Is the Eco-district the new model of Utopia? Examining sustainable development through the lenses of Utopia

Ming Hu
University of Maryland, College Park, Maryland
Minghu2013@gmail.com

Summary statement
Utopian design and environmental science share a common object in that the utopian model is always linked to a physical environment. Every utopia is a society of people somewhere on earth, and consequently, every utopia represents the interaction of human institutions and organization with common environmental and ecological characteristics. Thus, the utopist and the environmental theorist have a basis for a meeting of the minds.
There is one other way in which utopian and environmental methods are related. The ultimate test of the final product of both modes and thought lies in human action. In the last analysis, environmental theory is proved when men initiate activity based upon its predictions and are successful in their endeavor. For utopias, the measure of value is more problematic. Theoretically, a successful utopian model is one that is perceived as the best of all possible worlds, even after its realization. No society has ever passed such a test. A more modest objective is to demand that those who construct a utopia agree that they have established a society superior to the one they abandoned when beginning the utopian project. So defined, utopias have played a progressive role in human affairs. The intent to merge Utopia and environmental science is the result of a fiction published in 1975 – Ecotopia.

This paper will try to identify the linkage between Utopia and sustainable development or ecological design by achieving the following study objectives:
- To identify the key features of Utopia and eco-district
- To establish the synergy between those two
- To analysis the success and failures of previous eco-district
- To identify the path forward

1. Utopia Development – Origins and key features

The word of Utopia has a Greek origin, means “no place”, indicating that more was using the concept as allegory and did not consider such an ideal place to be realistically possible. Another similar word “Eutopia” meaning ‘good place in reference to “Utopia” (Easton, 2001; Merlin & Choay, 1988).

There are two important literatures we need to mention. The first influential literature is Thomas More’s Utopia, published in 1516, it is immensely influential and stimulated many monographs on the ideal city and society. Despite his detailed description of religion, education, diet and other aspects of Utopian society, however his description of architecture and physical environment in this idea society are not described in any detail. The second influential book is Thommaso Campanella’s “City of the Sun” written in1602 and published in 1623, in his utopian cities the architecture was important feature of the society, unlike in More’s version, architecture is pretty a secondary feature. In Campanella’s city the temple is in the center of the city dominating its surrounds and the geometric pattern of the cities highlights the structure and order of the cities and their societies. The city of the Sun is described as being circular and two miles in

diameter, it is divided into seven circuits which are named after the seven planets of the compass. The plan and the architecture of the cities express an individual urban philosophy: The city plan represented the heliocentric microcosm of the macroscosm and the city itself holds all human knowledge of the microcosm – it is painted on the walls and available to all of the citizens.

In general, More's Utopia was a radically original urban and social proposal that opposed the ideology of its time period. Based on the critique of an existing society, it proposed a framework for a better world at ideological level; Campanella further materialize the ideology and made the first attempt to describe what Utopia could look like. Based on their work, followers have further proposed different utopias, such as Fourier's (1772-1837) utopia for the new industrialist society; James Harrington's " commonwealth of Oceana"; William Morris' (1892) "News from Nowhere", etc. Francis Bacon's (1627)"New Atlantis" is first attempt to create a scientific and technological utopias, he believed that advanced science and technology will allow utopian living standards, for example, the absence of death and suffering, changes in human nature and the human condition. Later on Buckminster Fuller presented a theoretical basis for technological utopianism and set out to develop a variety of technologies ranging from maps to designs for cars and houses which might lead to the development of such utopia.

Evidently social and economic concern compose the essence of utopia, Discourses about collectivism, work, sex, education, and family constitute the essential elements of utopia (More, Logan, & Adams, 2002). Ecology or environmental concern also play important role, ecological utopian society describes new wyas in which society should relate to nature. They react to a perceived widening gap between the modern Western way of living that destroys nature and a more traditional way of living before industrialization, arguably more sustainable. According to Dutch philogopher Marisu de Genus, ecological utopias could be sources of inspiration for green political movements. (Gnus, 1996)1

The key features or common values in a Utopia relate physical built environment and sustainable development are: quality of housing, quality of streets, public green space. In his book " Ecotopia", Ernest Callenback described a nation composed of Washington, Oregon, and North California created an environmentally sounds, stable-sate, eco-sustainable country, in this country the working hour has been reduced half, to 20 hours per week, in order to generate more employment positions, also to help people to have time to get in touch with nature and each other in a deeper level. Also in Ecotopia, there are real-world developments like compostable plastics, citywide recycling and composting programs, urban agriculture, bikesharing, C-SPAN, reality TV, print-on-demand publishing, and more. The book was sold almost a million copies and been translated into nine languages. Ecotopia drew a clear linkage between ecology and utopia, and predict through the sustainable development and life style some of the social and economical issue could be solved.

2. Sustainable development and eco-district development – Origins and key features

In Callenback's fiction " Ecotopia", the new country banned the internal combustion engine and the car culture that went with it, turned in oil for solar power, recycled everything, grew its food locally and cleanly, and in the process created clean skies, rivers, and forest. Sounds familiar? Indeed, it might the first detail outlined eco-district we deem as a norm.

One obstacle to an accurate, working definition of sustainability may well be the historical perspective that sees the practice as pre-existing, either in our past or as a Platonic concept. The key difference between those indigenous, sustainable communities and our modern eco-district is that they had no choice but to be sustainable. Bluntly stated, if they cut down too many trees or ruined the soil, they would die out. Modern society has the options presented by trade, long-term storage, and synthetic replacements; if we clear-cut a field, we have subsequent options that our ancestors didn't. In this situation, we must voluntarily choose sustainable practices, since there is no immediate survival or market imperative to do so. Next we would look at three eco-districts to find out the lessons we could learn from their success and failures.

3. Case Studies

3.1 Arcosanti

Arcosanti is an experimental town designed by architect Paolo Soleri. The construction began in 1970, but it never finished. The goal of Arcosanti is to explore the concept of archology, which combine architecture and ecology. For him, architecture and ecology were twin component of man's relationship with nature- by treating cities as living, breathing, evolving organisms, humans could live in harmony with nature and with each other. In a lot of ways, Soleri defined his vision of arcologies in close similarity to the notion of eco-district, or eco-utopia. The project itself is remote from major city on 25 acres land, supposed to house between 50 to 150 people at first phase. And ultimately, the goal has been for the town to house a population of 5,000 people. Soleri himself strongly believe in recycling of materials, waste reduction, energy conservation and renewal energy source. As he stated: "In nature, as an organism evolves it increases in complexity and it also becomes a more compact or miniaturized system. Similarly a city should function as a living system." Same as what was described in "Ecotopia", people living in Arcosanti would burn no fossil fuels, grow their own food, and be totally self-sufficient. The failure of Arcosanti is due to its lack of realistic financial planning as well as technology inadequacy. Firstly, he proposed selling wind chimes would fund the whole community, which is obvious the first failure. Solorie is adamant about use local natural resource to create self-sustained Utopia, however he only dabbled in popular technologies such as solar panels, rain barrels and composting toilet, that were not enough to preserve and generate enough power in order not to compromise the living quality. Also, some original plan has never been fully realized, such as building greenhouse, hot air would rise from these conservatories into a complex of tunnels that could heat the East Crescent. Without fully realized the original plan, it is difficult comprehend the potential benefit of such ecotopia. But the upside of Arcosanti is that, Soleri's concern and attention to issues about pollution, waste, energy depletion, link the technical aspects of eco-district to the success of Utopia from philosophical perspective.

3.2 Biosphere 2

In most people's views, Biosphere 2 is an expensive failure. The biosphere 2 were set as a full scale, two-year experiment to test a completely independent sustainable living environment. It was truly man-made sealed Utopia, the team, a group of scientists would not only grow their own food, but also their own oxygen. Beside the philological impact on the team members due the isolation, technical obstacle or lack of adequate knowledge of technical issues also contribute to the failure of the experimental scientific green Utopia.

One of major technical failure was that the biosphere has to reply on outsider to pump the air(oxygen) into the biosphere. The main reason known of the losing oxygen lies in the physical materials of biosphere: concrete. A vast majority of Biosphere 2 was built out of concrete, which contains calcium hydroxide. Instead of being consumed by the plants to produce more oxygen, the excess carbon dioxide was reacting with calcium hydroxide in the concrete to form calcium carbonate and water. Besides the technical failure, after two years trapped in the huge manmade bubble, the scientists also suffer depression and social isolation, which caused some erratic behaviors.

4. Is ecodistrict a useful concept?

One obstacle to an accurate, working definition of eco-district may well be the historical perspective that sees the practices as pre-existing, either in our past as a Platonic concept. We do not yet know what it will look like; it is being socially constructed through a sustained years of research. It is helpful to look into the sustainable development or eco-district in the pre-industrial period and culture.

One of most popular trend of interdisciplinary thought may be its linking the traditionally separate intellectual traditions of critical social theory and environmental science. (Smith 1990) Some environmentalists argue that if sustainable development is necessary, it therefore must be

possible. The answer espoused may be as much has ideological as a scientific choice, depending on whether what's constitute ultimate goal of sustainable design. In the contemporary contact, quite a few cities have been suffering from industrial decline and look into establishing "eco-district" as a way to attract new investment and use it as revitalization strategy. The aim of eco-district is to integrate objectives of sustainable development and reduce the ecological footprint of the project. It is not easy to describe eco-district since it is such a comprehensive perspective, and to public's eye, eco essentially means green in a simplified version. A district that effectively reduces energy costs starts by constructing building with integrative passive and active design strategies and using advanced technologies. Beside reducing energy consumption, conserving water and materials, eco-district can also reduce green house gas emission by providing pedestrian friendly live and work environment. Currently, globally, transportation is responsible for about 15% of green house gas emissions. Eco-district think up their flows, developing clean vehicles, public transport service with high-quality service, soft transport such as walking, biking or carpooling. All of those will also help to overall green house gas emission, including from building and transportation.

If we look at the sustainable development through the lens of technology, we might be ready to build eco-district with all those current available technologies, however the important lessons we learned from the precious unsuccessful attempts are: technologies and science could certainly enable the start-up and operation of eco-district, however lacking of solid economic framework or social infrastructure could jeopardize the efforts.

5. Path-forward : eco-utopia

An eco-district is more than a mere accumulation of buildings boasting ultra-high-tech specs. The major difference between tech-district and eco-district is the "eco" focus. In 1866, Ernst Haeckel, a German biologist defined ecology as the study of the relationship of organisms with their environment. Natural environment is no longer the predominant for human habitat, the built environment, the cities, the towns and neighborhoods have become the important ingredients of ecosystem. And Ernst Haekel pointed out " By ecology we mean that which addresses total relations, because they alone are capable of maintaining biodiversity." If the eco-district allows synergies within itself, it is not interfering with the outside world and in that, its objectives are futile from the start. The lessons we learned from the failures of the two previous version of eco-district told us that the technical difficulties would be overcomed by thorough planning and investigation. The lack of cohesive social mission and economic framework would pose biggest challenge for the future eco-district. Yet, we could find the two missing pieces in Utopia planning and concept. With blend utopia into sustainable development, eco-district serve as a prototype of Eco-topia.

There are two final aspects of the fuzzy definition of eco-district: its path and its outcome. The basic premise of eco-district is one that, is hard not to like. As with reducing waste and to be energy independent, however, two troubling questions about eco-district remain: How are you going to get there? Once you get there, what are the negative consequences? Designers and planners don't yet have adequate answers to those two questions: that is, as yet they have no concrete strategies to achieve eco-district, no do they know how to counter the social and political resistance to it.

[1] Geus, Marius de (1996). Ecologische utopieën- Ecotopia's en het milieudebat. Uitgeverij Jan van Arkel.