Part II
Towards a Theoretical Synthesis

Synthesis – SHED – Conclusion

II. Rebuilding the Foundations

I swear the earth shall surely be complete to him or her who shall be complete, The earth remains jagged and broken only to him or her who remains jagged and broken

(Whitman (1856/1881) 1991 p.68)

Architecture is in the process of becoming the physical definition of a multilevel, human ecology

(Soleri 1969/1973 p.31)

Since there are now few places left on earth which man (sic) has not altered in some way we could say that much of the earth is really designed

(Rapoport 1972 p.4)

We are as gods and might as well get good at it

(Brand 1968)

Philosophy, Practice and Popular Culture

The idea of ecocities necessarily involves cultural change but Ecopolis posits cultural change as the core requirement for consciously integrating urban systems into the processes of the biosphere to optimise the functioning of the biosphere for human purposes. It is about continuous process, with no omega point.

An important part of this overall proposition is to do with the dissemination and replication of ecocity ideas. As cities are the built expressions of values held in social, political and cultural processes, the *real* task is not the making of buildings but the creation of an ecological culture. Education is a vital part of the process of embedding ecocity precepts and values in the communities that comprise that larger culture. It is about a rediscovery of citizenship. In the chapters that follow I have dealt with education in its widest interpretation as a means of drawing out and transmitting information, knowledge and experience across society and not just to do with formal institutions (see 'Capturing the Transmitters' in Chapter 10). Most importantly, because so much of what we learn in mass society is not through formal institutions, and because the task of adjusting cultures globally is urgent and

cannot rely on returning everyone to school, it is vital that mainstream popular media provide critical pathways for disseminating ideas. It is imperative to communicate effectively at the level of popular culture in order to both precipitate and maintain the changes in human settlement design, development and maintenance needed for humans to be successful organisms in the community of the biosphere.

Attack or Defend?

The truism that 'The history of man (sic) is the history of increasing mastery over nature' (Clark in Rapoport 1972 p.38) is typical of preambles in tracts on design, planning and the environment. Like Le Corbusier's proud boast about attacking nature, it is an enormous conceit and is fundamentally untrue. All that humans have done is extend their domain within the biosphere, we have pushed the limits of our niche just as any other species would. The difference is that we have evolved organisational skills and extra-somatically powered, extra-corporeal means to act on the environment at a scale over which the consequences are so displaced in distance and time that we cannot know whether we have yet to demonstrate any mastery whatsoever. What we do know is that, intentionally or otherwise, we are designing our fate. In the absence of evidence for the contrary it would seem wise to design in a manner that defends, rather than attacks the foundations of our existence.

Design Synthesis

The syntheses presented in the following chapters is about design in the sense that it is the totality of human decisions and choices made in order to provide and maintain conditions for human habitation within the biosphere. Linkages rather than barriers, commonality rather than difference, integration rather than separation and mutual aid rather than competition describe this totality. The following chapters bring together allied understandings of buildings, cities and living systems in a framework intended to facilitate sustainable human ecological development.

Chapter 8 describes biogeophysical aspects of urban ecology and their relationship with human culture and society through the built environment. It relates to the proposition that 'City-regions determine the ecological parameters of civilisation'. In particular, I maintain that cities are artificially constructed living systems in which the needs of species other than human have to be taken into account and that climate change provides an imperative for understanding the myriad relationships between the city and its environment in order to ensure the maximum chance of survival for all species. This chapter includes an unashamed attack on urban sprawl and outlines some of the strategies for integrating human habitat with that of non-human species.

I describe, in Chapter 9, various aspects of the development processes that may bring Ecopolis into existence. These include some of the means by which knowledge can be effectively integrated, i.e. by action rather than mere contemplation,

addressing the imperative of the Ecopolis proposition regarding the intregration of extant knowledge. In this chapter I introduce theories of politics, society and economics whose social and moral arguments say that authoritarian power structures are inimical to societies capable of sustaining ecologically responsive urban civilisations in the long term because such structures tend to filter and block critical flows of information. The rapid integration of knowledge requires good, uninterrupted communication. Cities require the maintenance of civil society over and between generations and this also requires constant, open communication. Cities occupy commanding positions in the flux of energy, resources and biology of the region they inhabit. The inhabitation of a place demands a thorough understanding of the living landscape and I propose that a critical approach to regionalism offers the means to gain and maintain that understanding.

Chapter 10 takes us on an exploration of some cultural 'change agents', those many ways of communicating ideas that inform and affect the cultural, social and individual realms of human life. It addresses the proposition that an ecological civilisation requires conscious, systemic cultural change and looks at ways to achieve and sustain that change. I describe a number of specific approaches to education for an ecological culture, each of which, with my colleagues in UEA, I have attempted to employ. An underlying theme is that the best education is learning by doing and that knowledge needs to be acted upon to have effective value in changing cultural norms, i.e. culture is not a spectator sport or an abstract concept but really is about how we live. Popular culture has been neglected in the design of buildings and the planning of cities and towns at a fundamental level, and the importance of its role as a catalyst for deep cultural change has been underestimated. I believe that it can provide the accelerant we need for achieving the speed of cultural transformation needed to deal with increasingly rapid climate change.

My attempt to reweave the many strands of analysis, theoretical positions and practical examples to create a workable synthesis, is set out as the 'SHED' (Sustainable Human Ecological Development) in Chapter 11. This chapter presents the four central elements that constitute the framework of the theory – *a mission statement:* the Charter of Calcutta; *a performance measure:* the Frogstick; *a set of principles:* the Ecopolis Development Principles; and *a process:* the Seven Steps. Taken together with the Propositions, these elements constitute the Ecopolis synthesis, and provide a step-by-step program and framework for cohering the many facets of design, development and maintenance into the fractals of ecocity demonstration projects.

Pattern Pieces

In a sense, this book represents an attempt to find a pattern language for making ecological cities (and to relate the organic, city-as-living-system typology to the science of ecology and what Geddes called 'civics'). Because such cities have yet to be made, the language for them does not yet exist in a clearly visible form. As pieces of ecocity get built so the understanding of which patterns do and do not fit

will improve. The Seven Steps (Chapter 11) and its relationship to urban fractals can be seen as a means of setting out some ecocity patterns so that they can be shared and tested.

Community processes are vital to establishing the social patterns that must underlie the making of ecocities and much of this theory is to do with how the community can be engaged in the entire gamut of processes and activities that create and maintain ecologically viable human settlement.

There are two approaches to defining ecological cities: the 'performance' model and the 'ideological' model. The performance model stresses measurable outcomes: air quality, levels of pollution, percentage of wastewater recycled, percentage of renewable energy captured, etc. It is essentially to do with urban biophysical environments and is typically dealt with in phenomenological texts that lay stress on description, classification and quantification[1]. The ideological model lays stress on conceptual and less measurable aspects, e.g. provision of roof gardens and community amenity, commitment to social justice in management structures, health and security, etc. This approach is more clearly focussed on the human ecology of the city.[2] This characterisation, or thematic identification of definitions based on 'performance' or 'ideological' approaches can also be interpreted in terms of 'biophysical' and 'social' themes. Human settlement is a consequence of the interweaving of these themes, which are reflected in the Ecopolis Development Principles[3] (Chapter 11) that have been developed and tested in the public domain through the case studies described in Chapter 7.

Over a quarter of a century ago, Ian Douglas told us that "The urban eco-system is the most elaborate geographical control-system or integrated resource-management system in human experience." (Douglas 1983 p.206) But we have yet to see this profound observation properly acted upon. There is a lot of good information available and a number of well-constructed texts that deal with ecological architecture, urbanism and design, but curiously, none of them seem to provide a framework for using and integrating the wealth of knowledge each provides, or the set of principles each encompasses. The Seven Steps provide a framework for dealing with these many ideas and bits of information. The Seven Steps do nothing to reduce the complexity or richness inherent in any of the theories, principles, procedures or practices they

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[1] Characteristic of this approach to elucidating the relationship between human settlement and the biosphere is the textbook 'Urban Biophysical Environments' (Bridgman, Dodson and Warner 1995).

[2] It is interesting to compare this distinction with the different types of environmentalism identified by Doyle, in particular the Australian and North American 'preservationist' and the European 'human ecologist' (Doyle 2000). The one is 'at a distance' from social concerns whilst the other is focussed on them. Apart from this apparent similarity, however, it is difficult to find any consistent relationship between the parallel analyses because the two general approaches to ecocity thinking are just as likely to occur in Europe, Australia or North America.

[3] Initially drafted as a set of 12 precepts for ecological development in 1991–1992 by Prelgauskas, Hoyle and Downton.

relate to, but do provide a means of systematically accessing that knowledge and experience within the framework of a clearly expressed set of values and goals.

An Urbanism of Resistance

An important idea at the centre of the evolving Ecopolis theory is that community expectations are not, and cannot, be entirely conditioned by the current state of global capitalism and that what Kenneth Frampton calls "a contemporary archi-tecture of resistance" (Frampton 1987 p.27) can be conceptually and practically extended into an 'urbanism of resistance' against the monocultural, monopolistic, life-threatening practices inherent in conventional city design, development and maintenance.

Technology Is the Key

> The time for real unification of art and technology is really long overdue.
>
> (Pirsig 1974 p.294)

Our global impact on the environment is a result of technology. Our survival as a species depends upon technology. There is nothing 'unecological' about this proposition; technology is the key. But what is technology? Humans are tool-using creatures. Other species have evolved some tool use, but we have developed more tools and have learned to use them in more ways. I always return to the definition of technology inspired by Mumford:

$$\text{Technology} = \text{Tool} + \text{Use}.$$

Thus technology is simply what we get when we decide how to use tools. The tools themselves are pretty dumb and cannot really be blamed for anything. Those decisions are based on values; they are culturally derived, which is part of why the terrorist's perverted use of everyday items is so frightening.

Thus technology is the key because it derives from and depends on the values we apply to the use of our tools, whether they be hammers or words. It is the application of *values* that makes the difference; we need to construct the cultural base of Ecopolis with care.

Essentials

> Cities must become socially, economically, and ecologically sustainable, fulfilling basic human needs for shelter, subsistence, and social cohesion. For this to work the active par-ticipation of people in shaping their urban environment is crucial
>
> (Girardet 1992 p.117)

For ordinary citizens to participate in city-making as an ecologically responsible activity in the context of conscious evolutionary endeavour, complex processes and concepts must be made as accessible as possible. The following chapters include a set of icons and Geddesian 'thinking machines' as a contribution to the community-oriented design program that must be at the heart of ecocity making. The challenge has been to make the complex processes of creating human settlement appear simple, to keep the goals of ecological development visible and understandable, and to reduce things to their essence. I have tried to arrive at a set of what might be called 'intellectual sound-bites' by way of trying to fit otherwise complex ideas into the communication framework of popular culture.[4]

In the final Chapter I have drawn some conclusions from the material presented in the previous eleven chapters and proposed that the most effective means of understanding cities is to see them as extensions of human physiology. Such an intimate and personal relationship with the built environment is a revolutionary proposition, first intimated in the work of Patrick Geddes in the early years of the twentieth century. I believe that this is an essential part of maintaining the focus and flexibility of mind needed for continuing to evolve a culture able to cope with the planet's rapidly changing climate and severely disrupted ecosystems.

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[4] This approach is lent some credence by ecologist Eugene Odum's Ecological Vignettes in which he was clearly of a similar mind, saying 'I have tried to show with 'sound bite' vignettes, cartoons, and charts how ecological thinking and human common sense can help us understand and deal not only with environmental problems but with other human predicaments as well.' (Odum 1998 p.55).