

The Ecological City: Metaphor versus Metabolism

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Abstract

In this study – a textual and visual analysis – I look at the ways the term “ecology” has been used to motivate western-style modernism in a global context and to prescribe and advance design decisions based largely in formal, compositional, and stylistic assumptions. Among the questions I am interested in is how new frameworks – sustainability, sustainable communities, and sustainable design – extend earlier ecological metaphors and the extent to which they have sublimated stylistic and formal design ideas without truly resolving the impact of modernization on the landscape.

Keywords: Ecology, Sustainability, Housing, Tourism, Preservation, Modernization

1 INTRODUCTION

The concept of the ecological city has a long history within western theories of urbanism: from the notion of the perfect city as the embodiment of the perfect body (Renaissance) to the city as diseased body (Nineteenth Century) to urban sociology's empiricist turn to science to describe the effects of modernization on both urban inhabitants and urban form (Twentieth Century). In all of these conceptual frameworks, natural processes were embraced as metaphors for the city rather than as its underlying metabolism. In the twentieth century both urban sociologists and planners used scientific signifiers to describe urban processes in an attempt to bring the study of the city into a value system controlled by the assumed objectivity and rationality of science. Many of these values remain imbedded in contemporary urban planning models, even as modifications are made to incorporate notions of sustainability and to reincorporate the image of the historic city within the new city as a signifier for a sustainable city. Within the last two decades this combination of modernization and historicism has had significant impact on the explosive growth of Chinese cities.

Until the 1960s, when an increased awareness of the actual biological, geological, and hydrological systems that are at play in all cities began to influence urban thinking, all uses of the term "ecology" with reference to urban environments were metaphoric. The essays and case studies in *The City*, an important foundational text for urban sociology, built an argument for linking human behavior to an urban ecology that could be described through processes of extension and succession, concentration and decentralization. One can "[think] of urban growth as a resultant of organization and disorganization analogous to the anabolic and katabolic processes of metabolism in the body," Ernest Burgess, wrote in this influential volume.¹ The actual metabolic processes of the city were distinct from the formal rationale of its design, a split that was heightened in the modern city as these metabolic functions were increasingly handled by technologically complex infrastructures.² Over the past two to three decades, a way of thinking about the ecological processes of the city – as distinct from the city as an ecology – has been absorbed into a larger concept of the "sustainable" city. The idea of the sustainable city assigns ecology a role alongside other urban systems, be they economic, cultural, social, or political. Ideally, a sustainable city is one in which conservation of natural resources and environments are balanced with economic viability. However, like all open, evolving systems,

¹ Ernest W. Burgess, "The Growth of the City: An Introduction to a Research Project," in Robert E. Park & Ernest W. Burgess, *The City* (Chicago: University of Chicago Press 1967 [1925]), p. 53.

² See for example, Kathy Poole, "Civitas Oecologie: Infrastructure in the Ecological City," *The Harvard Architecture Review* 10(1998): 126-143.

the sustainable city is not without its conflicts. Of particular note are the conflicts that arise between economic goals and cultural traditions and developmental imperatives and existing ecologies. The recent pace and scale of development of Chinese cities, bring these conflicts to light; as a recent *New York Times* headline read: “Red China or Green?” implying the extensive debate over pollution (both internal and exported) and sustainable development attendant to Chinese urbanization and modernization.³

The explosive growth of Chinese mega-cities such as Beijing, Shanghai, Shenyang, and Wuhan has called attention to the problems of massive human migration, pollution, and the loss of arable land. These are noted daily in both the Western and Chinese press, with a significant amount of finger pointing on both sides. However, the effects of rapid urban development can be seen throughout China in its large cities, rural regions, and small, yet growing cities. For my case study I will take as my examples several recent projects in the city of Shunde in the Guangdong province. Shunde is one of a large network of cities that together interact to form the agricultural and industrial base of the Pearl River Delta, historically united by water, and now brought together via advanced technological connections, highways, and, in the future, light-rail. (Fig. 1) Shunde itself is not a megacity; currently it operates as a district of Foshan, (pop. 3.8 million, 2004) itself a satellite of Guangzhou. Nor, however, is it “rural” in the strict sense of the word. Its population, somewhere above one million and growing (not including its floating

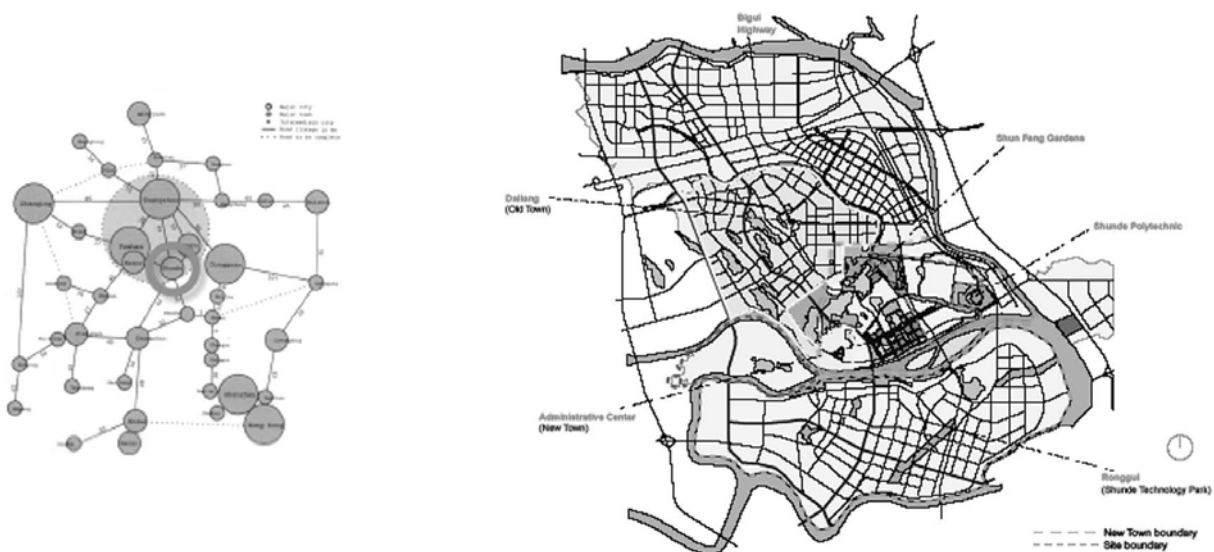


Figure 1 Shunde in the Pearl River Delta network of cities and map of its central areas

³ Thomas L. Friedman, “Red China or Green?” *The New York Times*, June 30, 2006.

population), is comparable to the North American city of Phoenix (pop. 1.3 million, 2006). As such, it poses a set of questions that are more common to urban development around the country than the over-generalized analyses of mega-city growth or the critique of specific projects such as the Beijing Olympic Village or the Pudong in Shanghai, around which many Western discussions of Asian urbanism are built. Despite its massive industrial, agricultural, and horticultural output including furniture, refrigerators, and flowers, Shunde is relatively “unseen” by the global economy of which it is a part.

2 SHUNDE URBANIZATION

Shunde’s growth can be understood in the context of its location and its history. Its origin dates to the 15th century; its economy has been based on agriculture and manufacture tied to its location in the water-based ecology and economy of the Delta. Shunde’s vernacular architecture and urban patterns have two primary characteristics: a loose but dense network of fish and silk farms scattered throughout the water-based landscape and dense urban development following the contours of a mountainous topography further inland. (Fig. 2)



Figure 2 Old City Center and Fish Farms of Shunde

Chosen as a “pilot” city in the 1980s, Shunde has rapidly modernized along these historic lines requiring new industrial zones, technical schools, residential areas, and administrative capacities. Further, as part of a large network of growing cities, Shunde’s government and planners perceive the city’s future to be directly tied to its ability to compete for both local and global recognition and sales of its products. As one city development brochure

puts it: “creating the future with urbanization.”⁴ This future, however, still has ties to the past; city leaders describe their methodology for growth as “being flexible and dexterous like the water,” recognizing that the city’s foundations sit within “the earliest artificial ecological system in human history.” As the urban designer and academic Richard Marshall has noted with regard to Asian projects designed to allow cities to compete globally: “Among other things these projects provide two very important global advantages to their host locations. First they provide a particular type of urban environment where the work of globalization gets done and second, they provide a specific kind of global image that can be marketed in the global market place.”⁵ This is true even in the relatively small city of Shunde, which promotes itself both on the basis of its industrial strengths and the image of its green environment. The question: is ecology a component of the city’s efforts toward sustainability or is it an artifact?

Shunde’s “urbanization” is situated throughout its metropolitan region rather than being specifically based on expansion from its historic center. Indeed, rather than expanding the “Old City” Shunde has built the infrastructure for and begun to develop a “New City” closer to its river waterfronts and new industrial areas. Although there is a great deal of western-style development in its Old City – tall buildings, shopping malls, hotels, McDonalds, KFC – most development is occurring within the delta-landscape. This “desakota” region is “characterized by an intense mix of agricultural and non-agricultural activities that often stretch along corridors between large city cores.”⁶ This “patchwork” urbanization, as Marshall describes it, creates “a thick band of ambiguous fuzziness that denotes the transition from one to another – neither wholly urban nor wholly rural, but something new entirely.”⁷

Marshall’s description is apt, but it misses two aspects of the scenario as it pertains to places such as Shunde. First, there are many moments when the physical space created by development is anything but blurry. (Figs. 4 and 8) The superimposition of a 300m X 300m urban grid over fish farms to create the New City, for instance, illustrates a jarring clash of old and new landscape. One can still be seen inside the other, and often, where one system ends, the other suddenly begins. Second, the desakota landscape may be an inherent developmental

4 Quotations from promotional materials are taken from four volumes on Planning, Operation, Industry, and Culture provided by Shunde’s planning department. See also: <http://newcity.shunde.gov.cn/english/>

5 Richard Marshall, *Emerging Urbanity: Global Urban Projects in the Asia Pacific Rim* (NY: Spon Press, 2003), p. 4.

6 Daniel Z. Sui and Hui Zeng, “Modeling the dynamics of landscape structure in Asia’s emerging desakota regions: a case study in Shenzhen,” *Landscape and Urban Planning* 53 (2001) p. 37. “Desakota” from the Indonesian words “desa” – village – and “kota” –town.

7 Richard Marshall, “Asian Megacities,” in Edward Robbins and Rodolphe El-Khoury, eds. *Shaping the City: Studies in History, Theory and Urban Design* (NY: Routledge, 2004), p. 205.

condition of the region created by the local ecology itself in which land and water, urban and rural have always been of the same piece. The *desakota* may not be solely a development of the late twentieth century. (Fig. 3) Although the phrase describes a condition in distinct contrast to western models of urban development such as that described by Burgess in his famous diagram of city-centered growth, the “village”/“town” dynamic seems inherent in the historic development of the region, in which land and water have been continually modified to promote agriculture, production and trade. However, now the scale, technology, and methodology of building have shifted dramatically, layering modern building and infrastructure on top of the region’s ecological attributes through a massive reshaping of water and land. When looking at maps, planning documents, and drawings, what is always unclear is the accuracy of original conditions, what has been built versus merely planned, and what plan is currently in place. Representations of the PRD seem to rarely match experiences on the ground.

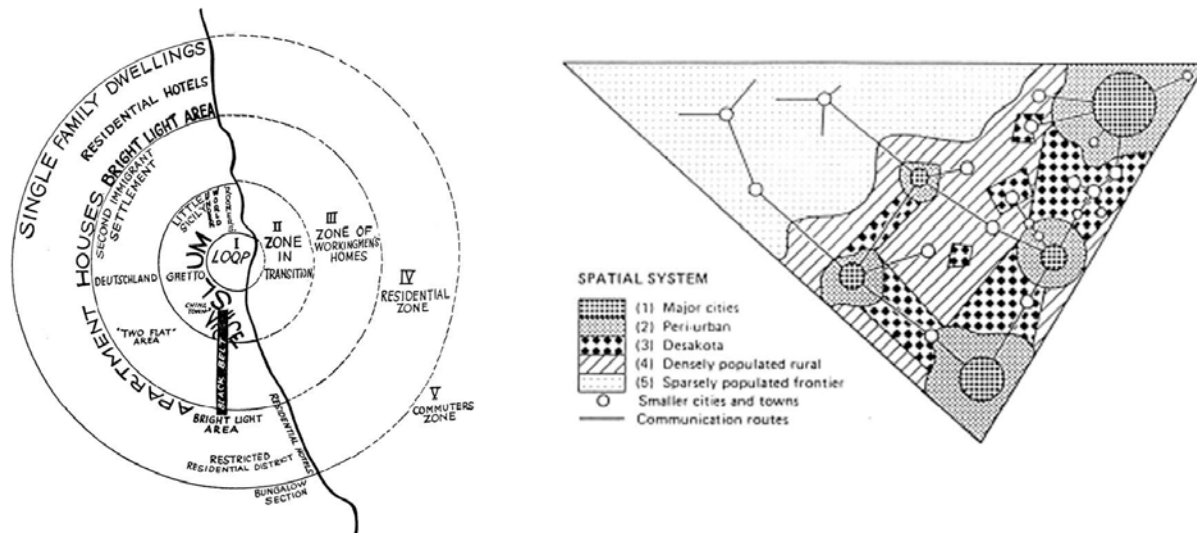


Figure 3 Ernest Burgess’s model of urban extension & succession in Chicago and The McGee-Ginsburg model of emerging *desakota* regions in Asia

3 LANDSCAPE ERASURE

In Shunde development is taking place on two tracks: the building of the pieces necessary for globalized competition and the promotion of local traditions. With globalization comes not just factories but the infrastructure to support them: roads, highways, water management, and the New City, too large to be accommodated within the old center and, therefore, necessitating the large-scale conversion of agricultural land (much of it water) to hardscape and modern buildings. Preservation is also a developmental imperative necessitating

the survival of pieces of rural lifestyle and the building of new sites to celebrate history and tradition.

The Hong Kong-based urbanists Laurent Gutierrez and Valerie Portefaix aptly describe the geography of the Delta as the situation and characterization of its urban form: floating. “It is very natural that these small villages developed from an agricultural production to an industrialized economy. The multiplication of rural enterprises, small towns and transport infrastructure are the main determinants of today’s organization. This transition not only involved farming activity but also the size of plots and accessibility to water. This also extends to the erasure of surrounding peaks to fill ponds and create artificial planes that accommodate a growing infrastructure and urban settlements.”⁸ (Fig. 4)

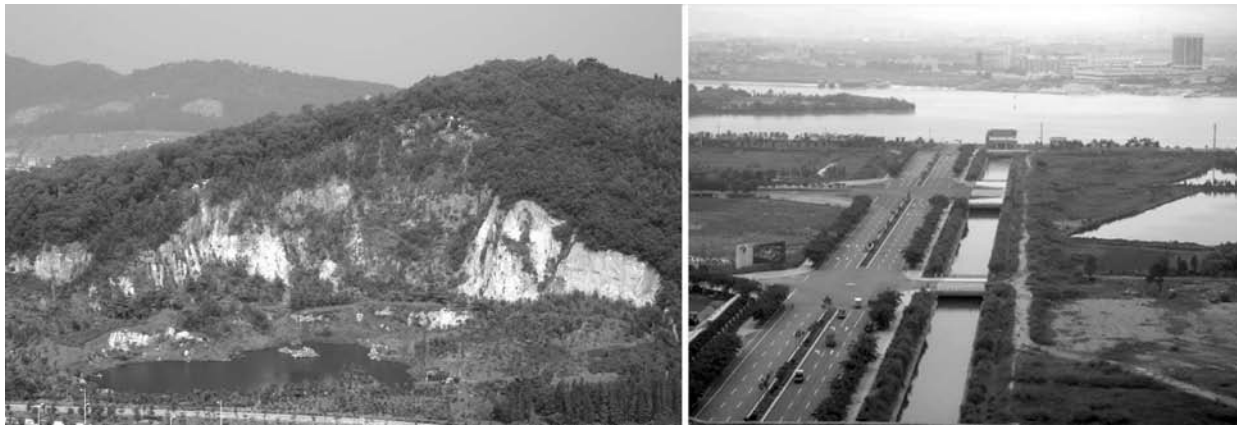


Figure 4 Cutting and Filling to create the ground-plane for the New City of Shunde

The erasure of cultural traditions, for instance, family farming and manufacture (including fishing and silk), canal towns, family temples, and local Lingnan organization incorporating buildings and water, has been brought about through massive reorganization of the landscape, particularly water and land. Gutierrez and Portefaix’s description of urbanization in the PRD explains the method by which the landscape of the water-based agricultural region is being remade into a plane for industrial growth (including industrialized agriculture). And planners in Shunde are extremely aware of the consequences as they describe the price of development to be the loss of local culture and extreme pollution. This “loss” informs both the form and style of contemporary developments and an increasing interest in ecological and heritage tourism. This turn toward tourism is understood as both a way to preserve traditional culture and promote the

⁸ Laurent Gutierrez and Valerie Portefaix, “Pearl River Delta: Lean Planning, Thin Patterns,” *Architectural Design* 73(Sept/Oct 2003), p. 75.

city for future economic development. In this dynamic, preservation is an after-effect and made possible by the speed of growth and expansion of wealth in the city.

4 WATER

Water is at the center of all development in Shunde and the central feature of its ecology, so it is not surprising to find it at the center of questions of both sustainability and preservation. The villages of the region are organized around canals and centered on the relationship of fish farming for sustenance and mulberry bushes for silk production. The canals were the primary circulation method with alleys opening off them. They also served to connect the villages to larger towns and trading networks for their products. Although no longer significant to the region's industrial economy, preservation of the villages and restoration of their family temples have become an essential feature of heritage tourism. One piece of Shunde's promotional material reads: "Stepping into Fengjian village, you will see the setting sun turning the Mulberry fish ponds into red, the reticulated watercourses, the hit-and-miss cockleboats, the banana forest on the riverside, the blue stone plate roads leading to the back roads." (Fig. 5)



Figure 5 Changjiao and Fengjian Villages: Housing, Canal, Family Temple

The region's canal-focused villages illustrate a form of family-based, communal living that remains extant in many new residential projects but without the integration of landscape and production. As family farming and industry have shifted to industrial-scaled agriculture and horticulture and the region's productive capabilities have moved into industrial and technology parks, the nuanced integration of living and working around water has disappeared. The future economy of the villages is tourism, particularly as younger inhabitants move to jobs and residential projects in and around the city.

However, water remains a centerpiece of residential developments, albeit stripped of its functions as resource and connector. The role of water as a symbol of the region's ecology is present in almost every new development, but particularly in residential projects where water courses through artificial streams, canals, ponds, fountains, and play areas. (Fig. 6) Here water is image rather than environment, a stand in for ecology. Separated from productive functions, its "artificiality" is of a different nature than the artificial ecology of the aquaculture built within rather than on top of the delta. This is not to say, however, that there is not an attentiveness to the sustainability of the water itself. But the style of the architecture and landscape is distinct from the functions of the water, a metaphor of ecology and an image of sustainability.



Figure 6 New Residential Developments: Suburbs and New City

Water is also a strong element in the design of the New City, but largely as a formal element within the grid. Large canals organize two axes, one focused on a new city hall and civic plaza, the other a cross axis leading to the Gui Pan River, anticipating housing and commercial development at this edge. (Fig. 7) Water here serves to augment the monumentality of the district's open spaces, roads, and buildings, but does little to relieve the excessive scale of roadbeds designed for anticipated traffic in the final build-out.



Figure 7 Panorama of the City Hall and Civic Plaza of the New City from the Administrative Building

5 LAND

The regional ecology of the Pearl River Delta may have always been a patchwork, but today's patches are of a size and scale out of touch with traditional forms. New projects may incorporate water elements into their landscape themes, but typically to the detriment of the existing water ecology. It is here that the greatest effects of Western-style modernization can be seen in the wholesale erasure of traditional landscapes and agricultural methods. To create the new ground plane for industrial agriculture, industrial and technology parks, and entirely new cities, large amounts of the delta must be filled. The effect of this filling is evident, not only in the loss of fish farms, but also in the denuding and carving out of the area's hills and mountains. An overlay of new and planned projects on top of the pre-existing landscape around the Gui Pan River illustrates the extent of this process. (Figure 8)

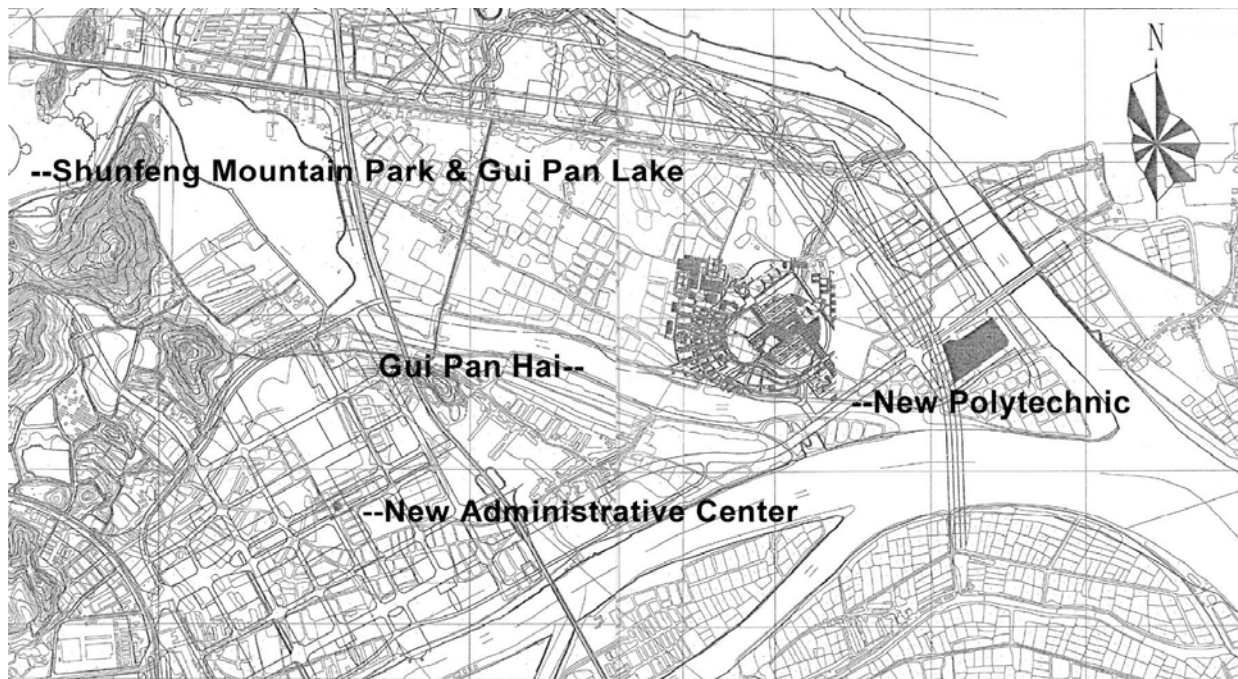


Figure 8 New developments around the Gui Pan Hai; palimpsest of old and new

Development rarely follows the contours of the hills or former canals and dikes. The new Polytechnic, with its own dramatic and meandering water landscape runs up against the existing water systems without acknowledging them, probably in anticipation of further development. Each block of the New City swallows numerous fish ponds with little attention to existing land divisions or waterways. The inhabitants of old villages are relocated to new villages in leftover spaces between new developments. Existing hills are scoured to provide new fill. Green

elements – trees, bushes, flowers, and grass – are abundant, lining every new road and highway requiring constant watering by water tankers throughout the cool night and tending by manual labor throughout the hot day. The process is a new form of tabula rasa development in which land is created to provide a flat, fresh plane for development and history has to be rebuilt.

In contrast to the New City with its axial organization, large-scale grid, and neo-historicist and neo-modern architecture is the Shunfeng Mountain Park, equal if not larger in size than the New City. (Fig. 9) Lying between the New and Old Cities, the park, its landscape features, and architectural elements form a new history for the city out of fragments of the past. Here the land is excavated rather than filled (one can assume excavated material is used in nearby development) to create a lake that forms the centerpiece of a series of experiences that reference, and in some cases appropriate, historic garden motifs. One of the first pieces to open in the park, the Baolin Temple presents a case in point. It is reconstructed from pieces of a tenth century temple relocated from a nearby hill to serve as a ceremonial link between city and mountain. Passing through its rooms filled with Buddhas and souvenir shops, one arrives to the top to gain a distant view of the lake, bridges, pagodas, and an array of passive recreational spaces, but also a forest of electrical transmission lines and new developments in the vast region beyond.

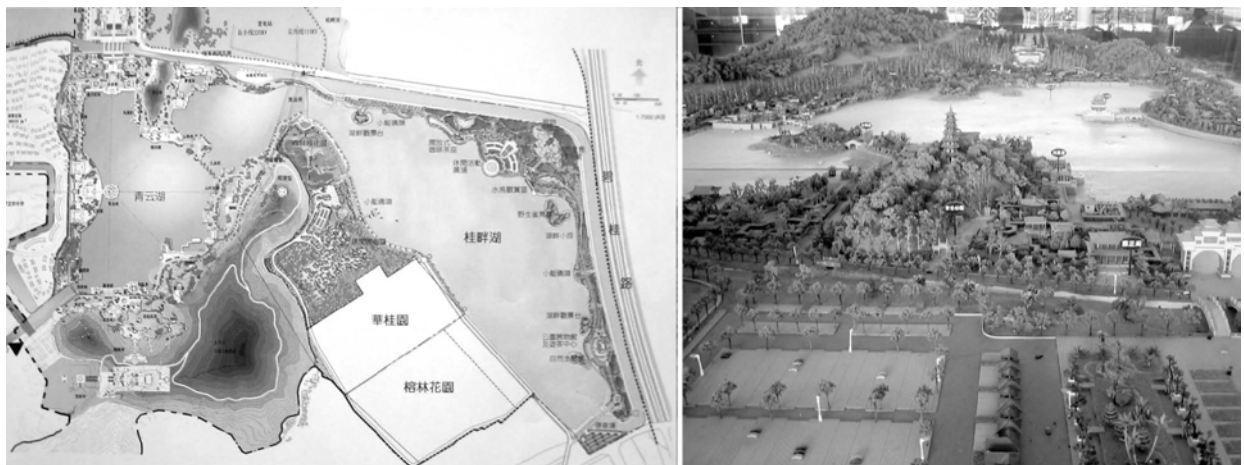


Figure 9 Drawing and model of Shunfeng Mountain Park

Shunfeng Mountain Park and Baolin Temple present a number of questions to a Westerner. At first glance they are an amalgam of Chinese references including Behai Park and the Summer Palace in Beijing, of a completely different scale and design tradition than the Qinghui Garden (now also renovated and expanded), an important historic artifact in the Old City. Methodologically, they appear to be Western, aligned with Haussmann and Alphand's

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creation of the Parc des Buttes-Chaumont in nineteenth-century Paris, in which a quarry was converted into a park through the invention of a new landscape and history. Like the building of Central Park in New York, also in the Nineteenth-Century, old uses were moved out to create the new landscaped park. In these instances existing water patterns were occasionally maintained, although “renaturalized” through the addition of artificial elements that augmented their appearance. In what ways do these modern methodologies intersect with Chinese traditions? The landscape theorist Stanislaus Fung noting that “Chinese buildings continue to be caught in a perpetual cycle of building and rebuilding,” suggests that the physical survival of buildings in China is not an integral part of urban “identity.”⁹ Shunfeng Mountain Park creates a vast environmental panorama at the same time that it is an indicator of the city’s need for attractive, ecologically mindful open space. Is this spectacular new park a means of extending the identity of the region or creating a new one through the appropriation of a past at a distance? Like the preservation of the canal towns, the Park and the New City use the past as a way toward the future but in a way that speaks to stylistic rather than cultural traditions, a form of cultural, social, and economic, if not ecological sustainability.



Figure 10 Shunfeng Mountain Park and Baolin Temple under construction

6 CONCLUSION

Sustainability – economic, cultural, social, political and ecological – must be a guiding theme of contemporary and future development of both historic places and vast new urban regions. Are eco- and heritage-tourism sufficient means to support cultural preservation? How do we understand ecology within the context of urban development in such a way as to truly preserve natural resources and landscape systems, agricultural and communal lifestyles, and housing traditions and culturally significant spaces while still addressing contemporary urban

⁹ Stanislaus Fung, “Mutuality and the Cultures of Landscape Architecture,” in James Corner, ed. *Recovering Landscape: Essays in Contemporary Landscape Architecture* (NY: Princeton Architectural Press, 1999) p. 148.

needs? In the unfolding urbanization of China, ecology and the larger issue of sustainability will have to be understood as more than “greening”. This will necessitate a conceptual move from the metaphoric to the metabolic, a true integration of cultural tradition, regional ecological systems, and economic globalization.

The questions raised in this paper are meant to point to areas for further investigation not as indictments. The city and people of Shunde are living the experiment of “creating a future with urbanization” where “the future lies in the past,” a difficult task that begins to take into account the need to balance economy, culture, and ecology. Stanislaus Fung in his reading of the traditional text on Chinese Gardens, *Yuan ye*, within both a traditional Chinese and a Western philosophical context offers one way of thinking through this dilemma: “The person who notices borrowing is not a universal subject; the moment when borrowing is noticed is not just happenstance or undetermined. Rather, the borrowing of views is discussed in *Yuan ye* as eventful encounter and depends on the notion of tradition, here conceived not as a tradition of stylized or designed objects but as embodied practices of daily living.”¹⁰ Here Fung is speaking to the specific experiences within a Chinese garden, however his focus on “embodied practices of daily living” suggests a connection between the social and the ecological. His analysis also suggests a methodology for conceiving a sustainable, regional urbanism in the Pearl River Delta, building identity out of the land and its traditions.

¹⁰ Stanislaus Fung, “Here and there in *Yuan ye*,” *Studies in the history of gardens & designed landscapes* 19 (1999), p. 44.

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