
Environmental education using Nek Chand's Rock Garden in the City of Chandigarh

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Abstract: The aim of this paper was to assess one of the pre-eminent examples of environmental success, Nek Chand's Rock Garden in the City of Chandigarh in India. Environmental education is multidisciplinary in nature with respect to learning and developing knowledge, awareness, attitudes, values and skills. This enables society to contribute more meaningfully to maintaining and improving the quality of its surroundings. Environmental action is the next important step in the process. Unlike other vegetative parks and gardens, Nek Chand's Rock Garden consists of a series of interconnected rocky grottoes, walkways, landscaped waterfalls and thousands of animal and humanoid sculptures made out of discarded materials. In a study on domestic tourists coming to the city, the Rock Garden was found as the most preferred sightseer spot. A mechanism to maintain this garden out of tourism revenue was suggested.

Keywords: Rock Garden; Chandigarh; India; tourists; travel cost method; environmental action; environmental education; sustainable development; public parks; gardens.

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1 Introduction

The City of Chandigarh in India is well known for its urban parks, gardens and planned landscaping (Lindquist, 1996). It has the distinction of having the world acclaimed Rock Garden which is unique in its concept. Artists and connoisseurs from all over the world come to see this amazing creation. Built of industrial waste and thrown-away house-hold items, it is perhaps the world's most poignant and salient statement of the possibility of finding beauty in the unexpected and accidental aspect of life. It expresses the fragility of the environment and the need for conservation of the earth's natural resources. This garden has become a heritage site of international importance which addresses the global problem of balancing industrial growth with sustainable development of the environment. Built by Nek Chand, it emphasises the fact that the developing and developed countries are united by common concerns and problems by addressing a dilemma; the antagonism between a productive industry and a healthy and sustainable environment. The Rock Garden expresses this global problem through beauty, ingenuity and imagination (Lindquist, 1996).

The aim of this paper was to assess the success of Nek Chand's Rock Garden in the City of Chandigarh in India. Environmental education is multidisciplinary in nature with respect to learning and developing knowledge, awareness, attitudes, values and skills. A mechanism to maintain this garden out of tourism revenue will be suggested.

2 The creator of the Rock Garden

Nek Chand Saini, the creator of the Garden, was born in Barian Kalan village (now in Pakistan) in 1924. During the volatile partition of India in 1947, he was forced to leave his village and settled in an area which is presently a part of the City of Chandigarh, designed by French architect Le Corbusier. Nek Chand became a road inspector in the Engineering Department of the Chandigarh Capital Project after serving initially as superintendent of the dump for road construction. This included a function as storage for stones brought from the Shivalik hills for breaking up for use as hardcore. Under this project, a mass of waste was created by the demolition of over 20 villages and numerous other buildings to clear the ground for the new planned and modern City of Chandigarh.

Maizels (1996) noted that Nek Chand believed that in nature everything could be used such as fallen leaves and twigs which go back to enrich the soil, and the waste of human activity which might be recycled. Nek Chand roamed the Shivalik foothills and picked up stones resembling birds, animals, humans and abstract forms. He had a natural passion for collecting unusual shaped rocks/pebbles as well as discarded household objects that he salvaged from the rubbish dumps in the city and demolished sites of 20 villages. He regularly transported them on his bicycle to a forest area in the vicinity of the city boundary near Sukhna Lake; though heavy stones were brought by trucks. Without making anyone aware, it was in this forest area that he began his furtive action of producing various kinds of sculptures. From 1958 to 1965, he collected natural materials and waste such as broken ceramic tiles, old toilet and basin units, bike saddles, electrical items, bangles, foundry slag and oil drums.

The master plan of the city did not allow for the development of such type of creation/sculptures in this forest area. However, mass public protests in support of the garden had a profound and positive effect on the city's politicians (Jackson, 2002). Bureaucrats, like the founding chief commissioner of Chandigarh City and the chairman of the city's landscape advisory committee provided unstinted support and patronage to the Rock Garden (Singh, 2002). The site was officially inaugurated as the Rock Garden in 1976.

3 Development of Nek Chand's garden

The lay out of the garden is based on the fantasy of a lost kingdom. The small entrance doors which make people bow their heads, not only create royal ambience but also impart humbleness. One has to pass through a variety of doorways, archways, vestibules, streets and lanes of different scales and dimensions, each one opening into a new array of display of courtyards and chambers leading to an air of suspense and curiosity at every corner and at every turn. As we stroll through the garden, enjoying the awe inspiring creation, we may come face to face with the unassuming down to earth artist Nek Chand himself, working at or supervising his 'kingdom' (Chandigarh Tourism, 2006).

A group of Indian women collecting water is particularly relevant in the context of the need to protect the environment and to conserve natural resources. In drier parts of India, an average village woman has to spend about 30% of the day collecting water (Lindquist, 1996). As a self taught artist, Nek Chand has conveyed this message in lay man's terms. He has translated traditional and vernacular art forms into his own visual expressions.

The Rock Garden became immensely popular in the 1980s when Nek Chand was honoured with the Padmashri award. The latter is one of the prestigious civilian awards given by the government of India. The country's postal department also issued a stamp with a Rock Garden sculpture on it. International exhibitions of the collections from the garden were held in London, Berlin and Paris. In Paris, the Grande Medaille de Vermeil was conferred upon him. Chand donated more than 100 sculptures to the Capital Children's Museum in Washington, DC and spent about six months installing them and organising workshops. He was also given the keys of the City of Baltimore. He has received hundreds of awards, which he displays in a special room in his home (Rajer, 2000).

Presently, with over 3,000 sculptures, this remarkable landscape covers more than 25 acres. This site is the second most visited tourist site in India after the Taj Mahal at Agra (Anderson, 2006). Unfortunately, all has not gone well in this garden paradise. Despite the success and popularity of the Rock Garden, it was in danger of partial demolition. In 1988, the High Court Bar Association at Chandigarh wanted garden's land for a parking lot on the plea that the expansion of the garden violated the master plan of the city. But, in 1989, Nek Chand won a landmark court case in which the Rock Garden was given permanent protection that included green space buffers around the boundary wall (Rajer, 2000).

The main concern of the last few years has been the lack of maintenance and shortage of staff at the garden by the Public Works Department of the city's administration. This has resulted in dilapidation and damage to some of the sculptures. During the 1990s,

when Nek Chand was largely away from the Rock Garden and was establishing such gardens in Europe and USA, the city administration removed garden workers and hence the security of the sculptures suffered badly as some of the careless visitors were in the habit of sitting on them for photography and fun purposes.

An open letter from Nek Chand was published outlining that the city administration was not providing a sufficient budget for phase-III of the garden nor allowing him to utilise entrance money for maintenance purposes. While funds were being provided for the city's other parks/gardens, the Rock Garden was being neglected. However, it should be fair to note that official opinion of the garden has not been entirely negative. One of the problems it has faced has been political wrangling and enmity between officials and political parties. A workable mechanism for effective utilisation of entrance money is needed.

4 Analysis and assessment of Nek Chand's Rock Garden

Nek Chand's Rock Garden is considered to be the world's largest imaginative environment, covering an area of 25 acres and containing over 3,000 sculptures (Jackson, 2003). Despite the scale and popularity of the garden, few scientific studies have been conducted on it. One of the most important studies was conducted by Jackson (2003). As part of a project, funded by the Arts and Humanities Research Council (AHRC), UK, Jackson catalogued and recorded the complete contents of the garden. The vulnerability of self-made environments at the Rock Garden was also well documented by Manley and Sloan (1997).

Figure 1 Net recreational demand curve (see online version for colours)

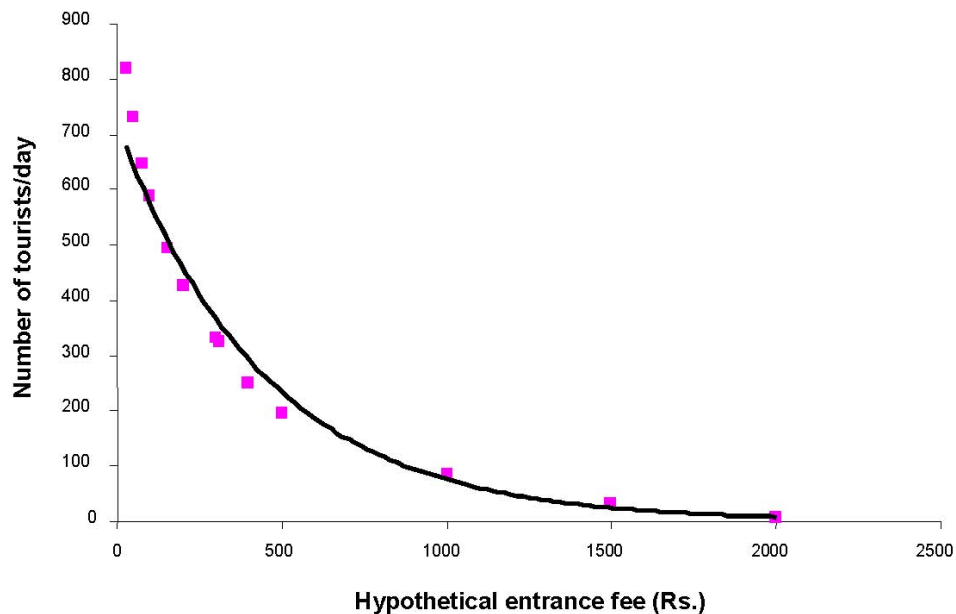
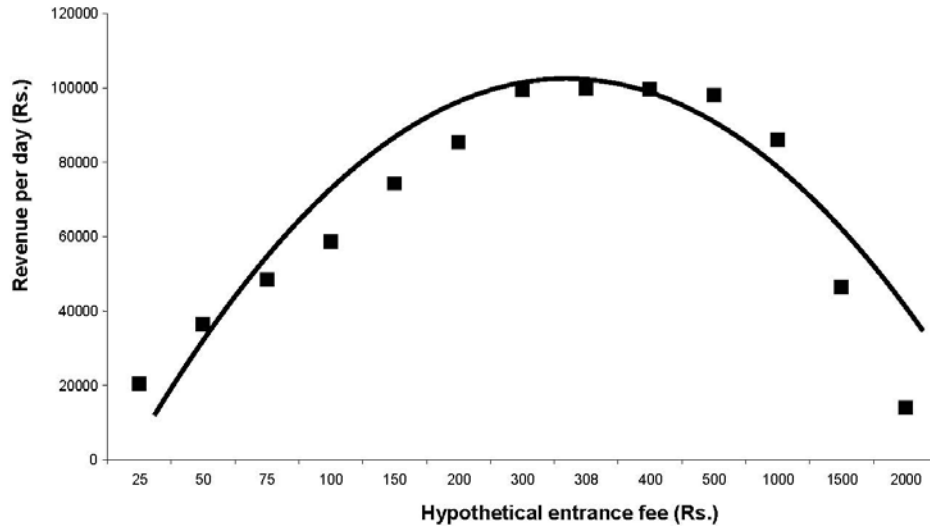


Figure 2 Total utility cum revenue generation curve at different hypothetical entrance fees

A study on the recreational use value of Chandigarh City's urban parks and gardens was reported by Chaudhry and Tewari (2006). Travel cost methodology (TCM) was applied on domestic tourists and a maximum consumer surplus per tourist visit of Rs. 308 (USD 7) was estimated by developing a 'net recreational demand curve' (Figure 1). The latter was based on a procedure described by the US Water Resource Council (1983). The above amount is a measure of average willingness to pay by the domestic tourists for the recreational benefits provided by the environmental resource like urban parks and gardens of the city. The revenue generation and total utility at this point would be at maximum (Figure 2). Taking a conservative estimate of 0.30 million domestic tourists per year, the annual recreational value of urban parks and gardens of the city was estimated as Rs. 308 per tourist \times 0.30 million tourists = Rs. 92.40 million (i.e., 2.13 million USD/year). Out of this, Nek Chand's Rock Garden accounted for Rs. 64.68 million (1.5 million USD), which is 68% of the total tourism recreational value (Chaudhry and Tewari, 2008).

At present, a nominal entrance fee of Rs. 10 per adult person is being charged at the Rock Garden. Chandigarh City's other parks and gardens are without any entrance fee. The net recreational demand curve (Figure 1) plotted between number of visitors per day (dependent variable) and the hypothetical entrance fee (independent variable), shows that if there was an entrance fee of up to Rs. 25, there would not be any appreciable fall in number of tourists, visiting the city. If it were increased beyond that, there would be a continuous drop in quantity of tourists (Table 1).

Since the Rock Garden has emerged as the choicest spot for the tourists coming to the city (Chaudhry and Tewari, 2008), it could be suggested that one composite entrance fee (meant for all city's parks and gardens) might be introduced at Nek Chand's Rock Garden in place of Rs. 10 being charged at present. Introducing an entrance fee at other spots such as Sukhna Lake, Rose Garden and Leisure Valley does not seem to be administratively feasible because of the absence of proper boundaries and given the beauty of vegetative fencing at most of the places around such spots.

Based on our study, Rs. 25 seems to be quite reasonable as one composite entrance fee at the Rock Garden, for the better maintenance of various parks and gardens of the city. It is worth mentioning that with this entrance fee, there should not be an appreciable decrease in the number of tourists coming to the city's parks/gardens (Table 1). In this way, more revenue can be generated, with out adverse affects.

Table 1 Change in number of tourists and revenue generation with the hypothetical entrance fee

<i>Hypothetical entrance fee (Rs.)</i>	<i>Expected number of tourists/day</i>	<i>Revenue generation (Rs.)</i>
25	820	20,500
50	730	36,500
75	647	48,525
100	587	58,700
150	495	74,250
200	427	85,400
300	331	99,300
308	324	99,792
400	249	99,600
500	196	98,000
1,000	86	86,000
1500	31	46,500
2,000	07	14,000

As per a conservative estimate, presently more than 3,000 visitors are visiting Rock Garden daily (Rajer, 2000) thereby generating revenue of Rs. 30,000 (i.e., USD 700) per day or more than Rs. 10 million (USD 230,000) annually. With a suggested entrance fee of Rs. 25 per adult person, annual revenue might go up to Rs. 27 million (i.e., USD 620,000). It is proposed the major share of the realised revenue (i.e., 70%) can effectively be utilised for the maintenance and expansion of Rock Garden and rest 30% may be kept for the maintenance of other parks/gardens of the city. This will minimise dependence of Nek Chand on the city's administration for financial support for the maintenance and expansion of the Rock Garden.

5 Concluding remarks

Nek Chand's Rock Garden in the City of Chandigarh in India is one of the pre-eminent examples of environmental success. It demonstrates that environmental education is multidisciplinary in nature with respect to learning and developing knowledge, awareness, attitudes, values and skills. Unlike other vegetative parks and gardens, our study has shown that Nek Chand's Rock Garden with its interconnected rocky grottoes, walkways, landscaped waterfalls and thousands of animal and humanoid sculptures made out of discarded materials is the most preferred sightseer spot. A mechanism to maintain this garden was suggested through increased tourism revenue. This should improve the overall upkeep and quality of this unique example of environmental education.

References

- Anderson, B.D. (2006) 'Concrete kingdom: sculptures by Nek Chand', *Folk Art*, Vol. 31, Nos. 1–2, pp.42–49.
- Chandigarh Tourism (2006) 'Rock Garden', available online at <http://chandigarhtourism.gov.in/>
- Chaudhry, P. and Tewari, V.P. (2006). 'A comparison between TCM and CVM in assessing the recreational use value of urban forestry', *International Forestry Review*, Vol. 8, No. 4, pp.439–448.
- Chaudhry, P. and Tewari, V.P. (2008) 'Tourism recreational value of Rock Garden, Chandigarh, India', *e-Review of Tourism Research*, Vol. 6, No. 2, pp.36–44.
- Jackson, I. (2002) 'Politicized territory: Nek Chand's Rock Garden', *Global Built Environment Review*, Vol. 2, No. 2, pp.51–68.
- Jackson, I. (2003) 'Research project funded by AHRC to catalogue and document Nek Chand's Rock Garden, Chandigarh', available online at http://www.kevinduffy.info/nekchand_info/pages/research.html.
- Lindquist, C. (1996) 'Nek Chand's Rock Garden in Chandigarh, India', available online at <http://carl.lindquist.googlepages.com/>.
- Maizels, J. (1996) 'Nek Chand shows the way', *Raw Creation: Outsider Art and Beyond*, Phaidon Press, London.
- Manley, R and Sloan, M. (1997) 'Self-made worlds', *Visionary Folk Arts Environments*, Aperture, New York.
- Rajer, A. (2000) 'The Rock Garden in Chandigarh, India', *The Folk Art Messenger*, Vol. 13, No. 1, pp.4–9.
- Singh, J. (2002) 'A tribute to Dr. M.S. Randhawa'. *The Tribune, Chandigarh*, 28 April 2002.
- US Water Resource Council (1983) *Economics, Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*, US Government Printing Office, Washington, DC.