

# Ecological Park as an Emerging Type For Sustainable City-A Need

Chandrakala Kesarwani

School of Architecture, Delhi Technical Campus, Greater Noida, (UP) India

## Article Info

Article history:

Received 25 January 2016

Received in revised form

20 February 2016

Accepted 28 February 2016

Available online 15 March 2016

## Keywords

Ecopark, Sustainable landscape, Ecology

## Abstract

Large parks are complex systems, and as such, parks with an area in excess of 500 Acres within contemporary metropolitan regions warrant special consideration and study. In particular, large parks pose specific challenges for long-term sustainability in terms of design, planning, management and maintenance, principally due to their actual and potential biodiversity coupled with the complexity inherent in their ecology and program. Indeed, "largeness" is a singularly important criterion that demands a different approach to design, planning, management and maintenance-oe that explicitly provides the capacity for resilience in the face of long-term adaptation to change, and thus for ecological, cultural and economic viability.

## 1. The Role of Urban Parks

There is no accepted definition of a sustainable city, and as it happened with the concept of sustainable development, many interpretations exist of which characteristics a city should present to be considered sustainable, and many are the criteria and indicators developed to assess them. They often include aspects of urban planning and community development. Some cities have been developing their own sustainability indicators, to try and measure quality of life issues in a meaningful way.

Why do people need urban parks? Which benefits do they get from visiting them? And, do these benefits really affect their quality of life? These are the main research questions addressed by this study. Issues investigated concern the social demands for parks among urbanities, the emotional component involved in their experience of nature and the benefits perceived. Results from a survey study conducted in The Netherlands, in the summer 2001, will be presented and their implications for city sustainability discussed.



Fig.1 Urban Parks and city sustainability

## 2. Spiritual relationship with nature

The growing number of people visiting natural areas and the various activities they carry out reflects the demand people place on natural areas, and helps analyse their needs that are expected to be fulfilled. This information can help decision makers to formulate strategies in tune with public needs and expectations. To collect data about people's motives to visit the park, the respondent was asked: "Why do you come here? The following alternative options were given. For social outings, to play with children, to walk the dog, to listen to and observe nature, to contemplate and meditate, to get artistic inspiration etc. A frequency analysis of people's objectives to visit nature shows that "Relaxing" is the most frequently mentioned response by the visitors, accounting for the 73% of the answers. This does not come as a surprise since in urban context the need to relax and desire to step away from the hectic city-life is particularly strong. As many of us have surely experienced, in silent and timeless natural surroundings one tends to forget the stress of daily-chores while breathing fresh air and relaxing, both mentally and physically.

## Corresponding Author,

E-mail address: [chandrasekaran@gmail.com](mailto:chandrasekaran@gmail.com);

Phone No: +91- 9811409242

All rights reserved: <http://www.ijari.org>

## 3. The emotional dimension attached to nature

Another important research interest of this study was to explore the emotional dimension of nature based experiences, the benefits people perceive and the relation with their well being in general. It is assumed that the feelings and the emotions we perceive in the natural environment form a relevant part of our experience in it. Respondents were asked to answer the following questions, "Which feeling does nature evokes in you?"

The feeling of "Unity with nature" accounts for almost 43% of the data obtained. The feeling of being one with nature implies harmony with it and the ability to live with extra-physical reality as one belonged to it. It simply implies a sort of transcendence from the ego and the self. "Happiness", "Unity with myself" and "Luck" follows, and "Adventure" is the less mentioned feelings people experience in the park.

## 4. Ecological park as an emerging type

Turf greenswards in Louisville's Summit Field were replanted with native prairie grasses to reduce runoff and increase the ecological health of the landscape. Only paths are mown to delineate how visitors should move through space. Alan Sonfist's "Times Landscape" in lower Manhattan treats secondary plant succession as an art piece. Viewing platform were built in Santa Barbara, entice those who want to watch the sunset away from the cliff edge, protecting it from erosion. Model of an Eco park design proposed in 1991 as a part of New York City's Riverside South development.

In 1982 book "The Politics of Park Design", Galen Cranz developed four ideals types to describe the changes in Urban Parks over the last 150 years. Her typology included consideration of both the shifting social purposes that parks have been imagined to address and corresponding variations in designed form. The four types of parks were as follows:

- (1) Pleasure Ground (1850-1900)
- (2) The Reform Park (1900-1930)
- (3) The Recreation Facility (1930-1965)
- (4) The Open Space system (1965 onwards)

A new urban park type is based on providing solutions to ecological problems and expressions of the human relationship to nature.

- (1) Pleasure Ground (1850-1900): The first urban park model identified in "The Politics of park deign" was the Pleasure ground. The pleasure ground was typically a large park located on the edge of the city. This is the kind of park we associate with Frederick Law Olmsted, and its purpose was to simulate nature or the country side, but this was not supposed to be wild nature. These spaces presented a number of problems for the next generation of park designers as they were usually located on the edges of cities.
- (2) The Reform Park (1900-1930): At the end of 19<sup>th</sup> Century an effort was made to translate the landscaping principles of the pleasure gardens to smaller parks closer to people. The result was Reform Park, which provided recreation and socialization space

for adults and play environment for children's. Such parks were small, symmetrically planned, and offered little illusion of country side or nature. Their principal architectural innovation was the field house, which was meant to provide a clubhouse for working class.



**Fig.2** A sketch of a typical Pleasure Ground



**Fig.3** A sketch of a typical Reform Park

- (3) The Recreation Facility (1930-1965): In 1930 Robert Moses was appointed as commissioner of New York City's Parks Department. He claimed "We will make no more absurd claims about what can be accomplished with parks, but rather, fulfil the mandate to provide recreational service".

His programs typified the third era, from 1930 to 1965—that of the recreational facility. The emphasis instead turned to establishing government and extending service to the suburbs and urban areas.

- (4) The Open Space system(1965 onwards): The mid 1960 saw major shift in park design. Recreation came to be seen as something could take place anywhere—in the street, on a rooftop, a water front, along an abandoned railway line or in a traditional plaza. In defiance of previous notion government standardization, a more artistic, participation sensibility emerged.

As a result Space System. of these changes of view, parks came to be conceived as public serving. The new park design was born and the fourth American parks model identified by Cranz termed as –Open

## 5. The Research reveals a change

The analysis indicated the examples of four past park model that had been published during the preceding 20 years.

Pleasure ground-22 %

Open space-43%

The second largest number of park (24%) fit into a 5<sup>th</sup> category i.e. "Ecological".

These Parks had several traits of the previous four types, including the use of native plants, restoration of streams or other natural features, integration of appropriate technology or infrastructure, recycling, community based stewardship and restoration of wildlife

habitat and native communities. Such parks will become more efficient and self sufficient with material resources.



**Fig.4** A sketch of a typical Recreation Facility

Secondly as they are integrated into the urban fabric, they will play a role in solving larger urban problems.

Thirdly they will model new standards for ecological aesthetics and management. They will employ new formal and aesthetic qualities both in terms of landscape and architectural forms and in terms of their relationship to city around them.



**Fig.5** Eco-Park as a new model in Park-design

The parks are public green areas. The areas generally have abundance of trees and plants, grass and various facilities (such as benches, playgrounds, fountains and other equipment) that allow enjoying the Leisure and rest.

Ecological, for its part, is an adjective that refers to what is linked to the ecology. This latter term (ecology), in its broadest sense, mentions the interactions that maintain living beings to the environment.

"An ecological park aims to protect the ecosystem in which it develops, although these regions also serve as recreation and allow to the public about the nature of a particular place."

## 6. Olmsted–designed New York City parks

Prospect Park continued the designers' interest in combining formal elements, such as the Concert Grove, with pastoral features, such as the Long Meadow, with rugged rustic elements, like the Ravine.

Where design-wise Central Park had several major obstacles to accommodate—its relatively narrow shape and the large reservoir in the center of the park—Olmsted and Vaux were able to take full advantage of Prospect Park's natural elements, including old-growth forests.

Olmsted and Vaux also created designs for a new type of roadway that counteracted against the inefficiency of Brooklyn's grid street system. Olmsted and Vaux called the wide, landscaped roadways they designed "parkways" and used them to connect suburban neighborhoods to the borough's main park, Prospect Park. Eastern Parkway originated near the Queens border, and Ocean Parkway connected Prospect Park's southern boundary with the waterfront at Brighton Beach. Olmsted's plan for Riverside Park combined elements of the topography—including the parkway that ran through the area—to take advantage of the site's hilly bluffs.





**Fig.6** Eco-Park protecting the eco-system



**Fig.7** Sketch of an Olmsted-Designed New City Park



**Fig.8** Depiction of 'From Parks to Parkways and Back'

## 7. Planning and design process

Preserving natural landscapes and protecting sensitive wildlife habitats goes a long way toward providing an ecologically sound and cost-effective project. Trees take a long time to grow, and mature specimens or stands provide incredible value for park users and wildlife. Additionally, when we preserve natural landscapes, we increase biodiversity and help conserve important natural resources such as water. Working with the natural configuration of the land, getting cues from its topography and vegetation, we avoid ecological damage and mitigate the costs of construction while at the same time creating a park that has its own sense of place and uniqueness. There is a growing desire these days to create parks that have a "signature element" that makes them distinctive. At the same time, we are realizing the importance of providing access to nature for both children and adults. Preservation of the natural landscape, even if it means giving up a few of the more traditional programmed elements, is one way to achieve these goals, especially on a limited budget.

Designing a park to take advantage of and reveal natural processes is another way to achieve sustainability. It is possible to create beautiful and functional places. In fact, they should be one and the same. Utilities such as storm water drainage can be treated as an

asset instead of a liability. Likewise, cultural elements that remain on the site should be incorporated into the design to provide a historical perspective. Not only does this serve as an educational component but it also promotes stewardship—an important factor for any successful open space. Providing social spaces for people to interact and build social capital is equally important. Suburban development, along with many small towns and even some cities, lack a town square or central meeting place. Increasingly, parks provide the places where people can network and build community.

### Holistic

- Landscape considered and studied as a system
- Interconnectedness of abiotic, biotic and man-made
- Integrates human related, socio-economic and ecological processes

### Responsive

- Existing ecosystem diversity and sustainability
- Natural and cultural resources
- The local character and place
- Vernacular knowledge and wisdom

### Ecological Landscape Design

### Dynamic

- Landscape as a product of natural and cultural processes
- Landscape as mosaic of ecosystems
- Integrating design across spatial and temporal scales
- Design and management as ongoing processes.

### Intuitive

- Integrating of emotions and imagination
- Involving total conscious and unconscious experience
- Creative in art and nature
- User/Observer as participants in the design

**Fig.9** Framework of Eco-landscape design & drawing on concepts

## 8. Resource Conservation

- Take advantage of land that is already disturbed
- Site any buildings to take advantage of the natural day light, ventilation, and solar gain
- Plant deciduous trees on the south west corner of buildings to reduce energy needs in the summer
- Plant evergreen trees on the north east corner of buildings for protection from winter winds
- Harvest rain water with cisterns to help reduce the use of potable water
- Design and implement efficient irrigation systems
- Specify drought tolerant plants
- Use local building and plant materials to reduce transportation costs
- Use recycled materials and FSC (Forest Stewardship Council) certified wood
- Minimize night light pollution
- Balance cut and fill on site
- Provide carpooling parking spaces and bicycle parking

## 9. Storm Water Management

- Celebrate and detain storm water on site to reduce the amount sent to the storm sewer
- Restore and create wetlands where appropriate for increased flood control and to enhance water quality
- Reduce pollution by treating storm water through the use of bioswales, storm water planters, rain gardens, and

ecoroofs.Reduce impervious surfaces with porous concrete, porous asphalt, permeable pavers

horse back riding, fishing and boat riding, aside from this people go to the park for some photoshoots mainly for weddings and print ads.

## 10. Maintenance

- Use native plants
- Avoid invasive species
- Reduce pruning needs by allowing plants to realize their natural forms and providing enough room for growth
- Consider lawn substitutes to reduce the amount of mowing needed
- Use organic mulch to retain water and suppress weeds
- Use organic fertilizers and compost
- Discontinue the use of pesticides or herbicides where possible and employ integrated pest management practices instead

## 11. Social Capital

- Provide ADA access wherever possible
- Design social gathering spaces
- Incorporate interpretive signage that speaks of site history and sustainable design principles
- Provide bicycle and pedestrian linkages
- Plan for the inclusion of public art

## 12. Waste Reduction

- Provide recycling bins for park users
- Make room for onsite composting
- Use quality products and materials that are durable and can be recycled.

## 13. A Study on La Mesa Ecopark

The La Mesa Watershed and Eco-Park is a dam and an ecological reservation site in Quezon City commissioned in 1929 in the Philippines . It is part of the Angat-Ipo-La Mesa water system, which supplies most of the water supply of Metro Manila. The La Mesa Dam is an earth dam whose reservoir can hold up to 50.5 million cubic meters occupying an area of 27 square kilometers.La Mesa Watershed is the primary source of drinking water of about 12 million Metro Manila residents.The property is owned by the Metropolitan Waterworks and Sewerage System (MWSS), a government agency. La Mesa Watershed is 2700 hectares, 700 hectares of which is the reservoir and 2000 hectares of which is the surrounding forest. This forest is the last remaining one of its size in Metro Manila and serves as its carbon dioxide sink. La Mesa Watershed, therefore, is vital to the city, not only because it is a primary source of drinking water, but also because its forest functions as the lungs of Metro Manila, providing it with clean air.

La Mesa Eco Park has its own uniqueness that makes the place beautiful. It offers different environmental facilities that will surely enjoy by the people who visits the park. La Mesa Eco Park offers different choices of tour packages that the tourists may avail. The people who visit the park may do some ocular and recreational activities that the Eco Park offers. Its forest functions as the lungs of Metro Manila, providing it with clean air.La Mesa Eco Park is open to donations and financial assistance from the people who wants to. It can be the center for biodiversity conservation.La Mesa Eco Park can still build up another facility or garden/farm because of its big space.

La Mesa Ecopark/Dam is a place to conserve and protect merely 12 million Metro Manila residents use this a the primary source of water. The Park is a nature forest w/n the area of Metro Manila specifically in Quezon City, people don't have to go far places just to experience the soothing environment of a forest, here in La Mesa people could feel the cool breeze of the air, relaxing sounds of waving trees , the chirping of the birds and the colorful flowers that surround the whole vicinity of the park.This place is also ideal for different types of occasions, such as birthday parties, seminars which are related to environment, or simply gatherings of families and friends, people can also do picnic and grill their favorite foods, also they can enjoy different kinds of activities such as the zipline,

**Table 1.** Comparison Table

Past conditions	Present Status
In 1987, more than 90% of the La Mesa was forested. Illegal settlers destroy the forest to make way for their crops. 1 Bunk house 3 Watch-towers 13 hectares of reforested areas burned in 2002	LA MESA WATERSHED-2,000 hectares,LAKE-700 hectares and Picnic and Recreational areas 1,344 hectares planted out of 1,500 hectares A 92.5% survival rate for 500,000 seedlings planted More than 15,000 volunteers have planted at the forest Animals have come back Flowers Bloom at La Mesa.Before Bantay Kalikasan there were only 9 exotic species planted at La Mesa, now there are 73 endemic species.

Lastly to wrap up all the things La Mesa Ecopark is a place that we should cherish and treasure without this there wouldn't be enough supply of water to all us people, this a place that we should take care so that it could sustain millions of lives.

## 14. Conclusions

Ecological landscape design is based on an ecological understanding of landscape which ensures a holistic, dynamic, responsive and intuitive approach. It is holistic because it simultaneously considers past and present as well as local and regional landscape patterns and processes. It is responsive because it develops from a realization of the constraints and opportunities of context whether natural, cultural or a combination of both. Ecological landscape design is guided by three fundamental, mutually inclusive objectives: the maintenance of landscape integrity; promoting landscape sustainability; and reinforcing the natural and cultural spirit of place.

Ecological landscape design engages the designer's rational, intellectual, emotional and creative capabilities Ecological design develops out of two areas of inquiry. On the one hand, it is the outcome of ecology's interface with the environmental design professions.

Despite the differing perspectives and focus of interest, a number of common concepts have been outlined. On the other hand, ecological landscape design also utilizes fundamental ecological. Input from these two areas of inquiry forms the foundation for ecological landscape design which is here seen as integrating four overlapping attributes.

## References

- [1.] CCRP, 2005. Cabazon Resource Recovery Park. Website <http://www.cabazonresourcerecoverypark.com/> in 2005.
- [2.] Chiu SF, Yong G. On the industrial ecology potential in Asian Developing Countries, Journal of Cleaner Production, 12, 2004, 1037–1045.
- [3.] CIWMB, 2003. California Integrated Waste Management Board, Case Studies.
- [4.] <http://www.ciwmb.ca.gov/LGLibrary/Innovations/recoverypark/C aseStudies1.htm>. Accessed in April 2004.
- [5.] Envision, 2003. Resourceful Ccommunities – A Guide to Resource Recovery Centres in New Zealand, Envision New Zealand.
- [6.] <http://www.zerowaste.co.nz/assets/Reports/ResourcefulCommunities-lowres.pdf>
- [7.] The New Age. Hundreds join hunger strike to save Zinda Park 2009.