

Sustainable Neighbourhood Design (SND)

- Critical Analysis on the Key Concepts of Global Eco-Village, Urban Village and New Urbanism Movements -

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ABSTRACT : This paper aims to analyze origins, key concepts, and criticisms of three SND movements (New Urbanism, Urban Village, Eco-Village Movements) and identify key planning and design objectives of future SND. Key research findings are as follows. First, the New Urbanism Movement is a top-down, designer led initiative for creating an pedestrian-friendly, mixed-use neighborhood having 'good' accessibility to a rapid public transit network. Although there is still some uncertainty as to the overall implementation of the 9 principles in actual projects and policies, nevertheless, the Movement provides a new vision for future SND in urban or suburban areas against existing low density urban sprawl. Second, the Urban Village Movement is a moderate top-down approach emphasizing the importance of public participation during the planning/design process to create a mixed-use, walkable, high quality urban neighborhood. Although there are some criticisms, the Movement has highlighted several design principles to prevent the negative effects of mono-cultural, segregated modern development and to create mixed-use, livable urban neighborhoods. The worldwide Eco-village Movement is a bottom-up approach to test new ideas, techniques and technologies in order to avert looming global, social and environmental crises, and to build environmentally-friendly SND. The extremely long periods necessary for planning, design, consultation and construction is, however, a major criticism of this approach. Nevertheless, the Movement highlights the effectiveness of a bottom-up approach in promoting public participation towards SND. Finally this research identifies seven key objectives of SND by analysing the three Movements' key design concepts.

Key Words : sustainable development, neighbourhood, design

요약 : 본 논문은 지속가능한 근린주구 계획의 관점에서 뉴어바니즘 운동과 어번빌리지 운동, 에코빌리지 운동의 핵심개념과 찬반논리를 분석함으로써, 세 운동의 특성을 파악하고 지속가능한 근린주구 계획의 핵심목표를 제시하고자 한다. 주요 연구결과는 다음과 같다. 첫째, 전문가 주도의 뉴어바니즘 운동은 대중교통 연계성 확보, 보행자 중심계획, 복합용도 개발을 근린주구 계획의 핵심과제로 제시하고 있다. 비록 일부 계획원칙의 실현가능성에 아직 의문이 남아있지만 뉴어바니즘은 무분별한 도

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시확산 문제를 극복하기 위한 새로운 개념을 제공하고 있는 것으로 평가되었다. 둘째, 어번빌리지 운동은 계획과정에 있어 주민참여의 필요성을 강조하고 복합용도의 건기편한 도시형 근린주구 계획을 지향하고 있다. 비록 전원생활의 향수에서 비롯된 개념이라는 비평이 있지만 단일용도 교외주거 단지의 문제점을 해결하기 위한 다양한 계획기준과 원칙을 제시하고 있었다. 셋째, 에코빌리지 운동은 주민 주도형 운동으로서 새로운 계획개념과 신기술을 적극 활용하고 소규모 환경친화형 근린주구 계획을 지향하는 것으로 평가되었다. 비록 너무 긴 계획과정 때문에 현실적이지 못하다는 비평을 받지만, 공동작업, 주민참여, 정보교류의 중요성을 보여주는 대표적인 사례로 분석되었다. 마지막으로 이 연구는 지역의 자족성 향상, 환경오염 최소화, 사회적 형평성 확보, 녹지공간 확대 등 지속가능한 근린주구 계획의 7가지 핵심목표를 제시하였다.

주제어 : 지속가능한 개발, 근린주구, 디자인

I. Introduction

The concept of sustainable development has become firmly placed on the global agenda since the Bruntland Commission Report(WCED, 1987). In addition, with the increased emphasis on improved quality of life (e.g. health, safety and equity) people are looking at alternatives to the post-war era of unsustainable neighbourhood development, and want to improve the environment and create a secure community.

However, although the new emerging generation of neighbourhood development plans puts sustainability center stage there are very few signs of actual change on the ground. Most new developments repeat the pattern of the recent past, and therefore facilitate disenfranchise non-car-users, and provide the essential services of water, sewage treatment, gas and electricity on demand rather than manage demand or seek to achieve local autonomy(Barton, 2000: 84). Thus, no significant progress towards SND has been made on a consistent basis worldwide. Most practices/projects

towards sustainable settlement design focus on the adaptation of new technologies and landscape design strategies in a merely cosmetic way. Furthermore, there has been a lack of research defining the concepts of SND and analyzing/evaluating the strengths and weakness of new design movements toward SND.

To further and assist SND practices this paper reviews key definitions and concepts of SND. In addition, it analyzes the origins, concepts, practices, strengths and weakness of recent neighbourhood design concepts: the New Urbanism Movement in the USA and Canada; the Urban Village Movement in the UK; and the Eco-Village Movements worldwide in order to ascertain key objectives of future SND.

II. Key Definitions of SND

Barton et al.(1995) and Barton(2000) proposed an ecosystem approach, derived from ecosystem theory in Lynch's book, *A Theory of Good City Form*(1981) and ecosystem theory developed

by McLoughlin(1969), which views the human settlement (home, an estate or a town) as an ecosystem in the sense that it provides an essential habitat for humans, creates its own microclimate, and exists for human comfort and sustenance. By planning and designing neighborhood as a self sufficient ecosystem many social and environmental problems (e. g. social segregation, loss of local activity and services, environmental disasters, etc.) can be averted. However, it is difficult to point a specific standard and size for a neighborhood.

A further review of existing definitions set by other researchers reveals little effort taken to define the concept of neighborhood in the context of sustainable development. Only a few studies have attempted to define sustainable neighborhood. Carley and Kirk(1998), for instance, in their report, *Sustainable By 2020? : A strategic approach to urban regeneration for Britain's cities*, defined sustainable neighborhood as:

‘lively, local, mixed-use settlements which maximize quality of life and social interaction and minimize negative effects, whether social or environmental, thus benefiting both local residents and society at large’(p. 5).

The present researcher has expanded upon Carley and Kirk’s more comprehensive definition to develop his own new definition of ‘sustainable neighborhood’ presented below:

‘Sustainable Neighborhood’ is a walkable

‘neighborhood’ within which a mix of people can live (without segregation), maximize their quality of life, enjoy social interaction and partial ‘self-sufficiency’ in basic facilities (e.g. homes, jobs, food shops, schools and post offices), resources (e.g. energy, water, waste and building materials) and decision-making (e.g. design and management), and experience minimal negative effects, whether social or environmental, thus benefiting both local residents and society at large’.

Therefore, “sustainable neighborhood design” can be ultimately defined as ‘a planning and design attempt to create a sustainable neighborhood well integrated with its context, while protecting and enhancing the environmental, social and economic health of its community, without significantly raising costs or diminishing the quality of life’. Based on the above definition, the following section will analyze origins, key concepts and criticisms of the three sustainable neighborhood design Movement, namely the New Urbanism, Urban Village; and Eco-village Movements that resolutely promulgate such ideas and are therefore linked in various ways to each other.

III. ‘New Urbanism Movement’ in the USA and Canada

1. The Origins

USA and Canada originated in dissatisfaction with conventional suburban development prevalent

after World War II(Thompson-Fawcett, 1996). The movement became popular after the establishment of The Congress for New Urbanism (CNU) in 1991. Initially, the group consisted of six leading urban design practitioners, architects and educators: Peter Calthorpe, Andres Duany, Elizabeth Moule, The recent uptake of 'new urbanist' approaches in the Elisabeth Plater-Zyberk, Stefanos Polyzoides and Daniel Solomon, but membership was later broadened by invitation to additional practitioners, consultants, developers, academics, bureaucrats, politicians, community and environmental groups.

The group's main concepts have been developed through several academic publications: *The New Urbanism*(Katz, 1994), *The Next American Metropolis*(Calthorpe, 1993), and *Towns and Town-Making Principles*(Duany and Plater-Zyberk, 1993), and annual Congress meetings since the first Congress in 1993. The movement has gained prominence through the support of the US Department of Housing and Urban Development, several planning documents (i.e. Vision/Reality: Strategies for Community Change(1994)).

After the fifth Congress held in Toronto in 1997, the movement developed further and became an international movement. At that Congress a total of 18 representatives from different countries attended. At the end of the fourth Congress in the previous year, the movement had produced its charter, stating the organisation's main beliefs, concerns and principles for action. It was signed by the Secretary of the US Department of Housing and Urban Development

2. Key Concepts and Practices

The core concepts of New Urbanism are found in the Movement's Charter which sets out the group's mission and 27 detailed principles as a guide to policy writers, developers, planners and designers. In its Charter the Movement states that it stands:

For the restoration of existing urban centers and towns within coherent metropolitan regions, the reconfiguration of sprawling suburbs into communities of real neighborhoods and diverse districts, the conservation of natural environments and the preservation of the built legacy
(CNU, 1996, p.1)

At the neighborhood level, the Charter sets out 9 detailed principles:

- In the metropolis, the neighborhood, the district and the corridor are the essential elements of development. They form identifiable areas that encourage citizens to take responsibility for the area's successful continuance and evolution.
- Neighborhoods should be compact, pedestrian-friendly and mixed-use.
- Many activities of daily living should occur within walking distance, especially for the elderly and young. Interconnected networks of streets should be designed to encourage walking, reduce the number and length of automobile trips and conserve energy
- Within neighborhoods, a broad range of

housing types and price levels can bring people of diverse ages, races and incomes into daily interaction, strengthening the personal and civic bonds.

- Appropriate building densities and land uses should be within walking distance of transit stops, permitting public transit to become a viable alternative to the automobile.
- Concentrations of civic institutional and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes.
- The economic health and harmonious evolution of neighborhoods, districts, and corridors can be improved through graphic urban design

codes that serve as predictable guides for change.

- A wide range of green spaces (e.g. parks, community gardens) should be located within neighborhoods.

(Source: <http://www.cnu.org>)

According to New Urban News's annual survey, 155 projects have been completed or are in some state of construction. Numerous projects are well under way and there are many more schemes on the drawing board. Counting projects still in planning, the total number of new urbanist projects in the US was 306 in 2000 (New Urban News, 2000).

(Table 1) Key Features of New Urbanism Projects

Scheme	Location/Status	Promoter/Designer	Key Characteristics	Area
Seaside	Florida/ Construction(92%)	Rovert Davis/ Duany & Plater-Zyberk	350 homes, town centre, beach front development, mix of housing forms	32 ha
Laguna West	California/ Construction(50%)	Calthorpe Associates	3,400 units, TOD, Pedestrian-oriented subdivision	400 ha
Civano	Tucson/ Construction(8%)	Fannie Mae, CDC partners/ Moule & Polyzoides, Duany, & Plater-Zyberk	1,300 homes, strict energy efficiency standard, town centre	323 ha
Cagan Crossings	Orlando/ Construction(25%)	Cagan management Group/ Duany. & Plater-Zyberk	8,000 homes, commercial centre	246 ha
Celebration	Osceola country/ Construction(55%)	Disney/Cooper Robertson, Robert Stern Arch.	5,000 homes, downtown, office park	1,984 ha
Northlake Park	Orlando/ Construction(20%)	Lake Nona Land Co./ Glatting Jackson	1,000 units, town surrounding 500-acre lake	400 ha
Addison Circle	Addison	Post Properties/ RTKL Associates	3,000 units, high density urban neighbourhood	32 ha
Uptown District	California/ Completed	Oliver McMillan/SGPA Architecture and Planning	High density urban village 318 unit, 145,000 sq.ft. retail	5.6 ha
Bamberton	Canada/ Planned	Development corporation/ Duany. & Plater-Zyberk	4,900 units, 12,000 residents, one-job per household, self-sufficient new town	631 ha
Southeast False Creek(SEFC)	Vancouver. Canada	City of Vancouver/ Not decided yet	2,000~2,500 units, Vancouver city centre, brownfield development, 20,000 sq.ft. non-residential space (retail, hotel. etc.)	13.6 ha

Source: Kim(2002: 63)

3. Criticisms of the Movement and Lessons for Future SND

Several criticisms have, however, been leveled against the movement. Firstly, the new urbanists' large-scale suburban and ex-urban proposals have been criticized for providing a justification for promulgating sprawl, whatever their importance in planning and design(Bressi, 1994). For example, the Seaside Florida project, which does not integrate with an existing urban area, defeats one of the ultimate purposes of the new urbanist approach by simply creating a different kind of sprawl, despite associated improvements in urban design and life at the neighborhood level (Bressi, 1994; Thompson-Fawcett, 1996).

Secondly, a frequent criticism is that the Movement represents a return to romantic conceptions of past lifestyles, and that it fails to meet the needs of twenty-first century living. Adler(1995), for instance, describes new urbanism's architecture and layout as 'a plot to lure unwitting citizens into living in a theme park'. Attention is also drawn to the effeteness of local small shops against large-scale discount stores.

Thirdly, criticism concerns the low level of affordable housing within proposals, especially for low-income earners, because most of the pilot projects are largely enclaves for those with middle-to-high incomes. Although the new urbanists' model provides options requiring certain minimum obligations, the problem of affordable housing still remains, especially in free market-driven countries.

Finally, criticism is made of the fact that the new urbanist model relies heavily on the use of design codes. Thompson-Fawcett(1996) argues that this severely limits the choices available to residents, although it provides certainty in terms of what can be expected for the area.

Despite the aforementioned criticisms, it is clear that the Movement provides a new vision for future development in urban or suburban areas. In particular, it points to the need for public policy writers, planners and developers to minimize the negative effects of current rapid suburbanization and to seek alternative solutions. In addition, as identified in the CNU charter, the movement has reinvented and proposed several fundamental principles for future sustainable neighborhood design, mainly transit-oriented, walkable, mixed-use neighborhood development to promote environmental efficiency. However, there still remains some uncertainty as to the successful implementation of these principles in actual projects and policies.

IV. 'Urban Village Movement' in the UK

1. The Origin

The British Urban Villages Movement was started by the Urban Village Group in late 1989. This Group was set up in response to a challenge from the Prince of Wales, who wanted to see a new form of development which would overcome the problems inherent in much of the planning and design of the previous 20 years.

The main task of the Urban Village Group was thus to promote a higher quality and more sustainable urban environment. The group consisted of various professionals such as house builders, architects, planners, and other professionals. Most of the initial members were the directors of their respective organizations.

In order to establish key factors making for livable, high quality and sustainable communities, the group visited many examples of good and bad practice throughout the UK and overseas (Aldous, 1992). It subsequently debated the key factors, concepts and dilemmas of a new category of development, mixed-use 'Urban Village' or Structured Planned Urban Development, and published the criteria for such development and a mechanism for achieving it in a report in 1992.

The campaign's work has continued under a reconstituted Urban Villages Forum which supports a programme of seminars and conferences, quarterly newsletters, the establishment of a number of working parties dealing with the practice of bringing urban villages into existence, and the publication of a report, which examines the financial viability of building urban villages (Thompson-Fawcett, 1996).

2. Key Concepts and Practices

Although the report, *Urban Village: A concept for creating mixed-use urban developments on a sustainable scale* (1992) defined a new category of development which, for convenience, was to be called an "urban village", it is often very

difficult to distinguish what might be labeled an urban village project from many other current commercial developments. Furthermore, the Movement itself is reluctant to confirm that any projects to-date meet all the basic criteria in its model. However, characteristics generally desired in urban villages can be summarized as follows:

- The ideal size: 100 acres (40 hectares)
- Population: 3,000 ~ 5,000 persons
- Flexible building and uses for preventing the need for clean-sweep redevelopment
- A diverse range of mixed land uses at neighbourhood, block, street and building levels
- Convenience shopping, basic health facilities, primary and nursery schooling, and some recreational/ cultural facilities within walking distance
- A high quality of urban design and architecture that encourages crime prevention and sense of place
- Balanced job and residents ratio, theoretically 1:1 ratio
- Energy efficient, information-efficient built environment, responsive to climate, location, and frugal and spared energy options
- Integrated land use and transportation design
- A pedestrian-friendly, traffic calmed environment
- A mixture of housing types, prices, and consequently a mixture of residents
- An urban form that reinforces economic, social and environmental sustainability.

Urban Villages are intended to be built in a strategic nodal pattern, i.e., a polycentric grouping of villages, near to a public transit system and existing infrastructure. The key locations for Urban Village development are: 1) Inner city “brown land” sites; 2) Suburban or edge-of-town sites; 3) Infill sites in existing urban areas, and 4) Carefully chosen green field sites. Thus, an urban village can be defined as a human scale, full-featured settlement, which integrates human activities harmlessly into the natural environment, supports healthy human development, and can be continued into the indefinite future (Thompson-Fawcett, 1996).

3. Criticisms of the Movement and Lessons for Future SND

The model put forward by the Urban Village

Movement has promoted considerable debate in architectural, developmental and academic articles. Firstly, many contend that the ideals of the Urban Villages are focused on the nostalgic or romantic aesthetic images of pre-industrial development, especially traditional life in English villages. Thompson-Fawcett(1996), for instance, argues that the Urban Village Movement and its projects are closely bound to a traditionalistic organic understanding of the city through its use of historical metaphors and symbols, and heterogeneous combinations of form and function.

Secondly, some query the effectiveness of community participation because several unsolved questions remain regarding the process of public participation, although public participation opportunities during the process of development are considered a key tool in giving the local

〈Table 2〉 Key Features of Urban Village Projects

Scheme	Location/Status	Promoter/Designer	Key Characteristics	Area
Crown Street Regeneration	Glasgow/ Completed	Scottish Homes and Glasgow Development Agency/ Piers Gough	1,000 homes, mix of tenure and uses, urban neighbourhood regeneration	16 ha
Poundbury	Dorset/1 st Phase Completed	Duchy of Cornwall/ Leon Krier	5,000 residents, mix of tenure and uses, light industry and workshops, greenfield development	158 ha
West Silvertown	London/ Completed	LDDC peabody Trust	5,000 residents, mixed tenure, brownfield redevelopment	73 ha
Hulme Regeneration	Manchester/ Completed	Hulme Regeneration Ltd/ numerous architects	3,000 homes, inner city regeneration, mix of tenure, shops, community facilities	97 ha
Blairs College	Aberdeen/ Drawing board	Trustees of the Blairs College Estate/ not decided	2,000 homes, mix of tenure, shops, parks, employment, community facilities	450 ha
Bordesley Regeneration	Birmingham/ Completed	Birmingham Heartlands Development Corp.	1,100 homes, mix of shops, offices and community facilities	38 ha
Tranmere	Merseyside/ Drawing board	Metropolitan Borough of Wirral/ not decided	Homes, refurbishment, mix of shops, employment and community facilities	250 ha

Source: Kim(2002: 67)

population a 'sense' of involvement. Questions raised include: What depth of participation is required? For how long a duration? How many opportunities should there be for participation? and How can the effectiveness or depth of participation be evaluated?

Finally, many researchers, such as Thompson-Fawcett(1996), point to the lack of evidence to support claims for the effectiveness of the concepts of the Urban Village Movement concept. She argues that proponents of the urban village concept have not substantiated their assertions with any evidence from research, and it is difficult to verify the advantages of their model in terms both of experience and simulation.

Nevertheless, the Urban Village Movement clearly presents a significant vision for future development. Especially at national policy level, the Movement appears to be having reasonable success since its concepts have been supported by the DETR and adopted in revised national policy documents (e.g. Planning Policy Guidance 1, 3 and 13).

In addition, the Movement, as an example of a post-modernist urban design movement, has emphasized several design guidance principles to prevent the negative effects of mono-cultural, segregated modern development and to create mixed-use, livable urban developments on a sustainable scale. Furthermore, the Movement acknowledges the diversity and role of the community in the design process, often ignored in the development process.

V. The Worldwide Ecovillage Movement

1. The Origins

The Eco-village Movement had its origins in 1990 when Gaia Trust of Denmark decided to use its resources to further the movement towards sustainability. In 1991, twenty people from the best communities identified by Gilman met under the auspices of the Gaia Trust at Fijordvang in Denmark to discuss a strategy for developing and spreading the eco-village concept. This meeting led to the formation of the Global Eco-village Network(GEN) in 1994. The GEN began as a small group of representatives from nine eco-village projects working together to promote and develop an ecovillage model for sustainable living which aimed to: 1) Support the development of sustainable human settlements 2) Facilitate the exchange of information amongst the settlements and 3) Make information available about eco-village concepts and demonstration sites. Early members included the Findhorn Community, Scotland; The Farm, Tennessee, USA; Lebensgarten, Steyerberg, Germany; Crystal Waters, Australia; Ecoville, St. Petersburg, Russia; Gyûrûfû, Hungary; The Ladakh Project, India; The Manitou Institute, Colorado, USA; and the Danish Association of Sustainable Communities.

Two major events occurred in 1995. One was the establishment of its website(www.gaia.org), the other was a conference at Findhorn entitled 'Eco-villages and Sustainable Communities'

organised by the GEN and the Findhorn community, with financial backing from the Gaia Trust. During this meeting it was decided to establish three regional networks to cover the globe geographically, with administrative centres at The Farm(USA), Lebensgarten(Germany) and Crystal Waters(Australia). Since then the GEN has grown rapidly to become an international group. In 1999, the GEN had networks in more than 10 further countries and an information node in more than 25 other countries. Over 160 communities are linked to the GEN at present.

2. Key Concepts and Practices

The Eco-village movement is a modern attempt by humankind to live in harmony with nature and with each other. Eco-villages, as an integrated solution to the global social and ecological crisis, represent a “leading edge” in the movement towards developing sustainable human settlements and provide a testing ground for new ideas, techniques and technologies which can then be integrated into the mainstream (GEN, 1996).

Robert Gilman in his book, *Eco-villages and Sustainable Communities*(1991), offers the following

〈Table 3〉 Key Features of Global Eco-Village Projects

Scheme	Location/Status	Promoter/Designer	Key Characteristics	Area
Crystal Waters	Queensland Australiz/ Completed	Group of residents	200 residents, 260 ha, world's first international permaculture, village, diversity of food, energy resources, economic enterprise, and social activities	259 ha
The Farm	Tennessee, USA/ Completed	Communal group (320 people)	Operates 30 to 40 businesses, Eco-Village training center, A source of innovation in solar housing, midwifery, soy technology, Third World relief, and cooperative living	717 ha
Findhorn	Scotland, UK/ Complete and ongoing	Group of residents	350 residents, 40 new ecological buildings erected to date, including an innovative Living Machine biological sewage treatment plant, a 75 kilowatt wind generator, turf-roofed houses with “breating wall” construction, and a Guest Lodge built to highest ecological standards.	20 ha
Ithaca Projects	New York, USA/ 1st phase completed	Residents group	100 units, co-housing projects, urban renewal project, Five small neighbourhoods clustered around a village green, seek to achieve energy- and water efficiency and food growing by using organic/ permaculture principles	71.2 ha
Sherwood Energy Village	Nottingham-shire/ proposal	Sherwood Environmental Village Ltd./Benoy	High environmental sustainability, targets including zero CO ₂ emission, reduction of car use, mixed use brownfield development in former Coalfield	50 ha

Source: Kim(2002: 72)

definition of an eco-village:

An eco-village is a full-featured settlement in which human activities are harmlessly integrated into the natural world in a way that is supportive of healthy human development and can be successfully continued into the indefinite future.

The GEN provides a similar definition of an eco-village and a detailed explanation of its key principles as follows:

An eco-village is a human scale, full-featured settlement, which integrates human activities harmlessly into the natural environment, supports healthy human development, and can be continued into the indefinite future.

Human-scale refers to a size in which people are able to know and be known by the others in the community, and where each member of the community feels he or she is able to influence the community's direction...

In a full-featured settlement, all the major functions of normal living (residence, food provision, manufacture, leisure, social life, and commerce) are plainly present and in balanced proportions...

One of the most important aspects of this principle is the ideal of equality between humans and other forms of life, so that humans do not attempt to dominate nature but rather find their place within it. Another important principle is the cyclic use of material resources, rather than the linear approach (dig it up, use it once, and throw it away forever) that has characterized industrial society... Healthy human development

involves a balanced and integrated development of all aspects of human life - physical, emotional, mental, and spiritual. This healthy development needs to be expressed not just in the lives of individuals, but in the life of the community as a whole... The sustainability principle - that the community can be successfully continued into the indefinite future - forces a kind of honesty on eco-villagers. Without it, it would be easy in the short-term to create human-scale communities that seem to be harmoniously integrated into nature and to be full-featured, but in fact are in some not-so-visible way living off the capital accumulated in other parts of the society; or dependent on unsustainable activities elsewhere; or not inclusive of a major aspect of life (such as childhood or old age) (source <http://gen.ecovillages.org>).

To achieve a truly sustainable community, the GEN points to the importance of 1) Conscious awareness of the inter-relatedness of all life and the cyclic sustainable systems of nature; 2) Understanding and supporting the cultural, social and spiritual values of this awareness in order to assist humankind's ability to live ecologically balanced lives; and 3) Viable technologies that do no further harm but rather help to heal the planet.

The eco-village movement is in the process of expanding. Huge numbers of eco-village projects are in a state of growth and evolution towards achieving their vision. These projects represent eco-villages at different stages of development, the oldest established more than 25 years ago

and the most recent under establishment. Common to all of the projects is their focus on education and a desire to integrate ecology, spirituality, community, and business development. Each of the projects functions as an eco-village training centre for its area. The range of skills that are on offer is very extensive, covering all aspects of sustainable community living (GEN, 1996).

3. Criticisms of the Movement and Lessons for Future SND

Criticisms of the eco-village Movement and its principles, concepts and development process concern the extremely long periods necessary for planning, designing, consultation and construction. The initial residents' group for The Farm project in the USA, for instance, has been building its sustainable settlement since 1971.

Nevertheless, the eco-village Movement provides many lessons for future sustainable development. Firstly, in contrast to the top-down approach to building sustainable settlements taken by modernists and some other post-modern movements, this Movement shows the effectiveness of a bottom-up approach in finding reliable solutions to problems arising from the vast differences and degrees of complexity between urban, suburban, and rural living and among many cultural traditions.

Secondly, the eco-village Movement shows the importance and effectiveness of communication between developers, residents, architects and

researchers. Its global Internet network facilitates the exchange of experience and knowledge which, in turn, promotes future development.

Finally, it is a remarkable fact that the group attempts to use technology in a way that is ecologically, socially and spiritually responsive to human needs without any harmful effects on nature. With this strategy the Movement has developed various sustainable technologies through its pilot projects for use as major tools to build sustainable settlements and also brought sustainable jobs into eco-villages.

VI. Conclusion

This paper analyzed origins, key concepts, and criticisms of three SND Movements (see Table 4). Key research findings are as follows. First, the New Urbanism Movement (1991 onwards) in the USA and Canada is a top-down, designer led initiative for creating a compact, pedestrian-friendly, mixed land use neighborhood having 'good' accessibility to a rapid public transit network. Although there is still some uncertainty as to the overall implementation of the 9 principles (particularly in respect of affordable housing provision) in actual projects and policies, nevertheless, the Movement provides a new vision for future sustainable neighborhood development in urban or suburban areas against existing low density urban sprawl. Second, the Urban Village Movement in the UK (1989 onwards) is a moderate top-down approach

emphasizing the importance of public participation during the planning and design process to create a mixed-use, walkable, high quality urban neighborhood having basic services, jobs and mix of housing type and tenure within the neighborhood boundary (about 40ha, 3000~5000 population). Although there are some criticisms, i.e. uncertainty as to the depth of public participation required and methodology to evaluate the effectiveness of public participation, the Movement has highlighted several design principles to prevent the negative effects of mono-cultural, segregated modern development and to create mixed-use, livable urban neighborhoods. The Worldwide Eco-village Movement (1990 onwards) is a bottom-up approach to test new ideas, techniques and technologies in order to avert looming

global, social and environmental crises, and to build environmentally-friendly sustainable human settlements (about 50~2000 population). The extremely long periods necessary for planning, design, consultation and construction is, however, a major criticism of this approach. Nevertheless, the Movement highlights the effectiveness of a bottom-up approach in finding reliable solutions, the importance of communication for exchanging experience and knowledge between developers, architects, residents and researchers, and the applicability of sustainable technologies to minimize harmful effects of development on nature and promote design sustainable settlements.

Finally, this research identifies the following 7 most important goals and objectives of SND by qualitatively analysing the origins, concepts,

〈Table 4〉 Summary of the Origins, Concepts and Criticisms of the New Movements

Movement	Origins/ Promoters	Aims/Concepts	Criticisms	Evaluations
New Urbanism	The Congress for New Urbanism founded in 1991	To restore existing urban centres and towns within coherent metropolitan regions, re-configure sprawling suburbs into communities of real neighbourhoods and diverse districts, conserve natural environments and preserve the built legacy	New urbanist sprawl Romantic neo-traditional ideas Rigid design codes	Identifying new visions and principles for future sustainable region, neighbourhood and building design Illustrating strengths & limitations of top-down approach
Urban Village	Urban Village Group founded in 1989	To build human-scale, compact, mixed-land use, mixed-tenure neighbourhoods within a wider urban area, with diverse open spaces, minimal car dependency, and relative self-sufficiency in terms of residents' needs for employment, shopping, recreation and community activity	Nostalgic aesthetic images Rural idyll Development opportunism	Identifying new visions and design guidance for future urban community development Illustrating strengths & limitations of top-down approach
Ecovillage	Global Ecovillage Network founded in 1994	To build human scale, full-featured settlements, which integrate human activities harmlessly into the natural environment, support healthy human development, and can be continued into the indefinite future.	Nostalgic rural images Extremely slow development process	Identifying new visions and design guidance for future urban community development Illustrating strengths & limitations of bottom-up approach

Source: Kim(2002: 72)

practices, strengths and limitations of the three Movements.

- To promote self-sufficiency in housing, energy, water, wastes, works and services (e.g. shops, schools, community center, etc.) within neighborhoods by facilitating mixed use development which provides for a wide range of living, employment and leisure facilities, is capable of adaptation over time as the community changes, and which reflects appropriate community standards of health, safety and amenity;
- To ensure that all developments minimize the generation of waste, sewage and other pollutants (i.e. indoor and outdoor air pollutants) and become more cost-effective and resource-efficient through the adaptation of innovative design methods and technologies;
- To ensure that all users, including users with disabilities, have access to services and facilities through the provision of a variety of lot size, housing types, price levels and barrier-free internal/external environment designs to cater for the diverse housing needs of the community at a density that can ultimately support provision of local services (i.e. shops, schools, and public transits);
- To provide/preserve a wide range of green spaces (i.e. parks, community gardens and habitats) within neighborhoods for human enjoyment but also for the sustainability of flora and fauna;
- To provide more opportunities for community

participation and management during the planning design and management of the site;

- To create a safe, walkable and interconnected network of streets to reduce car dependency, provide access to employment, retail and community facilities, facilitate movement by foot and save energy through increased surveillance and activity;
- To foster a sense of community and strong local identity in a neighborhood through the incorporation/ preservation of significant cultural and environmental attractions (e.g. geological, landscape, and water front features) of a site into the design of an area.

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