Social, Cultural, and Ecological Stewardship in the World’s Fastest Urbanizing Society

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**INTRODUCTION**

There is no doubt the 2008 Summer Olympics in Beijing was China's coming out party – a grand spectacle on the world's center stage. The question, however, is what will China's post-Olympic legacy be? Will China become a world leader in sustainability, implementing stronger policies on ecological protection, and advancing environmental technologies? Will it continue to embrace the new social realities of an emerging middle class, reflecting changes in human habitation, lifestyle, and culture?

This paper will explore three significant urban design projects which are representative of China's progressive attitude to ecological restoration, cultural expression, and contemporary place-making in the post-Olympic era.

**CASE STUDY #1: CAOHAI NORTH SHORE**

*Kunming, China*

**Introduction**

Located on the northern shore of Dianchi Lake in the southwestern city of Kunming, the 529 hectare (1,300 acre) Caohai North Shore development is planned as a vibrant residential, cultural, and entertainment district on the waterfront. The goal is for Caohai to serve as a contemporary model for development in China, advancing ideas of sustainability and restorative ecology on this extremely degraded brownfield site.

**Water Quality**

Currently, Dianchi Lake is ranked amongst one of the most polluted lakes in China. The focus of the planning and design study for the district therefore not only sought to create a bold urban form or attraction but, more importantly, to identify strategies which would improve the water quality of the lake. Limnologists and other specialized scientists that study inland lakes were consulted to advise on clean-up strategies that could create both immediate and long-term approaches to restoring the ecosystem of Dianchi Lake. The process tackled issues including dredging polluted sediment, diverting untreated point sources to existing and planned wastewater treatment plants, separating the city's wastewater from its storm water sewers, and implementing best management practices for the vast agricultural lands surrounding the lake to reduce runoff carrying pesticides and excess nutrients. Based on these recommendations, Kunming has begun a major civic initiative, implemented at the metropolitan scale with a generational timetable. In the short term, the development of the site will include new wastewater treatment plants utilizing membrane bioreactor (MBR) technology, on-site storm water treatment and groundwater recharge, and constructed wetlands to further treat water from existing canals that drain into the lake.

**Urban Design Strategy**

Because of this pollution, the city has turned its back on its most precious resource, the waterfront. A major goal of the urban design framework was to create a vibrant, mixed-use destination on the lake and to reconnect the fabric of the existing neighborhoods back to the water. The hope is this strategy will awaken the residents of Kunming to the value of the lake and the need to protect it. The catalyst of the district, the Dianchi Tian Di area, will serve as the new gathering point in the city. This compact pedestrian core takes its inspiration from the historical centers of Yunnan province's villages such as Lijiang. The program at Dianchi Tian Di will include unique restaurants, retail, a boutique hotel, entertainment venues, a dance theater and studio for regional dance troupes, a multi-purpose performance theater, art galleries that feature the work of local ethnic artists, a live-work artist community, and museums. Radiating from this physical and cultural center of the district, adjacent uses include a research and development area that will seek to attract creative industries, loft-style residences, and schools and community centers, each linked together by a generous open space network that weaves between development parcels and connects to a contiguous lakefront park.

The Dianchi Tian Di core is the center for most of the commercial uses in the district, forming a dynamic node of activity adjacent to Kunming's largest existing public open space, Daguan Park. Designed as a series of narrow streets and alleys with narrow canals through the center, this area serves as the focus of the district. Smaller courtyards are located off of the main street, creating interesting spaces and destinations along the continuous pedestrian loop. Museums and theaters anchor the village's western edge, a live/work artist community forms a major anchor to the east, and an
amphitheater at the waterfront park creates a much needed space for outdoors performances by local dance and theater groups. These new facilities seek to strengthen the cultural identity of Kunming and provide a cluster of new, dedicated space for both existing and emerging groups to showcase their talent. A series of pavilions located along the waterfront and on smaller islands creates additional exhibition space and provides a continuous pedestrian link around Daguan Park. The islands also create a link to adjacent residential areas, schools, and an office campus. This campus is meant to provide flexible space to start-up companies and other creative industries, its setting intended to foster communication, collaboration, and knowledge sharing. Its location along the main highway gives it visibility and provides for convenient connections to downtown Kunming. The campus is within easy walking distance to the various commercial and cultural uses of the retail village, and also nearby is a conference hotel, strategically sited between the office campus and Dianchi Tian Di. Educational uses within the development include the new home of the Peacock School of Dance, which is an important existing institution in Kunming, as well as four public schools. The schools are located within each of the major residential neighborhoods, and are sited such that they have direct access to parks and other open space, which can function as additional recreation facilities.

**Open Space**
The open space system at Caohai North Shore seeks to balance development with the natural beauty of the lakefront, and establishes generous areas for both active and passive recreation. While the character of public realm varies – from plazas to waterfront boardwalks to more natural areas – the fundamental objective is to establish the open space as a continuous, publicly accessible environment. The 600 year old Daguan Park, one of the most significant open spaces and cultural destinations in the city, is protected and updated as the centerpiece of the entire development and acts as the central park for the entire district. Additionally, a series of neighborhood pocket parks created within the residential neighborhoods, serve as centers for the community and provide informal spaces for public gathering. Other scenic, natural amenities include the preservation and restoration of the many lagoons, wetlands, and canals on the site. Even the lake itself, slated for cleaning to standards which allow for human interaction, will provide recreational opportunities such as sailing and rowing.

The success of Caohai North Shore ultimately will depend on the commitment to ensuring the implementation of correct long-term strategies to restore the lake ecosystem. Continued development of the master plan concept, careful urban design guidelines, and the implementation of ecological strategies for the landscape and architecture are important next steps to ensure the vision is achievable based on the design intent.
CASE STUDY #2: QINHUANGDAO SEACOAST
Qinhuangdao, China

Introduction
The coastal city of Qinhuangdao faces similar issues resulting from rapid, unchecked development. Historically, Qinhuangdao was one of the most celebrated places in China, with a rich history dating back to the Qin Dynasty when the emperor sought immortality along the city's scenic coast. During the Qing Dynasty, Qinhuangdao became a resort destination for wealthy expatriates, as well as a government retreat that gave officials a reason to escape the summer heat of Beijing. Today, Qinhuangdao has retained this legacy, with its coastal setting providing the backdrop for many important government gatherings and discussions.

The name Qinhuangdao is deceptive, as there is no island (or dao) in the present day city. More than 2,000 years ago, however, Qinhuangdao was located on a small island approximately one square kilometer in size. The combination of naturally shifting sand bars, coupled with human efforts to fill the narrow passage of water which separated Qinhuangdao from the mainland, eventually led to its current geography. Though it is no longer an island, Qinhuangdao is still a place that feels very much removed from the rest of contemporary China. Area attractions such as the eastern terminus of the Great Wall are an example of the many cultural assets tied to the rich history of the region. With numerous universities, the city of 600,000 also has a strong educational backbone, providing contemporary culture in the form of music and the arts. In 2008, Qinhuangdao hosted the semi-finals for soccer during the Olympic Games, placing it on the map as a city that celebrates sports, health, and wellness.

Despite these attributes, however, Qinhuangdao is not without its share of environmental issues. Many of its maritime forests have been cut and its watersheds polluted, and its coastal dune ecosystem has been severely degraded due to a lack of regulations in place to protect it. Through the foresight of an open-minded developer, however, a new urban district emerging along the city's most prominent coastal land seeks to reestablish the dunes, restore the maritime forest, and improve the health of the watershed. This 24.5 hectare (60 acre) site is being planned as a sustainable urban district which will include restaurants, retail, offices, a hotel, and mixed-density residential uses totaling approximately 510,000 square meters (5.5 million square feet) of gross floor area. This combination of uses will create a destination that capitalizes on the four season climate of the region by including activities and other design elements to ensure year-round use.

Urban Design Strategy
Urban waterfronts, like the cities they help define, are dynamic places. They are also a finite resource, and it is important to consider their use and design such that they embody the unique character of each community they touch. In Qinhuangdao, the careful development of the beachfront is therefore of the utmost importance. Successful waterfronts incorporate various activities and experiences. For a waterfront to truly thrive as a vibrant gathering place for a city, it should include a diversity of attractions and program, and consist of a variety experiences that allow people to engage the shore in different ways. At the Qinhuangdao Seacoast, the strategy for the waterfront adapts to the context of the larger city and responds to complex ecological, social, and cultural conditions impacting the site. With these strategies in mind, the following principles were applied to the planning and design strategy:

- Establish strong connections between the city and the waterfront
- Enhance existing ecological systems and functions
- Create multiple nodes of interest for residents and visitors
- Provide a human-scaled pedestrian environment
- Establish a clear open space hierarchy
- Provide both architectural and program diversity
- Incorporate sustainable technologies throughout the development

The first objective the urban design plan hoped to achieve was to create a destination that became the image of the development. This heart needed to engender a strong sense of place by including a variety of activities. At the same time, it needed to provide civic open space that the city currently lacks while also enhancing the site's ecological functions.
Because of the desire to link existing neighborhoods behind the site to the beach, the existing riparian corridor became the logical gateway, with a central open area and plaza defining the new public space. The mixed-use program in this new canal plaza includes outdoor performance areas, entertainment, restaurants, retail, office, and residential towers, creating a vibrant, 24/7 space. The canal district is open and engaging, and can host seasonal festivals and other activities to ensure the space remains active throughout the year. Its strategic orientation creates a microclimate which is cooler in the summer because of shade trees, water features, and breezes off the bay, and warmer in the winter because of its compact scale and building orientation which screen harsh seasonal northern winds. In addition to its activity, the canal district also provides an important ecological function. By celebrating the stream and demonstrating how careful landscape design can improve water quality, the space has an educational function as well, teaching about the importance of the environment and its impacts to quality of life. The main canal plaza is also a people-oriented environment, with automobile access limited to the edges to provide a comfortable walking environment at the interior. To reduce the dependency on cars by district residents, a bus route through the development links to the public transit system of Qinhuangdao. Bus stops are located at key points within a 5-minute walk from all residents. Parking, required by local code, is accommodated in numerous underground garages throughout the development. This strategy further emphasizes the pedestrian-friendly environment of the district, improves overall aesthetics, and reduces the amount of impermeable site area.

By creating a setting which is interesting, varied, and accessible, the waterfront becomes a shared commodity which all citizens will value and help to protect. Public access to the beach is therefore another core principle. Buildings are carefully sited such that views to the ocean reach into the development and back to existing neighborhoods through a series of open space corridors, providing more waterfront views to more people. Physical access to the beach is contiguous along the length of the district, with a boardwalk and oceanfront promenade that links to the larger open space structure of the city. A public pier provides access to sailboats, canoes and kayaks, allowing people to use the bay for recreational purposes and to experience it from a different perspective.

In addition to the central canal plaza and waterfront, other public open spaces include heavily landscaped streetscapes that provide pedestrian connections between the beach and neighborhoods adjacent to the development. The greenway, a landscape buffer along the western edge of the property, creates a linear park system along an existing major roadway, buffering noise and screening views while also providing park space for adjacent residential uses. Property owners use the semi-private courtyards, located within the residential blocks, as playgrounds and informal gathering areas throughout the year because of their protective orientation, which creates microclimates. The courtyards also are an integral part of the site's storm water management strategy, providing subsurface storage and infiltration basins. Similarly, roof gardens, located on key buildings, offer additional space for outdoor use, improve views from higher units, and help to reduce the urban heat island effect by providing more permeable surfaces for planting, rainwater capture, etc.

**Ecological Restoration**

One of the key landscape objectives of the development is the complete restoration of the dune system. Dune restoration is achieved easily through a passive, low cost process that does not require heavy machinery. Common practices for reestablishing dunes include the installation of silt fencing in conjunction with revegetation efforts. Silt fencing slows wind velocity and allows for sand accumulation on the area directly behind the fence protection zone. Simultaneously, the replanting of dune vegetation also aids with sand accumulation as the plant's root structures begin to hold sand in place, protecting the dune from further erosion by wind and water. Dunes are dynamic natural systems that constantly shift within the landscape. As the dunes change form, the resident plant communities also move accordingly. Seasonal fluctuations in sand accumulation and loss may occur annually based on local weather patterns and events. Eventually, however, a series of smaller dunes will form a larger dune facing the sea called a foredune, followed by a series of smaller backdunes that gradually transition in topography and plant communities, eventually becoming a maritime forest. A key factor for successful dune reestablishment is the reduction of pedestrian impacts to the vegetation. Construction of controlled access points at strategic locations at the end of major thru streets protects the dune by clearly delineating how people access the beach without disrupting the sensitive vegetation and wildlife using the dune.

In addition to the dune habitat, restoration of the riparian vegetation along the central stream provides several benefits to the overall health of the watershed. First, vegetation shades and subsequently reduces water temperature, making it
more suitable for aquatic organisms. Also, many native riparian plant species have the capability to remove pollutants from water and soil by accumulating them in their tissues, and by trapping sediment runoff before it reaches the flow of the creek. The ability of the creek and the vegetation to reduce the velocity of the water as it moves through the plaza, and to cleanse the water of pollutants prior to its discharge into the sea, is important for maintaining high water quality, thus protecting the health of the bay. The riparian zone surrounding the creek is designed to accommodate over-bank flooding during heavier storm events. Occasional over-bank flooding, combined with the meandering course of the stream, increases the amount of water surface exposed to riparian plants and soil substrate, promoting sediment trapping and pollutant removal. Planted within the riparian zone are plants selected for their ability to remediate pollutants. Species such as *Helianthus* spp. and *Pennisetum* spp. remediate cadmium and nitrogen, and native coastal flora of the region such as *Carex scabrifolia*, *Aster tripolium*, and *Salicornia herbacea* increase the local biodiversity, support native insect populations, and add seasonal color throughout the central plaza.

Finally, the replanting of healthy maritime forest can help to reduce wind velocities coming off the sea, and improve air quality by filtering pollutants and particles in the forest canopy. Forest plants also sequester and store atmospheric carbon, potentially helping to reduce the impacts of climate change. Within the development, revegetated bands of maritime forest reduce urban heat buildup, creating comfortable microclimates for pedestrians in all seasons. Reconnecting these existing forest fragments also creates a more suitable wildlife habitat by providing contiguous corridors for terrestrial animals that rely on the maritime forest for survival.
Introduction

In 2004, the 798 Arts District in Beijing – a haven for emerging artists – faced near destruction in the name of progress. With the help of a Belgian art collector, however, a new plan for this former industrial site is beginning to transform the district into an international destination for arts and culture. Today, as Chinese culture increasingly is emerging onto the world stage, the district is poised to become the center of the country’s creative culture. Its modern bohemian style, combined with its historic industrial architecture, saved it from the wrecking ball and quickly is transforming the area into one of Beijing’s most distinctive neighborhoods. As 798 continues to face pressure from the fast-paced growth of adjacent development, however, preserving the character and spirit of the district while infusing it with additional revenue-generating program continues to be of great importance.

With its East German designed factory buildings, the district is one of the most unique architectural gems in a metropolis that has a rich ancient history and a contemporary international context, but tends to ignore its mid-century industrialism. But it is not just the existing structures that form the character of the district. Many other relics on the site, including a gasworks, railroad, and overhead cranes also contribute to the industrial aesthetic of the district. Its narrow streets and limited access have protected the district from the traffic congestion that has become characteristic of the rest of Beijing, creating a delightful pedestrian character of courtyards, corridors, and passageways. And because many trees were planted when the factories were built over 50 years ago, a wonderful and extensive canopy of large trees still exist.

Although this combination of the district’s unique elements provides it with its many advantages, it was also evident a strong framework for new development needed to be established. The infusion of a wide variety of arts-related, revenue-generating uses seeks to encourage the district to continue to regenerate itself in a sustainable way, creating an energetic, 24/7 destination. The new 798 vision plan hopes to solidify the area’s standing as a frenetic, contemporary destination with a distinct focus on the arts, positioning it to become one of the world’s epicenters of culture.

Redevelopment includes a mix of museums, galleries, theatres, retail, restaurants entertainment venues, hotels, conference facilities, and parks and plazas for performances and sculptural displays. Other issues addressed in the vision plan include improving access and the arrival sequence, creating strong connections to transit and adjacent neighborhoods, establishing guidelines for the redevelopment of historic structures, and opportunities to revitalize historic facades which are currently hidden by newer structures.

Urban Design Strategy

Based on the evaluation of the district, as well as research and case studies of successful arts districts around the world, four main objectives began to define the framework for the revitalization of the district:

1. **Emphasize the arts** as a central theme for the district by creating major plazas as the focal points and flexible public spaces associated with key buildings, and incorporating linear landscape parks as key soft landscapes for the outdoor display of contemporary Chinese art.

2. Retain the essential qualities of the historic **industrial aesthetic** by restoring the unique character of the factories, preserving as many trees as possible, and using green zones for historic interpretation and ecological benefit.

3. Develop strategies which make the district more **visible to the city**, including enhancing the existing roadway network to make the district more accessible, creating multiple pedestrian and vehicular connections into the district, and establishing a pedestrian-only zone in the core of the district.

4. Encourage a wide variety of **arts-related and complementary uses** to ensure a vibrant and dynamic district by strategically positioning key public program elements (theatre, conference center, art institute, children’s museum, etc.) in highly visible locations, and using the roadway network as a framework for new urban development parcels, with higher density at the edges.
One of the most critical methods to ensure 798 becomes an even more vibrant and active district is by connecting it to the context of the greater metropolitan area. Currently, access and arrival to the district is limited, unclear, and does not create a powerful statement for this distinctive area. The master plan improves this by creating stronger, more visible entrances that provide a clear hierarchy for pedestrians and vehicles, easily leading visitors to the central core. This strategy creates a unique address for the district by emphasizing public art at highly visible entries and arrival points. Similarly, by embracing and strengthening the character of existing industrial elements such as the steam pipe network, the smokestacks, and other historic structures, they become iconic way-finding elements that enhance the district’s industrial character. Finally, to improve the area’s allure at night, artistic light installations above the roadways identify access points leading to major civic and cultural facilities.

Open Space
In addition to improving access and arrival, multifunctional open spaces were added in the form of civic plazas located adjacent to key cultural institutions. The purpose of these plazas, or arts squares, is mainly to create flexible outdoor space that allows for program activities such as movies, fashions shows, temporary art installations, theatre, ice skating, temporary sculpture exhibits, street performances, and other events. These spaces are usable throughout the year, change with the season, offer flexible seating areas for restaurants and cafes, and create a bold and clear main entrance to major museum and exhibition spaces.

As 798 continues to develop into a more urban district, integrating a larger system of parks and other open spaces is critical. A clear open space system that complements the spirit of 798 emphasizes the district’s historic core, allows for strong connections to the surrounding neighborhoods, and creates a valuable real estate edge for future development. In a compact district such as 798, a contemporary landscape also can provide contrast to the historic setting, re-emphasizing the architectural character without competing with it. Two major new park spaces, Rail Yard Park and Grasslands Park, are inspired by the existing open space and landscape character of the site. Rail Yard Park transforms the native grasses and gravel-lined track of a former railroad to the level of fine art, embracing former industrial elements such as a crane, gasworks, and decommissioned boiler plant. At the other end of the spectrum, Grasslands Park provides a quiet, contemplative space that weaves through an ever-changing existing urban meadow, its meandering path opening into landscape galleries of outdoor sculptures and temporary art installations. Together, these parks create a dynamic tension between planned development parcels and the historic pedestrian core, each becoming a unique expression of the district’s industrial aesthetic.

CONCLUSION
In a country with the fastest urbanizing society modern history has ever experienced, the challenges ahead for China are great. As its cities grow in population, density, and verticality, it is important to remember that the very essence of what makes cities great is its people and how they choose to embrace (or ignore) the public realm. How people interact with each other, express their ideas, and experience space is an important measure for how we deem a city to be great. For China’s emerging mega-cities to be culturally, ecologically, and socially sustainable, they must celebrate, link, and enhance civic space, making sure that this important connective tissue continues to bring people together.

With so much focus on iconic architecture, planners and designers working in developing countries such as China also must continue to emphasize the importance of the environment, both natural and man-made. This goes beyond fitting out buildings with the latest in sustainable technologies, but requires a big picture approach to city building. In the past, cities have generally caused a decrease in native species diversity. In the future, successful cities will explore how public space can increase biodiversity, restore damaged ecosystems, and improve the health and wellness of its population.

This sense of stewardship on all levels – cultural, social, and ecological – is the only way to make sure our cities of the future don’t simply have beautiful skylines, but also function from the perspective of the individual citizen.