphasizing the necessity of community building in the spirit of Permaculture. Paola Vigano elaborates on the concept of porosity and permeability as urban design approach in order to reflect on sustainability. Declan Kennedy and Kathleen Battge present the basic principles of permacultural thinking and expand them for urban issues. Akkelies van Nes and Sheng Qiang both apply the Space Syntax Method to analyze movements, urban compactness and centralities. Chiang Chesheng and Steffen Nijhuis present different methods to analyze spatial qualities.

Section IV

Governance focuses on the political conditions of planning, its actors and participants. In this framework both government responsibility and civic engagement are discussed. Saskia Sassen explores how to use the 'power of power' to face environmental challenges. Both, the concentrated command structures of global capital and the decentralized power on a city scale are addressed as possible carriers for environmental sound projects. On the case of Rome Maurizio Marcelloni discusses how to govern the scale of the temporary city. Miquel Marti Casanovas analyzes local policies to improve the quality of public space. Stephen Read discusses the understanding of local places in a global world. The local dimension also receives a platform in the contributions from others authors in this section. Camilo Pinilla focuses on the role of emergence in urban intervention, Roberto Rocco models the geography of economic activities and Diego Sepulveda explores the conditions of sustainability in middle-sized Latin-American cities. Paul Stouten completes the section with an article about policies for urban renewal and regeneration in The Netherlands.

Section V

Debate covers three different issues. Bernardo Secchi and Marcial Echenique both discuss, from different points of view, the pro's and contra's of a concentrated versus a dispersed urbanization. As the second issue two (utopian) models for sustainable local communities are presented: The Mosuo culture in the west of China as resurrection of the fairy-tale Shangri-La (Wang Chiuyuan) and the Fontana housing and leisure estate in the outskirts of Vienna as an example how upper-class people realize their dream of a sustainable living environment (Peter Johannes Görgl and Markus Vogl). The three last articles in this section address the conditions of urban sustainability in Indonesia. Jo Santoso brings to light the changing conditions of sustainability in the development of Greater Jakarta. Devisari Tunas analyzes the spatial conditions of informal economies in Jakarta's kampongs and, last but not least, Sandi A. Siregar presents the kampong culture as a generator for the development of a sustainable city.

Observe & interact
«Beauty is the eye of the beholder»

Catch & store energy
«Make hay while the sun shines»

Creativity use & respond to change
«Vision is not seeing things as they are but as they will be»

Use edges and value the marginal
«Dont think you are on the right track just because it is a well-beaten path»

Care of the Earth
Rebuild natural capital

Obtain a yield
«You can't work on an empty stomach»

Apply self-regulation & accept feedback
«The signs of the fathe are visited on the children into the seve generation»

Use and value diversity
«Don't put all your eggs in one basket»

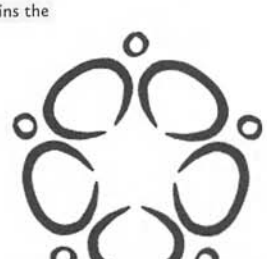
Fair Share
Redistribute surplus. Set limits to consumption and reproduction

Care of people
Nurture the self, kin and comunity

Use and value renewable resources & services
«Let nature take its course»

Use small and slow solutions
«The bigger they are, the harder they fall»
«Slow and steady wins the race»

Produce no waste
«A stitch in time saves nine»
«Waste not, Want not»



Integrate rather than segregate
«Many hands make light work»

Design from patterns to details
«Cant see the wood for the trees»

20 DECLAN KENNEDY / KATHLEEN BATTKE

PROF. DECLAN KENNEDY, DIPL.ING., DIP.PERM.DES., ABD (PITT.), M.R.I.A.I.(HON.)

KATHLEEN BATTKE, M.A., POSTGRAD. DIP. (GAIA UNIVERSITY)

ECO-VILLAGE LEBENSGARTEN STEYERBERG

Healing the City – Thoughts on Urban Permaculture Design

What does ecology mean in urban design and planning? Where does a 'PermaCity' come into the picture? Indeed, what does Permaculture mean within the context of 'urban design'?

A PermaCity or a designed eco-city with as many permanent cycles as possible would use less natural resources (energy, water, food, etc.) and produce less waste (heat, air pollution, water pollution, sewage, etc.) than a conventional city. The terms "PermaCity" and "eco-city" are –as the term "sustainable city"- relative. It is difficult to term one city as objectively sustainable and the other as not. But if we see it as a development process going on (that never ends!), or a spiral movement upwards, these terms can indeed be helpful to mark tendencies.

A city can, however, become more sustainable by taking certain actions. As the PermaCity idea applies to buildings, housing and other components of a city, some of the most obvious measures are:

- Planting fruit, vegetables and other productive plants on roofs, facades, and in open spaces
- developing and putting emphasis on public transport
- cleaning and recycling surface water discharge
- saving fossil fuels – CO^2 discharge
- producing and using predominantly solar energy
- creating green corridors which flush dense urban areas with fresh air
- setting up healthy buildings – aiming at Com-Post Modern Architecture.

Many experiments to implement Permaculture principles into urban settings are happening all over Europe since the 1970's – but all too few. We are not catching up with our environmental degradation in cities –quite the contrary. However, most of the successful experiments are 'bottom-up' initiatives, often based on technical principles– but still they are not always economically and socially sustainable.

As yet, few Permaculture groups have gotten together and managed to get sustainable urban projects going. However, there are some beautiful examples that can give us hope for an otherwise often pessimistic situation.

Such examples occur in free spaces in cities, such as

- unused areas
- demolished or unused building complexes
- in-between areas,

These areas are often used by citizen initiatives for temporary experiments, city farms, instant parks, wildlife corridors, etc.

In the 1970's, after the first oil crisis, many experimental projects were started, got a lot of publicity and then faded into oblivion. Later, in the 80's and the 90's, the self-administered, self-help housing projects were prevalent and these

last to the present day – some even aiming at accommodating all generations. The food and energy self-sufficiency examples in Amsterdam and Berlin, Dublin and Hamburg, London and Melbourne, Seattle and Singapore, for instance, were seen as utopian but had a high educational and emotional component, especially for inner-city children, senior and immigrant citizens who are not always as mobile as the mainstream population.

The general lack of financial resources, due to the overall prevalent demand for high interest rates on hoarded monies, often create new slums out of old and even 1960-70's housing areas. These were and are the targets for squatting by peripheral and younger groups who often start new social, economic and technical innovations. The complementary currency movement has originated partly from these situations, from run-down rural and urban regions – but also from Permaculture designers realising that their projects 'do not always pay'. Here, again, we see a great potential for normal citizens to empower themselves, to pull themselves out of the often appalling environments and to allow a more or less permanent solution for urban dwellers. Cities will always be with us, and the more Perma-cities we create the better.

And we can do it!

SETTLEMENT PATTERNS

Many food and cosmetic producers, regions and hotels use the label BIO nowadays. The word "ecology" is in every mouth – even conservative politicians tend to picture themselves as ecologists. Great! We are getting places. After all, the word "conservative" comes from the verb "to con-serve" – *to serve with*. Again, conserving can be seen as positive action. There is, however, little or no consensus among planners and designers – nor even among Permaculture designers – as to what exactly we are talking about when we speak of bio, ecology, or Permaculture. Slowly, in the mid-80's the Permaculture movement began to talk about ethics – after ten years of action. Others began listing mini and maxi solutions. We began to see the value in Christopher Alexander's work on Patterns and how these could be brought together into relationship that meant that we did not have to invent the wheel each time we had an ecological project.

I will use the three ethics of Permaculture, as defined in the First International Permaculture Convergence 1982 in Australia, now taken over as the ethics of Gaia University in 2006, to give a base for our discussion:

- Care for the People
- Care for the Earth
- Share the Surplus.

What is necessary for me then is a vision of a PermaCity:

- a city of proximity, mostly pedestrian with good public transport
- a city of energy descent with food producing gardens
- a city as a sharing of cultural, social and economic values.

We will need transition periods with low energy cars, with regional farmers' markets, with local exchange and trading systems (LETS) and regional complementary currencies for as much as a half-century to get to these goals – but these are some of the next achievable steps. We have to start somewhere! *And we will do it!*

We can build highly efficient houses that save energy, that need no heating in cold climates, no electric cooling in the tropics. People, like us, have been building these in eco-villages, urban eco-neighbourhoods and on the periphery of cities – already since before the turn of the 21st century. Unlike us, who have had our respective workspaces at home for the last 20 years or more, most people have to travel 15 to 60 kilometres to get to work. Their personal ecological footprints have, therefore, become huge. It is just simply transferring the pollution from the chimney to the exhaustpipe. This is not a permanent solution for the resource and climate crisis that is increasing daily. Centralization has failed in almost every field.

Now, in some countries, particularly in Germany where we both live, the tax collectors and the politicians are supporting sustainable behaviour – the programme for 100 000 PhotoVoltaic roofs, for instance, or the tax and price rebates for renewable energy production and zero energy building – but once again without designing the system itself anew, without the holistic approach that e.g. Permaculture design could deliver.

Eco-villages and urban eco-neighbourhoods are a good start but also need to look at their energy balance sheet. And they do not often do that regularly. Even if they are employing new solar systems, recycling wastes and houses, saving petrol and other energy, saving water, etc., their location and the corresponding necessity to travel by car usually puts a big hole in their otherwise welcomed endeavours. Here, I would like to mention the Dutch eco-village in *Culembourg* as a role model: They have pulled down car use (and ownership) by locating the eco-village immediately next to the train station on the line between *Utrecht* and *Eindhoven*.

TAKE ACCOUNTING INTO ACCOUNT AS PART OF DESIGN

Accounting is part of Design – Sim van der Rym suggested this back in the early 1980's:

- Exploring the Carbon Footprint of our Homes and Mobility
- Setting up Energy Audits & Ratings

- Implementing Energy Efficiency & Renewable Energy Systems
- Future Testing of our Homes and Vehicles.

We all know the concept of the 'ecological rucksack', put forward by Friedrich Schmidt-Bleek of the Wuppertal Institute and others in the 1990's. It measures streams of material to determine the hidden energies in every product and service in MIPS (Material Input per Portion Service). In urban and rural settlement patterns – and especially in the many suburban developments all over the world – little of this measuring concept has happened for determining the efficiency of e.g. infrastructure, public transport and the amount of land used-up by this settlement pattern.

For each German, there is presently approximately 40 square metres built for their housing, but 600 square metres of paved area. Housing areas on the periphery of cities (suburbs) use up land wastefully. This is only possible because of subsidies on food production (even bio-food) – dis-encouraging people to produce their own herbs and vegetables near their homes. Because of the general globalisation trends to produce cheaper and produce elsewhere than at home, we are continually using up good farming land in order to create the sterile rose-and-lawn syndrome, or 'industrial Parks' or production facilities, resulting more than often in urban sprawl.

We are our own problem. Most of us want to live individually in a green healthy environment in or near an urban setting: 'The main shopping street at the front door and wide open refreshing landscape at the back door, please.' This is usually easier for the politicians to sell to the population than a global ecological approach, based on energy descent and cost-benefit analysis for all humankind – because of its tiring watchfulness and regulations that seem to be necessary.

TOWARDS A MORE HOLISTIC ASSESSMENT OF SETTLEMENTS

Here we can look at a further development of the MIPS system as Holger Wallbaum did in his dissertation, amalgamating the five relevant themes of field of:

- Total Material Requirement (TMR)
- Cumulative Energy Expenditure (CEE)
- Global Warming Potential (GWP 100)
- Land Area Consumption
- Water Consumption.

These ecological indicators are put side by side with the five economic indicators:

- Planning and Implementation costs
- Production and Building costs
- Maintenance costs
- Demolition costs
- Costs of Rent including all Heating and Lighting costs.

Then, we add the final five that are social indicators:

- the Age Structure
- the Structure of Earnings
- the Unemployment Rate
- the Proportion of Employed Females per 100 employed males
- the Degree of Participation.

Wallbaum went one step further and used the COMPASS method to determine the value of a designed settlement, taking the ecological settlement of *Flintenbreite* in *Lübeck*, Northern Germany as his analytic example. This is a highly scientific method that can help designers during the concept period of a design as well as checking mechanism after implementation and later after a few years of people living there. Now Assistant Professor for Sustainable Construction, he is addressing conceptual, technological and at the same time sustainable innovations in the building industry. The regionally varying economic, legal, ecological, cultural and aesthetic frame conditions require constant rethinking and adaptation to apply sound approaches for specific uses and users. Integrity and adjustment are the dictums that have to be considered by sustainability-oriented planners, users and operators in order to realize sustainable reconstruction in cities.

COMMUNITY SUSTAINABILITY ASSESSMENT

A few of us in the *Global Ecovillage Network* (GEN) put together an approach – more like a yardstick – for self-assessing how ecological we are in our very different eco-villages all over the world. The CSA (Community Sustainability Assessment) on the GEN web site: www.ecovillage.org is based on the indicators:

- Social/Community
- Ecological/Technical
- Cultural/Spiritual.

With the aim of creating and presenting to the world outstanding examples of what it means to live in harmony with nature in a sustainable way, GEN promotes and facilitates communities – whether rural or urban – which develop and implement technologies and practices such that human activities are harmlessly integrated into the natural world. This integration is meant to take place in a way that is supportive of healthy human development and can be successfully continued into the indefinite future.

The *Global Ecovillage Network* is developing the concept of sustainability auditing to provide measuring rods for individuals, as are also the groups working in the

Global Action Plan. For existing villages and communities, they also compare the current status with ideal goals for ecological, social, and cultural sustainability. Such tools are to be seen as learning instruments – pointing out actions how individuals, businesses, communities and cities can take to become more sustainable by changing their daily behaviour. The process of Community Sustainability Assessment is an exploration and cultivation of the qualities needed to bring mankind through the 21st century.

Community Sustainability Assessment is a comprehensive checklist and anyone can complete it to get a basic idea of how sustainable his or her community is. This assessment tool is applicable to any community or neighbourhood. While it requires good knowledge of the life-styles, practices and features of a community, it does not require research, calculation and detailed quantification. This assessment takes about three hours for an individual to complete, or a series of sessions if done as a group experience by community or neighbourhood members.

And we are doing it!

HOLMGREN'S PERMACULTURE PRINCIPLES IN URBAN SETTINGS

David Holmgren, Co-Founder with Bill Mollison of the Permaculture Concept, has given us an easy access to the complex permacultural thinking by explaining the basic insights in twelve principles. We will expand these principles for urban issues:

1. *Observe and Interact*

"Beauty is in the eye of the beholder"

§ Observe, Recognize and Appreciate Details

§ Interact with Care, Creativity and Efficiency

§ The Thinking and Design Revolution

- I. *All observations are relative*
- II. *Top-down thinking, bottom-up action*
- III. *The urban fabric is the textbook*
- IV. *Failure is useful so long as we learn*
- V. *Elegant solutions are simple, even invisible*
- VI. *Make the smallest intervention necessary*
- VII. *Avoid too much of a good thing*
- VIII. *The problem is the solution*
- IX. *Break out of urban design cul-de-sacs*

§ Free up Design Education and Communications Media

§ Scepticism and the Limitations of Direct Experiences

§ Modern Context for Action Learning

§ The Importance of Interaction

Here I make an appeal to humanity in stating – that: *We need a vision*, because global problems cannot be solved by market mechanisms alone. I see the way ahead in the thousands of small, smart decisions that reflect a new awareness shared by millions of people and help ensure the survival of society. The vision and strategy of *an ecological urban design* has the advantage of not only being feasible, but also corresponding to the vision many people share of a world in which they would like to live. Making the vision a reality only requires the will to take a calculable risk and shed old prejudices and patterns of behaviour. In view of the problems bombarding us from all sides, this can only be seen as a hopeful perspective.

2. *Catch and Store Energy*

"Make hay while the sun shines"

- Urban Energy Characteristics
- Re-building of the Natural Capital in the City
  - I. Appropriate Use of Renewable Resources
  - II. Urban Fabric as Energy Storage – How Buildings can catch and store Solar Energy
  - III. Photosynthesis & Respiration
  - IV. Water Storage in Cities – Plumbing: Sewage, Drainage
  - V. Soil & Organic Matter
- Nutrient & Carbon storage in the City

Present energy-saving options and the rational use of energy for heating purposes, and of electricity and transport can cut energy consumption to less than 30% of its current level. *In an energy-efficient city*, energy is primarily generated on a renewable basis through sun, wind, tides, geo-thermal energy and organic mass. Buildings are designed for optimum passive solar use, both cooling and heating. Intelligent designs achieve a maximum annual consumption rate of 10-kilowatt hours per square metre of living space, which is amply covered by regenerative energies.

3.Obtain a Yield in the City

"You can't work on an empty stomach"

§ Models from Nature and History

§ Conserver instead of consumer values

§ Positive Feedback – Solutions to the Problems of Success

§ Timing and Flexibility

§ Efficient Use of Open Urban Spaces as a Resource

§ Accounting of embodied energy

Special care is placed on the selection of plant types, sizes and growth times. Thus, a *city of predominantly native species and productive plants* contains fruit-bearing bushes and trees, gardens, lean-to greenhouses, façade espaliers and herbaceous soil coverings that meet a good proportion of the settlement's needs for fresh fruit, vegetables and salad all year round, without much extra effort. The natural corridors, streams, ponds and wetland marshes also produce edible and medicinal plants for human and animal consumption. These products are fresher and cost less in terms of embodied energy, waste and money than imports that have travelled great distances, although these will be used to ensure added variety at the table. The sales of commercial products and exchanges of "surplus production" create permanent jobs and provide high quality products at reasonable costs for everyone.

4. Apply Self-Regulation and Accept Feedback

"The sins of the fathers are visited on the children unto the seventh generation"

§ Nurturing Positive Feedback and Self-Regulation in Managed Urban Systems

§ Top-Down and Bottom-up Strategies for Social Change

§ Personal Responsibility & Self-Audit

§ Self-Reliance and Disaster Preparedness

§ Self-Reliance as Political Action

Conflicts are seen and dealt with as creative learning processes in a *city of creative conflict-solving*. Re-Using together instead of consuming individually, sharing jobs, cars, fruit-trees, playgrounds, buildings and open spaces for play, sport, leisure and communication also means going through learning processes together, leading a richer life, but also a more difficult one as well. Self-regulation is predominant, as people give and receive positive feedback. Design 'failures and mistakes' are seen as opportunities. Ultimately we would have *a city based on occupant responsibility*

5. Use and Value Renewable Resources and Services

"Let nature take its course"

§ Renewable Resources as Energy

§ Investment of Non-Renewables – Ecosystem Services

§ Trees: Urban Solar Power Plants

§ Sustainable Use of Renewable Resources

This principle covers many topics. We will take water as an example, as it is the topic that we need most to deal with both on a local and global level. On-site rainwater seepage and the blanket ban on toxic substances entering the groundwater allow *a city that values recycling* to have its own decentralized drinking-water supply. Water-saving fixtures and the separation of faeces and all other organic waste for composting and fermentation cut drinking-water consumption to less than 60 litres per person per day. Grey-water from wash-basins and baths, showers, washing machines and dishwashers is purified in nature-based neighbourhood treatment processes, and then seeps back into the groundwater. Therefore, each city district preserves natural drainage conditions. This means that wherever possible, storage rooms at ground level replace basements. Vertical and horizontal filters become just as much an integral component of open spaces in the form of constructed wetland marches, as rainwater, which is creatively allowed to come to the fore in flow forms, open gutters, streams and ponds.

6. Produce No Waste

"A stitch in time saves nine"

§ Waste or Exchange in cities

§ Waste Minimisation

§ Waste as Resource

§ Industrial Strategies – Zero Emissions Research & Initiatives (ZERI)

Governed by the principle that "every waste is a resource in the wrong place", *a waste-free city* belongs to a regional, national and international network specially devoted to this aspect of sustainable husbandry, which helps to prevent over 95 percent of the current volume of waste. The aim is zero waste cycles. Be it domestic waste, excavation soil, building materials or waste from commercial or industrial production, the little waste (still produced here) is sorted on-site, before entering the respective recycling, down-cycling or re-use process. *An emission-free settlement* reduces energy consumption, treating wastewater in nature-based systems, limiting traffic and tree-lining streets, all these emission-free measures lower CO^2, SO^2O, NO^X and other toxic gases, as well as reducing dust particles. Sod roofs and façades covered in climbers, as well as natural corridors between individual neighbourhoods, improve the air and temper climate extremes. Ultimately we would have *an emission-free city.*

7. Design from Patterns to Details

"You can't see the wood for the trees"

§ Pattern Thinking and Language
§ Structural Patterns in Cities and Urban Sprawl
§ Land Evaluation and holistic Mapping
§ Land-care and Redesigning Urban Areas
§ Permaculture Urban Patterns
§ Permaculture Urban Design – Zones and Sectors
§ Bioregional Patterns & Aesthetics

We strive for a city on a human scale, with neighbourhoods to which residents can develop a direct relationship or a personal bond, but which have their own character as well. A city with nature corridors has woods, orchards, streams or wetland marches separating the individual areas and linking them to the surrounding landscape. A place where plants and animals have scope to thrive becomes part and parcel of our civilisation. *A city that fits into its own bio-region*, its landscape, its climate, celebrates its flora and fauna and its local culture. Open spaces and bodies of water typical of the area provide biological enrichment and orientation. *A city of healthy buildings* where building materials and construction systems (used in all buildings that are converted or constructed) are healthy, save primary energy and go easy on resources in their production, use and dismantling (from cradle to cradle). They are (re)-planned for multi-purpose use, easy conversion and expansion or reduction in size. Urban electrical cables and appliances are installed underground and connected in accordance with the latest findings to generate as little electric smog as possible. Before design commences, zones of geo-pathological interference are detected so that unnecessary health problems on top of them can be avoided.

8. Integrate Rather than Segregate

"Many hands make light work"

§ Integration in Urban Design
§ Types of Ecological Relationships
§ Each Element performs Many Functions
§ Each Function is supported by many Elements
§ Competition and Co-operation in Cities Districts
§ Corporate Culture and Ecology
§ Materialism and Spirituality working together
§ Rebuilding Community – Chaordic Organisation

Settlements and cities can be seen as collective artworks, as *cities of human values*. The individual and collective effort of many generations lends them a special, unmistakable character. Nowadays it is possible to simulate this historical development and make various alternatives (of building anew or renewing existing quarters) understandable to all, quickly. Thus, the complex process of coming to a consensus between the demands and needs of the occupants, the administrative authorities, the economy and the environment can be worked out easier until a plan has emerged that is tailored to the combined needs of those involved. The balanced, careful and conscious combination of chaos and order (chaordic) is about to prove as the best strategy for the organic development of such new structures. It takes time to make this shared vision a reality, but it forms the basis of the city's spiritual, intellectual and material expression.

9. Use Small and Slow Solutions

"Slow and steady wins the race"

§ Energetic Limitations on size of Urban Areas
§ Cellular Design and Scale
§ Slow is Sane – Italy's CittaSlow Movement
§ Reduce Urban Scale and Speed
§ Ethical Constraints on Size
§ Slow-Growth Strategies for Food
§ From Hierarchical Design to Nodes and Networks

The density for *a city of short distances* requires an ecological settlement not much larger than 1.5 – 2 km in diameter, meaning that everyone can walk from one end to the other in half an hour, or bike or drive their solar-vehicles across in five minutes. Cities should be kept small or broken up into oversee-able neighbourhoods. Car-and minibus-sharing is available to the district community members for all medium distances. Public means of transport – buses and trains – are faster and cheaper alternatives for longer journeys. Efficient infrastructure planning is facilitated by service centres specialising in different aspects and located at public transport pick-up points.

10. Use and Value Diversity

"Don't put all your eggs in one basket"

§ Biodiversity and the City
§ Balancing Productivity and Diversity

§ Diversity creates Stability

§ Cultural Globalisation and Renewal of the Culture of Place

§ Geographic Diversity following Culture

§ Rebuilding Community in Cities through Diversity

§ Economic and Social Diversity

A city of diversity, a DiverCity, is where the living spaces and the working spaces are reconciled and long trips to work are unnecessary; where social and cultural activities, recreation and further training, community and individuality can exist side by side. By limiting traffic and noise pollution from production processes, *this beautiful city* is a place of calm and quiet as well as festival and entertainment. The architectural expression and urban design follows criteria of beauty, elegance and simplicity, fitting into the existing landscape and cultural heritage of the region.

11. Use Edges and Value the Marginal

"Don't think you are on the right track just because it is a well-beaten track"

§ Edge as a Systemic Property

§ Edge Effect in Urban Agglomerations

§ Use of Edge in Urban Design according to the topography

§ Water Edges – River or Lake or Sea – are design elements

§ Effects of Intensity of Use

§ Value of Marginal Systems

The size and density of the settlement defines *a city that uses as little space as possible. This* depends on the degree to which the area the city requires for its material supply and disposal – on what is really available, without being a burden on the region and the prevalent cultural norms. Expansion beyond this size leads to the founding of a city or a new settlement. The grid pattern had its origin in military thinking, a democratic *chaordic* society needs flow both in its structure and in its forms. The interface of edges between different elements produces diversity, stability and places of high interest.

12. Creatively Use and Respond to Change

"Vision is not seeing things as they are but as they will be"

§ Systemic Perspective of Change – Ecosynthesis

§ Flexibility and Gender Balance

§ Ecological Models of Succession in Cities

§ Lessons from Urban Design and Land Management

§ Ecological Urban Design and Sustainability

§ Economic and Social Succession

There is nothing so permanent as change. All occupants are involved to the extent they can and wish to be in local, community self-administration, and in formulating and implementing the ecological settlement design in *a city based on occupant responsibility.* All decisions are made on the lowest level possible, based on the principle of subsidiarity. As far as possible, everyone uses the local range of services, production and trade, education, and leisure, and supports links and communication with regional, national and international groups and networks. We can master four perspectives: how things were, how things are, how things might become and how things ought to be – and synthesizing them into a compelling concept of a constructive, peaceful urban future.

All these principles have been taken or adapted from David Holmgren (Co-Originator of the Permaculture Concept): *Permaculture – Principles & Pathways Beyond Sustainability,* Hepburn, Vic., Australia, 2002 – see www.holmgren.com.au

PERMACULTURE AND ACTION LEARNING WILL HELP US BREAK THROUGH

The future is here, and it is not what we had imagined: 80% or more of the world's population live in urban areas. As designers for sustainable systems, as Permaculture practitioners, we cannot just ignore them and go on creating and living in our green oasis. We have to overcome this postulate that was so often mentioned in the 1980's and 90's: – 'do your own thing and forget about these (supposedly) non-thinking, greedy urbanites'. The urban fabric is a reality, is a manifestation of a system that we have enjoyed at the cost of nature and based on continual support we have been getting from less economically fortunate 'developing' countries. It is basically a system that is continually depleting itself and the resources of the earth, sustenance being mainly shipped into urban areas from outside,

The urgency of responding to climate change and energy security will require new directions in design. Much of the necessary changes will enable us to see an overall improvement in quality of life if we embrace Permaculture methodologies and goals. All stakeholders have a role to play, and urban designers will need a new set of strategies and skills to do so. Action Learning and urban Permaculture design can help us break through. The urban Permaculture groups will present the issues, outline some of the priorities for change, and introduce tools for effective engagement in building a more sustainable future. We also need urban thinking by permacultural planners, policy makers, politicians and citizens.

We still have a lot to do and a lot to learn. So that is why I am still working

on the concept of helping 'doers' to reflect on their doing and to learn from it while they are doing it – the concept of action learning, that was defined by the Englishman Reg Revans in the early 1960's. We are now bringing it again into the world of life-long learning through Gaia University in co-operation with Revans University. If you want to know more about this "complementary university" visit the web site: www.gaiauniversity.org

HEALING IS POSSIBLE – MY CONCLUSIONS

Throughout my life – or at least the last third of it, since I met up with Permaculture – I have been involved in many dialogues attempting to shape the ideas of new generations and to provide accessibility to the pool of vast human resources capable of healing a "deeply wounded world." Now retired and living in the ecovillage of *Lebensgarten Steyerberg* with my wife, Margrit, what do I see as the challenge of the 21st century?

For global consciousness to develop, which is one of today's biggest challenges, reflection on actions, action learning and creative imagination are critical. We can find these aspects at Gaia University. Unfortunately, people tend to avoid facing up to the situations confronting them, and in today's world there are many means of disassociating ourselves from reality. Additionally, media distort the world situation – and mirrors convey to us false images of ourselves and of each other.

In the end, I think the operative word is "health", in the sense of becoming whole – at the individual level over the course of a lifetime, in the groups with non-violent communication and, globally, through the concerted practice of mediation in all conflict situations on whatever scale. I call my approach "urban healing", preventive medicine for an imperilled planet, homeopathic in nature – and urge us to look past the symptoms in order to identify the root causes of the world's malaise.

I do believe in magic, but no outside agency and no degree of wishful thinking can relieve us of our personal and collective responsibilities. As I see it, the future of humankind depends on us and us alone. At an age of over 70, I am convinced that to heal, we must move beyond the power games in which the 'enemy', so often our scapegoat, must be destroyed at all costs. Instead, we must come to terms with the fact that tension is inherent to every relationship. It is up to each of us to learn to accept, manage, and transform tension. See it as a learning curve. 'If we don't break through, we will break down'. History bears sober witness to the accuracy of this observation.

This timely and thought-provoking PermaCity idea, being illuminated from all sides in the conference from which this book is a result, can be the answer – but needs to explore how we can save energy, resources and money by making our homes, our transport systems and our food production more energy efficient, more beautiful and more human. This is the way we need to develop our design abilities and use that potential to create urban ecology – the PermaCity, urban-ecovillages, neighbourhoods and districts – indeed, an urban Permaculture, which supports the dignity of all people and the vulnerability of natural systems, and which gives every sentient being their fair share. In the words of the Swiss/Englishman Sir Martin Brofman: "Anything can be healed".

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