Photographer unknown, *Buckminster Fuller and Shoji Sadao in Beijing*, 1979. Photo from M1090, Buckminster Fuller Papers, Series 14, Box 3, Folder 7. Courtesy of the Department of Special Collections, Stanford University Libraries.

 https://doi.org/10.1162/GREY.a.373

Interiors Turning Off and On: Buckminster Fuller, Airborne Architecture, and Special Economic Zones in China, 1979–1989

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In May 1979, American architects R. Buckminster Fuller and Shoji Sadao visited China for three weeks as guests of the China Merchant Steam Navigation Company (CMSN), a state-owned enterprise under the ministry of communication.[1] At the time, the central government had just made CMSN the developer and owner of Shekou Industrial Zone, China's first special economic zone (SEZ).[2] Modeled after free trade zones such as Singapore's Jurong Industrial Park, Shekou—with its relaxed environmental, labor, and financial regulations—became the "test tube" of China's economic reform.[3] Seeking guidance on development strategies, CMSN invited Fuller and Sadao to design prototypes for floating cities and geodesic domes. Eager to access Hong Kong's capitalist market and advanced infrastructure, yet unable to purchase land across the border, CMSN envisioned shiplike islands that could suture the geographical divide imposed by the sea through their mobility. They were also drawn to the promise of geodesic domes, whose long-span structure aligned with China's spatial needs for its Import and Export exhibitions—the state's key venue for international market engagement since 1957.[4]

Wary of the ideological implications of exposing Fuller and Sadao to China's general public, CMSN carefully confined their visit. The architects stayed at Beijing Hotel, designed to isolate foreign guests from ordinary citizens while providing international-standard amenities, including the food and tea Fuller preferred.[5] Before a two-week tour, Fuller gave a closed seminar to sixteen elites from such institutions as Peking University and the China Academy of Science. The itinerary, covering Shanghai, Suzhou, Hangzhou, Luoyang, and Guilin, included carefully curated receptions and allowed little personal time.[6] Fuller and Sadao were among the many foreign experts invited from the United States between 1979 and 1980.[7] Their vision of fusing, if not replacing,

architecture with wireless communication technologies resonated with the state's search for an alternative path to industrialization informed by advanced electronic systems.[8] It is no surprise, then, that at the farewell banquet in Beijing, Gao Yuan, director of the Council of Science and Technology at the Ministry of Communications, extended another invitation to Fuller, saying, "You are China. Please return."[9] Fuller, too, reflected fondly on the trip. He saw China as more adventurous in reform than the Soviet Union. China's ability to do a lot with very little, and its willingness to set aside ideological differences, impressed Fuller. He came away convinced that China was eager to pursue his ideas in its future industrialization efforts.[10]

Such mutual appreciation was curious, given that the two parties came from opposite sides of the Cold War and could not be more different in their political and economic aims. While Fuller envisioned China as part of his planetary integration project, CMSN sought to preserve national sovereignty amid growing foreign investment. Yet over the course of their decade-long collaboration, neither Fuller nor his Chinese counterparts addressed the fundamental tensions between sovereignty and property, solidity and fluidity, land and sea. This paper unpacks the paradoxical alignment by situating Fuller's projects like floating cities and geodesic domes alongside the development history of Shekou, on the one hand, and his broader vision of planetary ecology and world economy, on the other.

Through this alignment, this paper explores what the encounter between Fuller, Sadao, and China's zone authorities reveals to us about both sides. It traces the ideological and technological transformations that occurred both in Fuller's broader body of work and at the dawn of China's economic reform—transformations that enabled Fuller's information-driven, self-sustaining ecological visions to align with the resource-intensive operations of SEZs. Such convergence reveals that Fuller's ecological project was inherently neoliberal. Historians like Felicity Scott, Fred Turner, Eva Díaz, and Alec Nevala-Lee have noted Fuller's apolitical stance, postscarcity utopianism, affinity with the military, and tone deafness toward class, gender, and racial inequalities.[11] Fuller argued that a technological revolution in planetary environmental control would resolve all social problems. In practice, however, it often reinforced the status quo.

Architecture, for Fuller, which had once been built from the land, could now be dropped from the sky. He envisioned architecture as a global environmental service network that relied on airborne technologies to transform the surface of the earth into the bottom of a smooth and undifferentiated ocean of air. Aviation and airwaves transcended sovereign

and geographical boundaries, while air-conditioning neutralized climatic constraints. Fuller's formulations coincided with, and consequently reinforced, a fundamental transformation in late-capitalist architecture, where immaterial flows seemed to supersede physical places. Yet they also exposed a contradiction: buildings, no matter how well connected, remained tethered to land. It was precisely this terrestrial tether that produced the inequalities Fuller hoped to dissolve through fluidity—inequalities that his vision denied from the outset.

Situated at the crossroads of an incipient capitalist economic reform, China's central government was drawn to Fuller's ideas precisely because they wanted to transform China from a land-borne agrarian state to an airborne information society, while also bypassing the protracted processes of industrialization that had unfolded in the late nineteenth century. In this vision, SEZs would function as incubators through which communication technologies could begin to infiltrate China. Through sensors, data flows, and air-conditioning, architectural interiors were imagined as discrete state machines that could be turned off and on. Information and material flows circulating within and beyond architectural enclosures made it possible for these interiors to connect more to "world-class" office spaces and hotel rooms in Hong Kong than to its immediate surroundings. Displaced and dispersed, political boundaries became less tangible. Migrating along pipes and ducts, these bounardies grew increasingly entangled with the infrastructure of communication itself.

Although China's state officials embraced Fuller's ideas and proposals with enthusiasm, in Shekou there remained a disconnect between the state's futuristic outlook and what CMSN's financial, political, and technological resources could actually sustain. Shekou's early development history demonstrates that connection to the global market depended on steady cash flows, properly maintained infrastructure, and sufficient energy supply. To connect, in short, meant access to environmental and telecommunication systems. In the early 1980s, as CMSN struggled to raise capital and allocate resources for Shekou's initial development, the zone's fluidity proved intermitent. Its connectivity could vanish whenever its infrastructure failed.

From Treaty Ports to SEZs

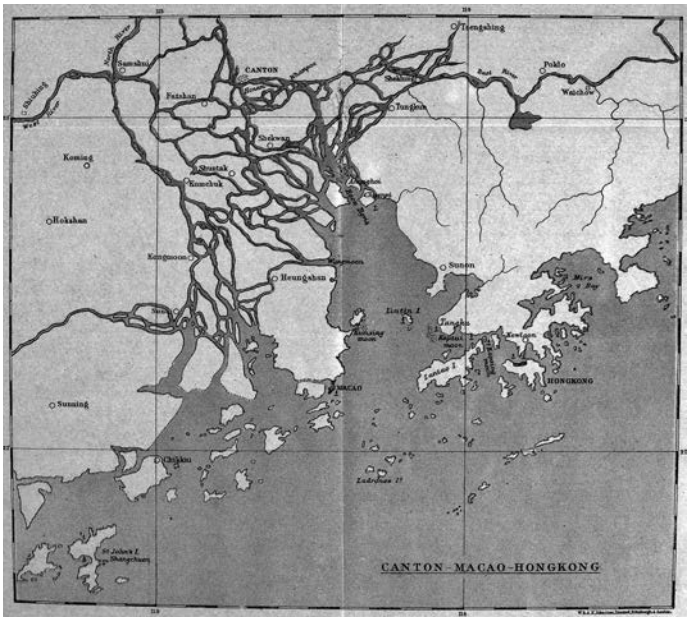
CMSN's attention to Fuller and Sadao's work was inseparable from its long-standing engagement with shipping and navigation. The architects' floating city prototypes resonated with the company's historical role in asserting sovereign control over free-flowing waters through rigid infrastructure, such as wharves, ports, and steamships. Founded in 1872 under Qing viceroy Li Hongzhang, CMSN was China's first Western-style

enterprise. It facilitated technological transfer and defended domestic markets as foreign merchants advanced inland through treaty ports—littoral cities forcibly opened to trade through "unequal treaties" signed between Qing and colonial powers.[12] As the infrastructure of world economic integration, treaty ports pulled China into the Euro-American trading and banking system without Qing's awareness or consent.

Geographically adjacent to Guangzhou (Canton), Shekou sits within a region that served as China's primary hub from the late 1600s until 1842, when the Treaty of Nanjing, signed between the Qing dynasty and the British Empire, designated Canton as a treaty port and ended Qing's foreign trade regime known in English as the Canton System.[13] The treaty also ceded Hong Kong to Britain, gradually shifting the center of trade in the Pearl River Delta from Guangzhou to Hong Kong. The international trade network that began under the Canton System enabled merchants from the Pearl River Delta to travel abroad and establish diasporas in Southeast Asia, Europe, and the Americas. Kinship lineages formed through this migration and commerce later prompted the People's Republic of China (PRC) to locate three of its first four SEZs in Guangdong.[14]

Under the Canton System, foreign merchants—arriving first in Macao, a Portuguese colony since 1557—would sail through the Bocca Tigris (Humen) into the Canton estuary to reach the city. The shallow mouth of the Pearl River imposed natural navigational limits, allowing Canton authorities to regulate incoming ships through forts and tollhouses.[15] Once in Canton, merchants were restricted to a suburb of fewer than twelve acres where their trading stations were located. Despite Qing's cautious approach to foreign commerce, the Pearl River Delta remained a vibrant multicultural region frequented by merchants from Sweden, United States, France, Spain, Denmark, and England.[16]

In contrast, the treaty ports established after the 1842 Treaty of Nanjing functioned as semicolonial enclaves where foreigners lived under extraterritorial protections and governed their own settlements. These concessions permitted foreign governments to sell land and build modern infrastructure, while also locking in low tariffs on imports. Although extraterritoriality seemed only to shield foreign subjects from the "primitive and barbaric" Chinese justice system,[17] it institutionalized racism against Chinese people and gave foreign merchants the upper hand in competition for business.[18]



Right: Hosea Ballou Morse, *The Canton Estuary*, 1910. Illustration from *The International Relations of the Chinese Empire*, Volume 1 (New York: Longmans, Green, and Co., 1910), xlii. The location of Shekou is marked with a cross by the author.

Opposite: Sunqua, *View of the Canton River*, 1850–1855. The image shows the thirteen merchant stations in the background.

Treaty ports introduced a waterborne system of commerce that allowed the global market to operate independently of Qing's sovereignty. As these ports proliferated along China's domestic waterways, the Euro-American trading and banking system eroded Qing's autonomy. With extraterritorial privileges, artificially lowered tariffs, and steamships capable of breaking through the geographical and meteorological limits, foreign shipping companies soon dominated China's domestic shipping market. Against the rise of foreign shipping monopolies, the Qing court founded CMSN.[19] Its initial goal was to prevent the state's tribute rice shipment from falling into foreign hands. As a part of China's fiscal income, tribute rice guaranteed the grain supply for the officialdom, the court, and military troops in and around Beijing. Commissioning this business to CMSN, the Qing government reasserted sovereign authority within an increasingly foreign-controlled maritime economy.[20]

As a Western-type enterprise, CMSN brought institutional change to China. It adopted the *Guandu Shangban*, or government-supervised and merchant-managed system, where the Qing court offered political support—such as assigning state shipping business to the company—and left the merchants to manage the company's finance and operation on their own.[21] The nineteenth-century *Guandu Shangban* system provided an institutional precedent for the twentieth-century political-economic experiments of SEZs. Between 1872 and 1978, although CMSN underwent several reorganizations, it remained a state organ. In January 1950, its Hong Kong branch became a state-owned enterprise of the newly established PRC. While its headquarters remained in Hong Kong, the company's staff was appointed in Beijing.[22]

In 1978, when the central government decided to test the market economy in Shekou, CMSN's experience with international trade and its access to the global market became an asset. As one of the four PRC-owned companies in Hong Kong at the time, CMSN operated primarily as a shipping company, with activities ranging from services for oceangoing vessels to barge transport, warehousing, vessel trading, and ship repair. Despite this breadth, it occupied only a small share of Hong Kong's shipping market, with total assets of HK$137 million (approximately US$29.7 million).[23]

On October 9, 1978, CMSN's chairman Yuan Geng submitted a proposal titled "Guanyu chongfen liyong Xianggang Zhaoshangju wenti de

qingshi" (On the full use of Hong Kong China Merchants Steam Navigation Corporation) to the central government, contending that CMSN could be employed in developing and governing Shekou. He proposed an outwardly oriented development strategy, where the zone would attract foreign direct investment with its cheap land and cheap labor through the capitalist market in Hong Kong and Macao. He further noted that Guangdong's long history of foreign trade left behind strong connections with overseas Chinese diasporas. Established since the treaty port era, such a social network could be activated again as the Shekou Industrial Zone opened.[24]

Yuan's proposal initiated a restructuring of CMSN. Drawing on the historical precedent of the *Guandu Shangban* system, the state granted the company unprecedented political and financial autonomy, allowing it to function simultaneously as developer and governing authority of the Shekou Industrial Zone. In addition to its shipping business, CMSN entered real-estate development. By paying a modest annual land-lease fee of HK$4 million to the Shenzhen municipal government, CMSN gained the ability to acquire, sell, and develop land in Shekou.[25] Lacking direct financial support from the state, the company was compelled to expand its monetary reserves through foreign direct investment, bank loans, and commercial operation. In its early years, Yuan even ordered the dismantling of aging vessels to salvage their steel. At the time, Hong Kong was experiencing a construction boom and demanded large quantities of steel, and Yuan initially planned to sell the scrapped metal at high prices to Hong Kong construction firms. Although the scale of this operation was ultimately limited, it revealed that for Shekou and CMSN alike, a symbiotic relationship with Hong Kong was crucial to their early viability.[26]

Becoming Fluid

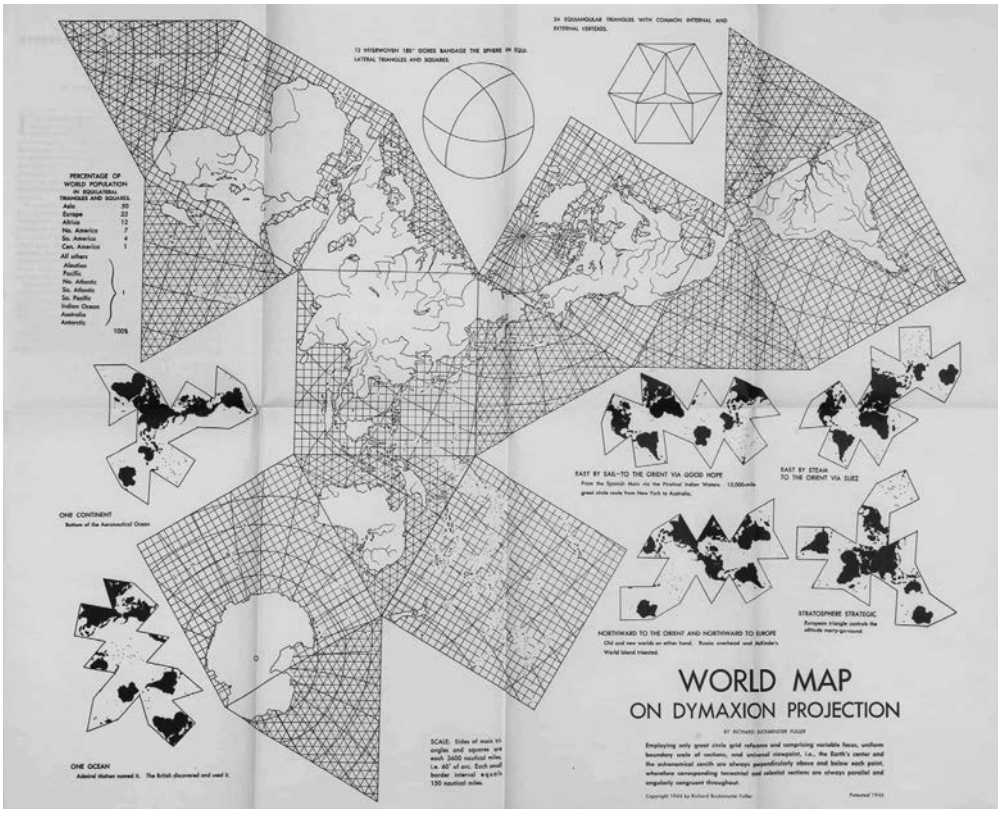
Occupying a liminal space between sovereign control and market flows, CMSN's developmental trajectory aligned unexpectedly with Fuller's vision of fluid geography. In 1942, as chief engineer for the U.S. Board of Economic Warfare, Fuller proposed that world economic history unfolded through a series of elemental phases: a land-borne agricultural economy, a waterborne commercial economy, an airborne pneumatic economy, and, finally, an energy-borne future economy. He associated each element with a corresponding political-economic regime, arguing that, as history progressed, economic activities had become increasingly fluid.[27] For Fuller, air was the element of his historical moment. In 1944, as the outcome of World War II still hung in the balance, Fuller published the Dymaxion Projection, unfolding the globe into triangles and squares that

R. Buckminster Fuller, *World Map on Dymaxion Projection*, 1944. Illustration from *American Neptune* 4, no. 2 (April 1944).

merged continents into a continuous island and oceans into a singular sea. Both land and sea were rendered the bottom of an air-ocean that transcended all boundaries, political and otherwise.

Within the emerging techno-atmosphere, Fuller's architectural projects became airborne: They relied on aviation for supply chains, radio waves for communication, wind for power, and air-conditioning for environmental control. Even when static, his houses were conceived as ships sailing through the air-ocean. The Wichita House, for instance, had a revolving cone ventilator shaped like a ship's turbo propellers. As he argued, "The average wind speed over the United States as computed by widely reported recording is approximately 12 miles an hour. Houses may be considered aerodynamically as little ships whose standard cruising speed is 12 miles an hour."[28]

Fuller's economic history provided a lens for examining CMSN's semicolonial past and reform-era market experimentation through the fluidity of water and air. Unlike CMSN, Fuller regarded state borders as "clots in the economic bloodstream of our planet."[29] His stance resonated with the position of neoliberal economists, who supported the separation between sovereign powers and the global market. Supranational corporations, growing from colonial empires, became "the interlocked owners" of a new "invisible empire."[30] The invisible empire Fuller had in mind was that of broadcast technologies, identified by American inventor Lee de Forest, whose work with wireless communications introduced Fuller "to a new world."[31] De Forest envisioned radio as a global organism that transformed the air into a structured territory for technopolitical control.[32] Inspired both by de Forest's vision and by the rise of supranational cor-

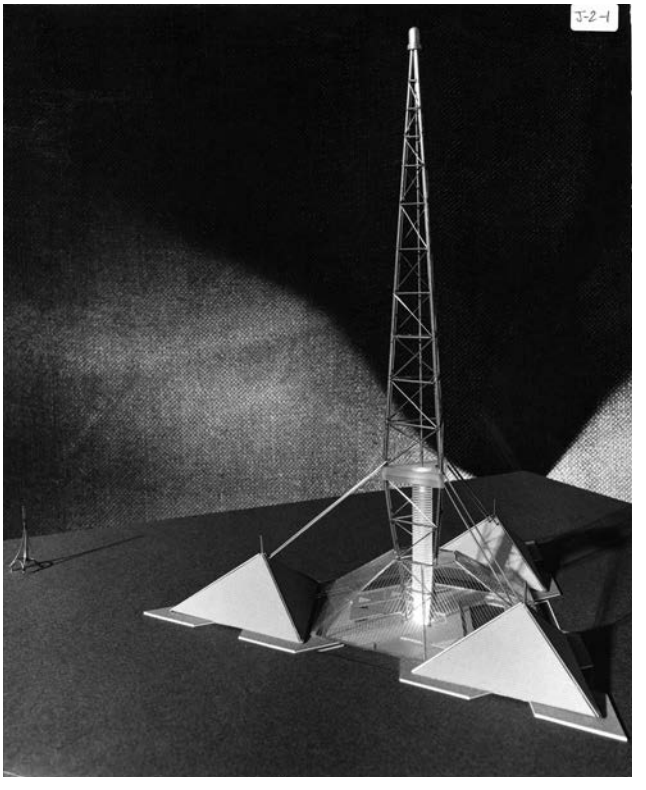


porations, Fuller imagined that the new invisible empire—comprising legal contrivances, airwaves, satellites, skyscrapers, factories, laboratories, and "all the oriental industrial deployment, such as in Taiwan, South Korea, Malaysia, Hong Kong, and Singapore"—would provide the infrastructure for global resource redistribution guided by consolidated information flows.[33] By "oriental industrial deployment," Fuller meant free trade zones. As precursors to Shekou, these zones served simultaneously as inspiration and competition for Chinese reformers like Yuan, who hoped Shekou would join their network.

If airborne technological systems like radio and aviation reorganized the atmosphere into a new territory, they also generated new forms of subjectivity. Each economic phase, for Fuller, produced its own subject. For the emergent airborne economy, he coined "World Man," a descendent of the waterborne "sailor man." Whereas "landlubbers" had been tethered to immobile property, World Men would become mobile and adaptable.[34] They had no homestead but instead inhabited the air itself, sleeping in airplanes or high-rise hotel rooms and perpetually navigating an atmosphere made occupiable by transportation, communication, and environmental technologies.

Shekou: The Floating Zone

Little did CMSN know that Fuller and Sadao had originally conceived their floating city prototypes for World Man. Commissioned initially in 1966 by Japanese media mogul Matsutaro Shoriki, the project was intended to be a television tower taller than Mount Fuji. Initially, Shoriki proposed to name the project "World Peace Prayer Tower." Fuller, however, argued that no physical structure could embody a prayer and suggested renaming

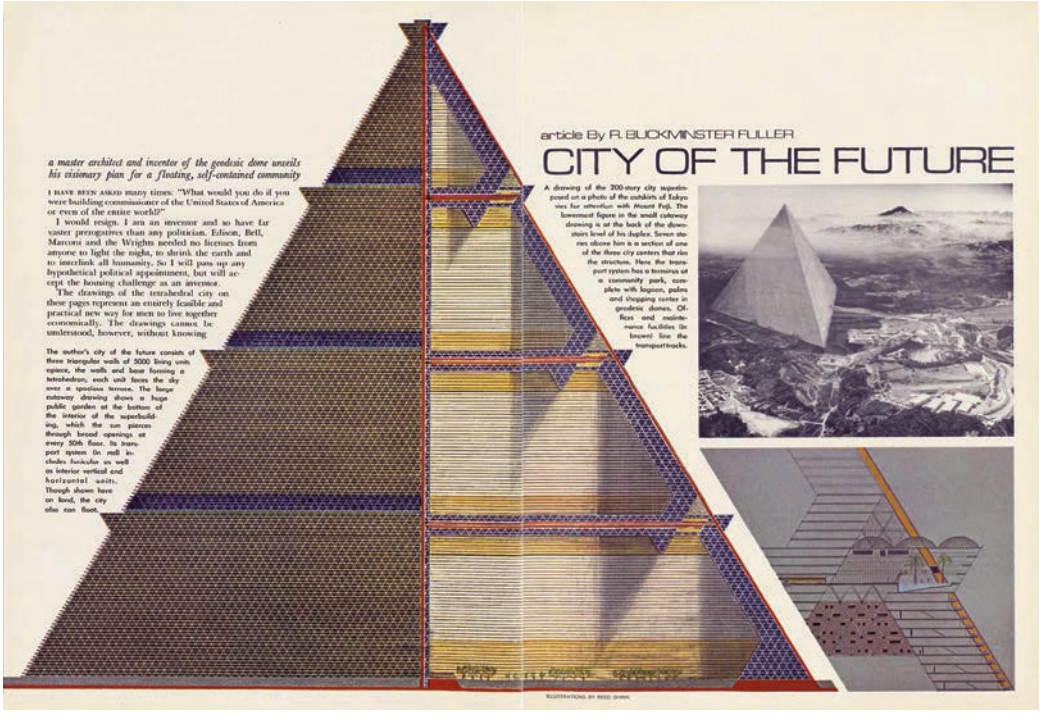


Right: R. Buckminster Fuller and Shoji Sadao, *Shoriki Tower*, 1966. Photo from M1090, Buckminster Fuller Papers, Series 13, Box 12, Folder J1. Courtesy of the Department of Special Collections, Stanford University Libraries.

Opposite: Reeo Shinn, *Tetra City section*, 1968. Illustration published with R. Buckminster Fuller, "City of the Future," *Playboy* 15, no. 1 (January 1968), 166–167. Courtesy of the Department of Special Collections, Stanford University Libraries.

it "the Tower of World Man." Together with Sadao, Fuller designed the tower based on the geodesic principle, using triangular units as its smallest structural components. The proposal featured a vertical, three-dimensional octet truss supported by a truncated tetrahedron base, with a single observation deck at its core. From the base's corners, three tensioned cables extended outward to anchor the central tower to three smaller tetrahedral structures. Before the design advanced, Shoriki revised the commission into a vertical city for a million inhabitants. In response, Fuller and Sadao transformed the scheme into a floating city and relocated its proposed site to Tokyo Bay.[35]

Known as Tetrahedron City, the structure was designed to be either anchored in triangular canals or set adrift into the sea. Drawing inspirations from Kenzo Tange's 1960 Plan for Tokyo Bay, Fuller—who had met Tange earlier that year at the Delos Symposion hosted by architect C.A. Doxiadis—adapted a similar principle: a permanent structural framework combined with temporary modular housing units that could plug in and out, allowing the city to expand as needed. In Fuller's vision, Tetra City would be a megastructure of octet trusses supporting 200,000 prefabricated housing units. There would be an open floor on every fiftieth floor, accommodating city centers, community parks, shopping centers, offices, and maintenance facilities.[36] As Fuller later wrote in 1967, the city would be so structurally efficient that the entire 9,000-foot-tall city would be light enough to float on water.[37] Tetra City echoed the collective living ideals of contemporary projects such as Kiyonori Kikutake's Marine City. However, Fuller envisioned "a frequency modulation schedule," in which inhabitants would check in and out like hotel guests, remaining strangers to one another.[38] These foamy environmental bubbles, turning off and on, he argued, would integrate into a global network of ecological management essential for planetary survival.


article By R. BUCKMINSTER FULLER

CITY OF THE FUTURE

a master architect and inventor of the geodesic dome unveils his visionary plan for a floating, self-contained community

I HAVE BEEN ASKED many times: "What would you do if you were building commissioner of the United States of America or even of the entire world?"

I would resign. I am an inventor and so have far vaster prerogatives than any politician. Edison, Bell, Marconi and the Wrights needed no licenses from anyone to light the night, to shrink the earth and to interlink all humanity. So I will pass up any hypothetical political appointment, but will accept the housing challenge as an inventor.

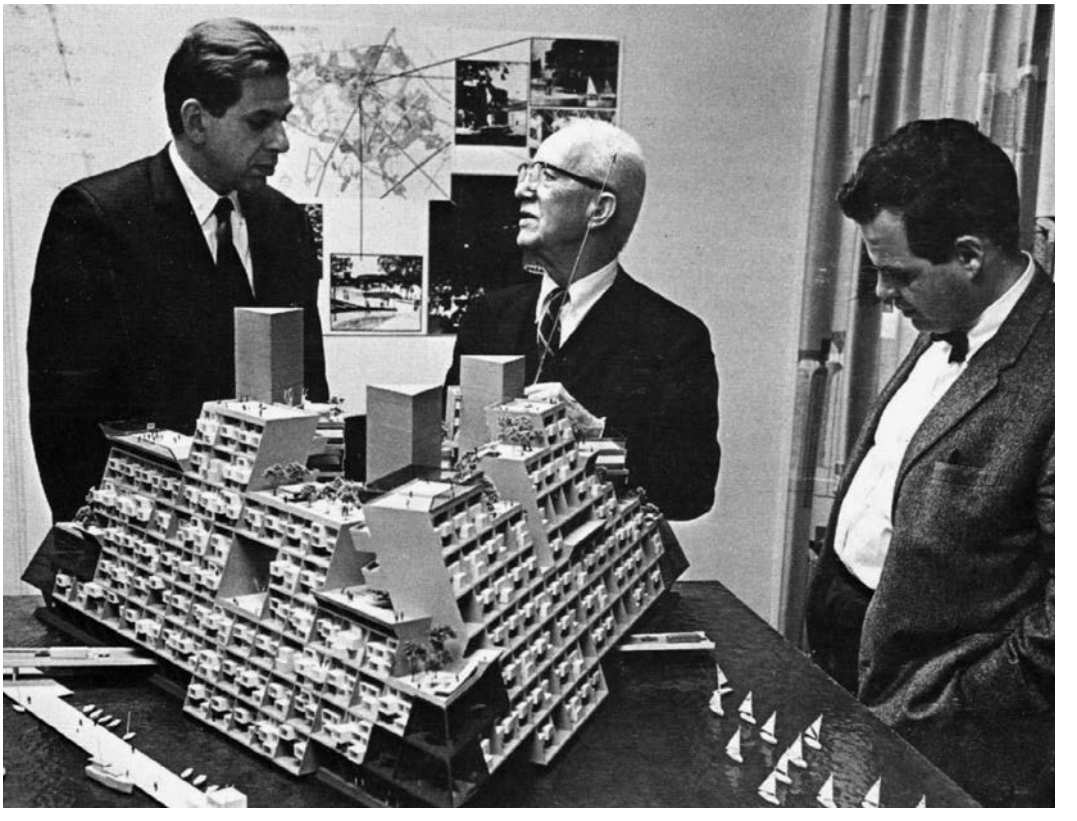
The drawings of the tetrahedral city on these pages represent an entirely feasible and practical new way for men to live together economically. The drawings cannot be understood, however, without knowing

The author's city of the future consists of three triangular walls of 5000 living units apiece, the walls and base forming a tetrahedron; each unit faces the sky over a spacious terrace. The large cutaway drawing shows a huge public garden at the bottom of the interior of the superbuilding, which the sun pierces through broad openings at every 50th floor. Its transport system (in red) includes funiculars as well as interior vertical and horizontal units. Though shown here on land, the city also can float.

A drawing of the 200-story city superimposed on a photo of the outskirts of Tokyo sets for attention with Mount Fuji. The lowermost figure in the small cutaway drawing is at the back of the downstairs level of his duplex. Seven stories above him is a section of one of the three city centers that rim the structure. Here the transport system has a terminus at a community park, complete with lagoon, palms and shopping center in geodesic domes. Offices and maintenance facilities (in brown) line the transport tracks.

Although Tetra City resulted only in a few magazine articles, it drew interests from the U.S. Department of Housing and Urban Development (HUD), which saw floating cities as a possible solution to the social inequalities produced by urban renewal. By relocating communities to open water, such cities promised to leave behind urban problems. HUD offered a grant to study the feasibility of floating cities as annexes to dense inner cities in need of renewal. To receive the grant, Fuller and Sadao founded the Triton Foundation, a nonprofit organization, and renamed their proposal Triton City. Compared to Tetra City, Triton City was far more realistic. The architects conducted feasibility studies that deemed the project economically viable but structurally risky—its octet framework might not withstand typhoons.[39] Designed to house 5,000 rather than 100,000 residents, Triton City featured twenty-two stories with apartments, an elementary school, a small supermarket, and local services. Fuller and Sadao's work culminated in a technical report, *Triton City: A Prototype Floating Community*, which addressed widespread critiques of urban renewal. Acknowledging that postwar suburb expansion in the United States had deepened racial and class divisions, the report claimed that Triton City would overcome such inequalities by building a community on water from scratch.[40]

CMSN's attention to Triton City may appear anachronistic. Floating cities belonged to the 1960s, when cities in industrialized countries faced challenges like deterioration and overcrowding. This temporal disjuncture led to misunderstandings when Fuller's visit to China made headlines. According to American journalist John Roderick, who interviewed Fuller in Beijing after his two-day seminar, CMSN's interest



stemmed from housing shortages imposed by China's large population. He assumed that, as a crowded country, with nearly a billion people, China would require land-saving housing solutions.[41] While China did hold the world's largest population in 1979, it had yet to undergo extensive urbanization; by 1978, only 18 percent of the population lived in cities. Housing pressure existed but were neither comparable to U.S. urban renewal crises nor driven by similar social dynamics. When Fuller and Sadao visited China, Shekou had fewer than a thousand residents and was served by poor infrastructure.

Keeping the industrial zone's infrastructural demand in mind, CMSN initially contemplated locating it in Hong Kong. But without state financial support, its limited financial reserve could not cover the cost of land acquisition, let alone constructing the entire zone. As an alternative, the company turned to Shekou, a site close to Hong Kong with the geographical potential for deep water seaports.[42] Yet, despite its vicinity to Hong Kong, how to access the global market across Deep Bay remained unresolved. Fuller and Sadao's report envisioned Triton City as an attachment to old, high-density urban cores where land was too expensive to redevelop. Its floating platforms could generate off-shore land, bypassing costs of land acquisition. Applied to Shekou, the floating city would create a dynamic boundary, effectively bringing the zone closer to Hong Kong. During his visit, Fuller assured CMSN that "the cost of such a city would be so low that it could be occupied by the next class above poverty."[43] As Roderick reported, "China had shown preliminary interest" to three floating city prototypes—"one for protected waters, another for not so protected waters, and a third for deep ocean." The basic unit was intended for five thousand people, but CMSN seemed to be interested in floating cities of a larger scale.[44]

The positive meetings did not ultimately result in the realization of a floating city in Deep Bay. Yet the idea of a mobile structure traveling back and forth between Hong Kong and Shekou only heightened the sense of division between the zone and its surrounding hinterland. The floating city would transform the bay from a geographical barrier to a channel of communication, allowing Shekou to decouple from *neidi*, or the inland, while recoupling with Hong Kong. At the time, Shekou was marked by

Opposite: Shoji Sadao, *Buckminster Fuller shows his floating city to U.S. housing officials*, 1969. Photo published with Shoji Sadao, "Buckminster Fuller's Floating City," *Futurist* 3, no. 1 (February 1969), 14. Courtesy of the Department of Special Collections, Stanford University Libraries.

Left: China Merchants Group, *Hong Kong map*, 1979. The map was used during a meeting where Yuan discussed the potential site of the industrial zone with the central government. Four possible sites for the zone were marked with red stars—one in Hong Kong island, two in Kowloon, and another one in Bao'an county, now Shenzhen. Map courtesy of China Merchants Group History Museum.

two major administrative boundaries: *Yixian* (the first line) marked the Shenzhen–Hong Kong border; *erxian* (the second line) referred to the boundary between the SEZ and the rest of China. While *yixian* had existed since 1842, *erxian* only came into being in 1980.[45] Stretching 84.2 kilometers, *erxian* consisted of a barbed wire fence, a cobblestone paved patrol road, 163 watchtowers, and six checkpoints. All Chinese nationals from the inland working in the SEZ were required to have travel and work permits for entry and access to social welfare benefits.[46] The two boundaries of Shekou turned the zone into a threshold between a sovereign-based planned economy and a global market economy.

In architectural language, the clash between sovereignty and commerce materialized as a tension between solidity and fluidity. Fuller and Sadao's floating cities, though seriously considered by the zone authorities for practical reasons, also became a metaphor of the zone's liminality. For Fuller, floating cities were sovereignty-negating vessels that generated fluid geography. The *erxian* created an abyss between Shekou and the rest of China, transforming the entire zone into a kind of floating city that could be set adrift into the sea of market economy. In its early years, CMSN planners imagined that Shekou might decouple from the terrestrial planned economy and recouple with the airborne and waterborne global market flows mediated through Hong Kong. What attracted CMSN to floating cities, in this sense, was precisely the way in which they embodied the problem of mediation—their capacity to suture Deep Bay, turn sea into land, and physically extend the industrial zone to Hong Kong while bypassing financial and diplomatic constraints.

Interiors Turning Off and On

For Shekou to merge into Hong Kong, however, it would need to match the then-British colony not only in its pro–free market and pro-corporation policies, but also in its transportation, communication, and environmental infrastructures. The economic reform was, therefore, also a technological reform. Scholars including Julian Gewirtz and Xiao Liu have noted that, at the dawn of the reform era, an information fever emerged in China, accompanying the publication of American futurist Alvin Toffler's *Third Wave* and Chinese scientist Qian Xuesen's *Engineering Cybernetics*.[47] As the central government invested millions of dollars into research and development programs in such areas as information technology, biotechnology, and energy, this information fever also invaded the popular imagination.[48] Beyond previous scholarship that has focused on the effects of this movement on state policy and cultural forms, Fuller's trip reveals that architecture in China, too, was being irreversibly fused with information technologies, both materially and metaphorically.

For the central government, Shekou was "the window of hope," a site through which the future of China could be glimpsed.[49] This imagined future resonated with the speculations of American futurists such as Toffler and Fuller. Both agreed that emerging technologies, especially wireless communication, could usher in a new information society, premised on the fantasy that a liberated flow of endless, immaterial data might somehow substitute for material infrastructures such as transportation and energy-intensive construction, allowing geographically dispersed settlements to coordinate economic and social activities through communication networks rather than through the physical movement of goods and people. They each visited China to advise on alternative paths of development that might allow the country to bypass fossil fuel–consuming and pollution-intensive industrialization, leaping directly into an information society. In the early 1980s, Fuller's *Operation Manual for Spaceship Earth* was the most widely read book by an American author in China and Toffler's *Third Wave* also became a bestseller.[50] While Toffler's vision focused primarily on policy and socioeconomic structures, Fuller's had spatial and architectural implications. For Fuller, entering the information society meant that China's architecture would become lighter and more ephemeral, while enabling people to "live in better conditions than they ever had before."[51] As he noted in a lecture in Hong Kong, following his mainland trip, "the extraordinary thing, [city centers filled with skyscrapers], which happened in Hong Kong and Singapore will not happen in China."[52]

From 1979 onward, telecommunication technologies gradually replaced shipping and navigation as the most critical component in CMSN's development strategy. Today, the company's archive is commemorated in a museum atop Weibo Mountain in Shekou. At first glance, the name *weibo*—which translates as "tiny ripples" in Chinese—might seem like a poetic reference to the mountain's coastal setting. Yet, *weibo* actually refers to microwaves: In 1981, the mountain became the site of Shekou's first telecommunication station, known locally as "the microwave building." The facility enabled the industrial zone to make international phone calls through Hong Kong, establishing a critical infrastructural link between Shekou and the global market.[53]

As Liu has noted, during the early 1980s, radio waves were imagined in China as a kind of "magic medium," one that promised unobstructed flows of information and energy between the human body and its surroundings.[54] Shekou's development illustrates that such surroundings were not only imagined but actively constructed and embedded in the material landscape of reform. CMSN's development trajectory also shows how Shekou's environment had been suspended between ocean waves

and radio waves from its very inception. Stemming from a waterborne semicolonial commercial urban conglomerate, Shekou now aspired to enter the emerging airborne neoliberal market. Fuller's airborne architecture offered a conceptual framework through which such a transition could be envisioned.

Radio waves were a crucial analogue through which Fuller understood architecture and its environment. In a 1952 lecture, Fuller suggested that houses could be understood as what he termed an "environment valve."[55] Drawing from wireless engineering, he envisioned architecture as operating like a radio: a device capable of selectively receiving, modulating, and regulating environmental flows, as if they could be transmitted without wires or conduits. Fuller's architectural vision was shaped in part by his early exposure to radio technology during his U.S. Navy service in 1918, when he first encountered Lee de Forest.[56] The engineer's radiotelephone tests, relaying signals between a fighter craft and Navy ships, one of them under Fuller's command, later informed Fuller's work as a radio communications officer tracking maritime shipping traffic.[57] His conception of valving was inseparable from de Forest's signature invention, the audion. Also known as a triode valve, this device introduced a control grid that allowed electromagnetic waves not only to be filtered and transmitted but also to be amplified and regulated.[58]

The audion's technical capacity enabled Fuller to imagine all things in nature as wave phenomena. For him, there were no solids, only events, or sine waves. A seed coming out of a fruit was a wave, just as childbirth was a wave. Plants were "wave thing[s]" that "open from the inside out."[59] Even the conventional house was a "long-wave, low-frequency event," one that only appeared to be static because it changed too slowly for human perception.[60] The human body itself became a kind of transceiver, operating along the axis of time. For Fuller, the conscious zone of human vision, hearing, taste, touch, and smell all captured wavelengths in the cosmos that resonated with human sensory organs.

In Fuller's thinking, if all natural forces could be understood as waves, then architecture became an environmental valve, acting as a cosmic radio oscillator and amplifier that translated wave things into patterns

Photographer unknown, *Microwave communication station atop of the Microwave Mountain*, 1981. Photo courtesy of China Merchants Group History Museum.

compatible with the human body, conjuring not only immaterial signals but also physical phenomena like wind and rain. By "environmental valving," Fuller meant that architecture should detect and intensify "all things in nature," much like the audion amplified electromagnetic waves, transforming imperceptible phenomena into perceptible ones. Environmental valves imposed on cosmic flows "a holding pattern" so that one can "interrupt, shunt, hold, and valve into their presence in magnitude and frequencies that correspond with their needs."[61]

In architecture, control valves have long been points of intersection where pipes and wires, environment and information, converge. Valves in pipes are openings that regulate the passage of fluids and gases by permitting flows in only one direction. They are essential in automatic atmospheric control: When connected to sensors, such as thermometers, valves convert environmental data into physical forces that open or close the passage of an environmental machine's energy supply, turning it on or off. Whenever one adjusts a building's thermostat, the difference between desired and ambient temperature becomes materially operative only through the instrument's valve. Fuller's speculation of architecture-as-radio could only be partially realized through control valves—material channels that direct and regulate flows of energy, matter, and information within architectural systems.

Fuller's theory of environmental valving rested on the misguided assumption that information and matter were mutually convertible. The material history of the valve itself, however, rooted in hydraulic and mechanical systems long before its migration into radio engineering, exposes what his theory overlooks. Valves used to be doors, which traditionally serve as a threshold between inside and outside (in Latin, the word *valva* denoted "that which turns"; in Middle English, it was adopted to refer to a leaf or folding of a double door). In Bernhard Siegert's theory of the door as a cultural technique, the introduction of wires, pipes, and ducts fundamentally transformed the door from the nomological agent of an inside/outside differential into a cybernetic machine in which both sides are folded into feedback loops. As he writes, "the basic distinction of inside and outside has been replaced by the distinction between current/on and current/off. The cybernetic logic of opening and closure estrange the old nomological logic."[62]

However, far from being channels that merely level information differentials, as Siegert argues, conduits are precisely where the inside-outside distinctions are produced—they both connect and divide.[63] Rather than smooth tubes, conduits are equipped with valves and sensors. In this sense, one might say that valves are doors that have migrated from the building envelope into its internal pipes, ducts, and vacuum tubes. At

the same time, the valves' sensors assume the soliciting agency that once belonged to humans. Together, valves and sensors reconstitute architecture's nomological logic. Such transformation made it possible for environmental machines to produce airborne territories independent of static boundaries, whether sovereign borders, administrative fences, or architectural envelopes. With control valves, it is no longer only information differentials, but also material and energetic asymmetries, that mediate interior and exterior.

Control valves in conduits thus mark the sites where Fuller's fantasy of transforming information into matter, and matter into information, takes material form. Yet, unlike in Fuller's vision where such convergence could occur with little constraint, conduits provide the material condition that both enables and limits it, transmitting and directing flowing matter such as air, water, fuel, and electric currents. Wires and pipes are therefore crucial in transforming the air into a navigable air-ocean: navigation that not only traverses space but also transposes environments beyond their geographical confines.

It is precisely this capacity to transpose environments that makes the control valve a scaling device. By stabilizing climatic and infrastructural conditions, valves produce artificially maintained homeostatic interiors that can be reproduced across geographically distant sites. In doing so, they allow transnational corporations to expand into new territories without fundamentally altering their modes of operation and organization. Control valves thus carve out property from sovereignty, turn solids into fluids, and blur the distinction between land and sea. With conduits, the asymmetries created by valving are foundational to climatic control, resource logistics, and telecommunication infrastructures that condition globalization and the neoliberal economy. Always simultaneously material and metaphorical, control valves generate the information, material, and energy differentials through which things—and humans—step up and down in value. In this sense, valving is not simply a technical operation but a political-economic mechanism.

In maintaining environmental homeostasis and enabling long-distance communication, valving also reshapes what Marshall McLuhan called "the sense ratio" of its occupants. By stabilizing the body's thermal environment through air-conditioning while transmitting images and sounds through radio waves, architecture allowed occupants to redirect attention away from the skin's sensation of heat and cold toward vision and hearing. From within air-conditioned interiors, they could extend these senses to a planetary scale while remaining physically insulated from their surrounding environments, whether in Vancouver or Hong Kong.[64] What Fuller refused to admit was that such sensory expansion was a

Photographer unknown, *Minghua Ship anchoring at Shekou's shore*, 1983. Photo courtesy of Shenzhen Museum.

privilege. He argued that in harnessing and distributing cosmic energy through valving, the global environmental service network would eliminate inequality by transforming "the have-nots" into "the haves."[65] However, the uneven access of environmental services was what made SEZs like Shekou successful.

As foreign factories began arriving in the city, officials quickly realized that the zone lacked hospitality facilities for their managers. In Fuller's term, the zone had failed to provide the kind of environmental services that would satisfy the needs of World Man. Having no time to design and construct a world-class hotel from scratch, in 1983, Yuan decided to acquire the newly retired cruise ship, *Minghua*, from Guangzhou Ocean Shipping Company and to transform it into a hotel and leisure center.[66]

Sea World

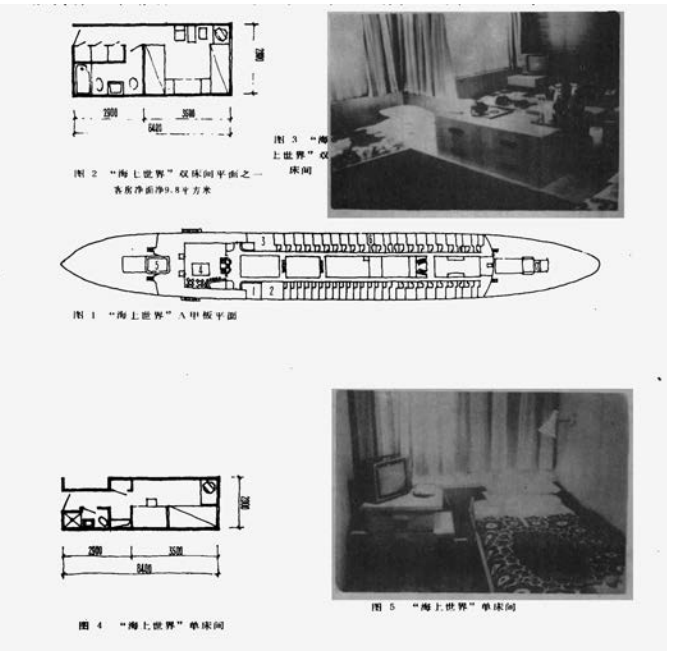
The *Minghua*, originally known as the *Ancerville*, was a French passenger ship manufactured in 1962. In the 1960s, it operated along the Marseille-Dakar route between France and Senegal. In 1973, after it changed hands to Guangzhou Ocean Shipping Company, the Chinese government used the ship to transport experts and workers to African countries such as Tanzania, where they supported aid projects aligned with "villagization"—a form of African socialism modeled after China's policies.[67] After purchasing the ship at a low price, CMSN anchored it along Shekou's coastline, finished the renovation in early 1984, and gave it a theme park–inspired name: *Sea World*.[68] As ethnographer Mary Ann O'Donnell argues, the history of *Sea World* marked a turn in China's diplomatic position from third-world mutual support to capitalist trade.[69]

Sea World featured more advanced environmental control and communication technologies than any other building in Shekou. Outfitted with a centralized air-conditioning system, the ocean liner produced its own air. Each guest room was wired to receive all the television channels in Hong Kong, and visitors could make direct calls to the city without routing through a central switchboard, which was impossible elsewhere. The ship also offered amenities rare in 1980s China: Western restaurants, a swimming pool, a gym, and an arcade.[70] In 1985, *Sea World* was featured in *Jianzhu Xuebao*, China's most prestigious architectural journal,

as a model for hotel design. The article emphasized how compact spaces could deliver greater comfort than the "large, empty" guest rooms typical of existing Chinese hotels.[71]

Through its environmental and communication technologies, *Sea World* generated an interior more connected to the world-class hotel rooms and office buildings in Hong Kong than to its immediate surroundings. This interior deposited in Shekou a new worldview among Chinese elites, orientating their geopolitical imagination from China's terrestrial connections to the Soviet bloc toward the fluid capitalist empires on the sea. As the air-conditioned interiors expanded in Shekou, zone elites embraced waterborne and airborne mobilities—foreign people, ideas, and goods that had once been deemed ideological threats were now recast as symbols of hope and progress. The ship molded a new subjectivity into being. Migrant workers and Chinese elites flocked to Shekou, not to advance social ideals but to pursue individual financial success. The rising tide of individualism ignited a nationwide debate over the legitimacy of the economic reform, pitting Conservative Party officials against the literate youth living in the zone. Many contemporaries considered the debate, known as the Shekou Storm, a prelude to the 1989 Tiananmen upheaval.[72]

In the airborne economy of neoliberalism, movement through space was no longer necessary. Physical vicinity mattered less than infrastructural connectivity. As *Sea World* demonstrated, pipes and valves were equally crucial as wires and switches in bending space and time. They produced and maintained an interior in Shekou that transported people to Hong Kong without touching its shore. For inland visitors, *Sea World* became an exotic bubble through which they glimpsed the world anew. Between 1984 and 1988, it served as Shenzhen's "living room," offering an attraction for tens of thousands of people daily.[73] Operating like Fuller's Tetra City, the floating hotel ran on "a frequency modulation schedule,"[74] transforming socialist elites into neoliberal ones.



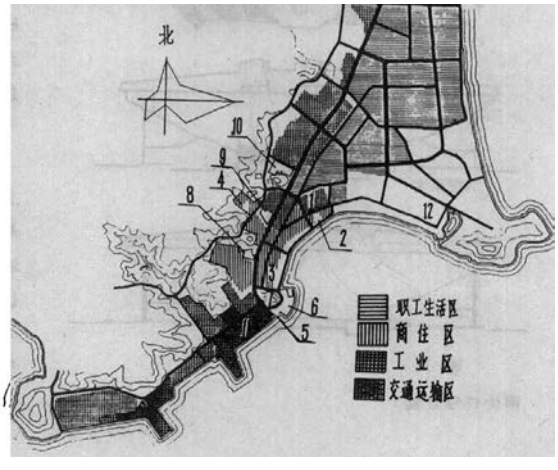
Right: Dazhong Wei, *Sea World plans and interiors*, 1985. Illustration from Wei, "Haishang Shiji de Qifa (Learning from Sea World)," *Jianzhu Xuebao*, October 28, 1985.

Opposite: Jiaxing Han, *Zoning in Shekou*, 1984. Illustration from Han, "Shekou Gongyequ de Guihua Yu Jianzhu (Urban Planning and Architecture in Shekou Industrial Zone)," Jianzhu Xuebao, July 29, 1984.

Sea World also marked the beginning of CMSN's long-standing effort to manufacture inequality within the zone. Its grand opening was a milestone in Shekou's urbanization. From that moment, interiors sustained by operations of communication and environmental machines began to multiply. The urbanization of Shekou became a process of manufacturing environments for financial investments and neoliberal elites rather than a way to serve local people and migrant workers. More tightly linked to Hong Kong than to its immediate surroundings, Shekou's infrastructural networks—such as ferries, electric cables, and telephone lines—all crossed Deep Bay to access the global market. As the first gateway toward the capitalist world outside, Hong Kong, with its skyscrapers, cosmopolitan culture, fashion, entertainment, and service industry, became a model for Shenzhen to emulate. The uneven distribution of infrastructural access and connectivity in Shekou demonstrated what sociologists Stephen Graham and Simon Marvin called "splintering urbanism."[75] The deliberate fragmentation of infrastructural access in Shekou, intended in part to contain the spread of capitalist ideologies beyond the zone, only deepened the divide between investors and workers, foreigners and locals, elites and common people.

Infrastructural inequality—connectivity for some and isolation for others—was also prescribed by Shekou's urban zoning. Deliberately divided into a commercial housing district and a staff quarter, Shekou's residential developments segregated condominiums for corporate elites from dormitories for migrant workers. Located near the beach, upscale residences such as Bitao Yuan Apartments and Guishan Villas were designed to satisfy the lifestyle of foreign investors, mostly elites from Hong Kong, Macau, and Taiwan. The emphasis in their design was not on efficiency but on luxury. Taking advantage of Shekou's hillside topography, these apartment buildings and villas maximized unblocked façades to offer rare views of the mountains and sea that were unavailable in the dense urban cores of Hong Kong. Commercial housing also featured larger floor areas and multiple restrooms to maintain separation between servants, adults, and children. By contrast, housing in the dormitory zone had less floor area. These units were built further inland, laid out in regimented rows on flat ground, resembling typical workers' housing typologies across China during the same period. Commercial housing zones were developed as gated communities that barred entry

图 1　蛇口工业区位置
图 2　蛇口工业区总平面
① 标准厂房区　② 海滨花园　③ 碧涛苑　④ 龟山别墅
⑤ 综合办公楼　⑥ 南海酒店　⑦ 微波站　⑧ 自来水厂
⑨ 总变电站　⑩ 污水处理厂　⑪ 蛇口港　⑫ 原有村镇



to individuals with rural *hukou*—China's household registration system that ties rights and mobility to birthplace. Since most migrant workers held rural *hukou*, this spatial restriction further entrenched social stratification within the zone.

This environmental privilege cultivated an aura around kinetic elites, while also distancing them from local populations. As a manager from Singapore observed, foreign companies invested in Shekou not only because Shekou could offer low rents and inexpensive raw materials, but also for its vast reserve of educated cheap labor. This workforce, he noted, was "hard-working, obedient, and had great respect toward their foreign managers, which often resulted in positive investment experience."[76] His testimony laid bare the structural conditions that underpinned Shekou's appeal: It functioned as an attractive investment precisely because the entire city had programmed its social inequalities in environmental form.

Populated with pipes, ducts, and wires, *Sea World* exemplified how architecture in the late-capitalist society had already become an environmental valve. Valving not only facilitated telecommunication across the global supply chain but also produced uniform air conditions across disparate climate zones. It converted buildings into discrete state machines whose connectivity and compatibility with the global market could be turned on and off, and where the sense ratios of their occupants could be dialed up and down. Environmental valving, therefore, conditioned an ideal neoliberal subject. It produced globally connected and environmentally controlled interiors that allowed transnational corporations to expand their footprints without altering their organizational structures. Valves generated another layer of boundaries that could overwrite traditional static boundaries—such as building envelopes and administrative fences—to expand the auditory and visual spheres of neoliberal elites, or World Men, toward a planetary scale, desensitizing their bodies to shifting climates as they traveled through air. *Sea World*, along with the condos, villas, and "world-class" hotels, enabled a territory of World Men to bleed out of building envelopes and merge with the global installation of comfort.

These mechanically enhanced territories relied on a series of unidirectional flows. Nourishing one side and depleting the other, valves were inherently political. The planetary sensory regime of the World Man depended on an outside that operated as both resource and absence—extracted and rendered invisible, both in Fuller's discourse and in practice. Those who came from this outside, such as migrant workers, did not belong to this mechanized territory. They might remain outside even

when the interior was turned on. Yet their movement across these boundaries, their labor and physical circulation, conditioned the very interior that sustained the World Man. In other words, for the World Man to stay airborne, others had to sink.

After *Sea World*, Shekou's desire to merge with Hong Kong materialized in a continuous encroachment into Deep Bay. As the coastline expanded through land reclamation, *Sea World* became a land-locked ship. Yet it continued to sail—no longer through water, but in the air-ocean, where airwaves, conditioned air, and aviation currents coursed across its surface and interior. It navigated the airborne neoliberal economy, much like Fuller's Wichita House had once sailed in the wind.

Conclusion

Fuller passed away in 1983, but the collaboration between his architectural partners, Shoji Sadao and Thomas T.K. Zung, and China's zone authorities continued into the late 1980s. In 1986, the central government invited Zung and Sadao to design the China International Trade Center (CITC).[77] A proposed site was located in Tianjin, a coastal city in northern China that had been one of the fourteen second-generation SEZs designated by the central government in 1984.[78] Like Guangzhou, Tianjin bore a legacy of international commerce: It had served as a treaty port since the late nineteenth century, and its existing infrastructural and diasporic networks provided a foundation for zone development.

The central government envisioned CITC as a mixed-use project, consisting of a hotel-office hybrid tower, a podium, and an exhibition center. The exhibition hall occupied a geodesic dome, its interior connected to the tower through a corridor. Import and export fairs were to be staged within the dome, along the corridor, and across the exterior plaza. Zung and Sadao designed the tower by extending Fuller's formal operation. It adopted a triangular floor plan, with tensile structural strings shooting from mid-height, anchoring its vertical volume to the bottom of the air-ocean. Beneath these strings was a food and beverage podium, whose tetrahedral geometry echoed the base of the Tower of World Man. Zung,

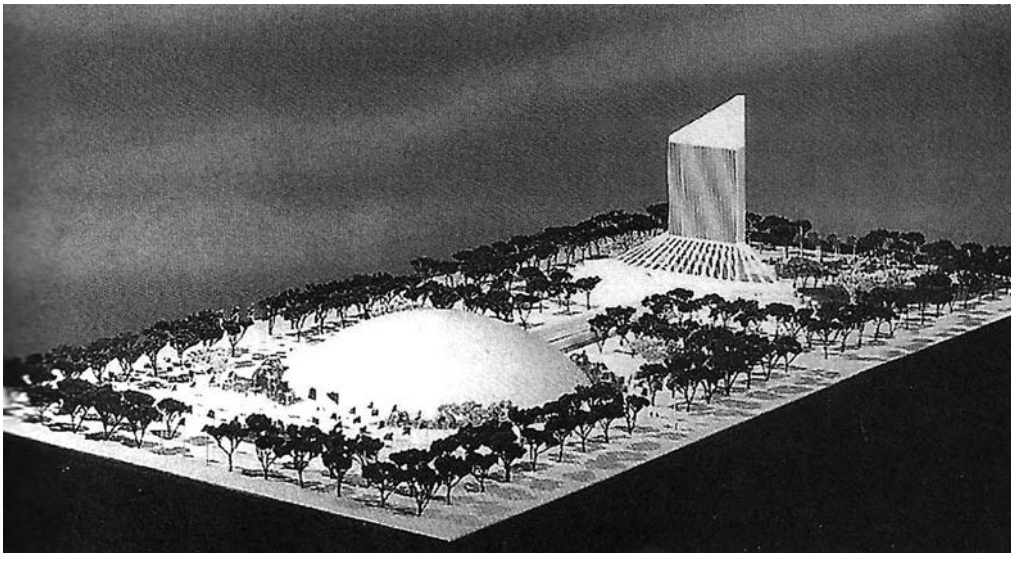
Opposite: China Merchants Group, Bitaoyuan villas (left) and *Staff Dormitory Shuiwan Village* (right), 1986. Photos courtesy of China Merchants Group History Museum.

Left: Zhaoqing Song, *Sea World plaza*, 2004. Photo from Song, "Shenzhen Shekou Haishang Shijie Chuanti Ji Zhoubian Guangchang Gaijian (Sea World Plaza Renovation in Shenzhen Shekou)," Jianzhu Xuebao, November 20, 2004.

however, presented this form to his clients as "a Chinese Fan."[79] Like *Sea World*, CITC was also proposed to address the shortage of international hotels in China as the country opened its coastal cities to the neoliberal market. Operated by the Sheraton hotel chain, the complex functioned as another environmental valve, a place where World Men felt at home.

As a project initiated by the central government, CITC was to be designed, operated, and financed entirely through U.S. organizations and personnel. Mediated through the U.S.-China People's Friendship Association, a nonprofit educational organization founded in 1974, the project attracted two U.S. investors—the Jeep Corporation and Heinz Baby Food—who sought to use the hotel to get their earnings out of China. As the office tower's owner, the Friendship Association would also profit by collecting rent. The design phase of CITC lasted for three years, until 1989. After the Tiananmen crackdown, both American developers pulled out, leaving the Chinese government no choice but to end the project. This moment also marked the end of the decade-long collaboration between Fuller, his surviving collaborators, and SEZ authorities. When the Chinese zone authorities in Shanghai reached out to Zung again in 1992, he refused to return.[80] The project, however, foreshadowed the super-block joint-venture development that would come to dominate Chinese cities for decades to come.

The 1989 crackdown was not only a clash of ideologies. It was also a collision between sovereign power and commerce, an inevitable rupture long latent in the seemingly harmonious encounter between Fuller and China. From treaty ports to SEZs, China's zone authorities, exemplified by CMSN, had long been integrating the state into the global market by means of architecture and infrastructure. Whereas the treaty powers in the late nineteenth century deployed maritime infrastructure to open China's interior, CMSN reversed the current by employing the very same tools, like ships and warehouses, to bring land to the sea. Shekou Industrial Zone continued this operation. Its purpose was not to invite the airborne neoliberal market in, but to contain it—to domesticate global capital through architecture.



Fuller, by contrast, envisioned architecture both as vessel and valve: ships sailing the air-ocean and vacuum tubes tuned to cosmic waves. Solid enclosures, for him were temporary states meant to be transcended. Seen from this perspective, the encounter between CMSN and Fuller is quietly contentious: CMSN wanted to use architecture to provincialize mobility, while Fuller imagined architecture would become a universal mediator for planetary flows. For CMSN, contained fluids became rigid, and quarantined market became sovereignty. For Fuller, however, radio waves melted containment. Architecture, operating as a valve, became a broadcast device capable of transmitting ideas as environmental services. Fuller even requested that his Chinese hosts broadcast the recordings of his talks on television for the entire country to see.[81] In practice, however, his lectures were never publicly disseminated and circulated only among a small circle of selected elites.

The collaboration among Fuller, Sadao, Zung, and China's zone authorities revealed architecture's ability to bring sovereign power and commerce, solids and fluids, land and sea into shared operative systems without resolving their constitutive tensions. The same floating city could be deployed for market expansion and for sovereign control. In this sense, the collaboration was less synthesis than a slow collision, with each side appropriating the other to its own ends.

Neither, however, was able to remain intact—they merged into each other irreversibly. Shekou emerged as a hybrid space where communism and capitalism, state and market, were no longer distinguishable. Characterized by architectural theorist Keller Easterling as exemplary "extrastatecraft," the zone produced a new form of urban development, one in which state actors hybridized with their market counterparts and employed architecture, infrastructure, and spatial protocols as new instruments of expansion.[82] Submerged in waves of matter, energy, and information, buildings could transcend their own rigidity just by turning on the environmental and communication machines. Yet to be on meant to be maintained in a privileged state—a state that not only consumed energy but also depended on an environment, an exterior, and the excluded. In other words, infrastructural inequality conditioned "the invisible empire of air" that extrastate actors inherited from colonial powers of the waterborne past. And "the haves," or World Men, always depended on "the have-nots," or landlubbers, for their mobility, connectivity, and comfort.

The encounter between Fuller and Shekou Industrial Zone finally challenges the commonplace association of globalization with fluidity. Contrary to theorists like Manuel Castells, who conceived the global "space of flows" as antithetical to "the space of place," *Sea World* and its

Thomas T.K. Zung and Shoji Sadao, *China International Trade Center*, 1986–1989. From Thomas T.K. Zung, eds., *Buckminster Fuller: Anthology for the Millennium* (Southern Illinois University Press, 2014), 379. © BFSZ, 2026.

afterlives demonstrate that global flows are deeply ingrained in material and infrastructural networks, and that airborne architecture must ultimately return to the surface of the land or ocean.[83] The space of flows is always already a space of places. However, these rigid infrastructures do not necessarily retain the character of places. Rather, they enable nation-states to exercise sovereign control over flows, just as treaty ports once allowed market access to China's hinterland. Producing and conditioning globalization simultaneously, SEZs have long been striated. It is precisely because of the striation—the conduits and stoppages—that the space of flows becomes a discrete state machine, shifting its connectivity and temperature on demand. SEZs are places where information, material, and value differentials converge. The smoothness of globalization is only one mechanical state among many—and one that can also be turned off.

Notes

1. Shoji Sadao, "China Trip Memo," 30 June 1979, Series 2, Box 393, Folder 7, R. Buckminster Fuller Papers, Department of Special Collections and University Archives, Stanford University Libraries.

2. See Qiao Tu, *Yuan Geng chuanqi* [Biography of Yuan Geng] (Shenzhen, China: Shenzhen News Press, 2020), 111. Paradoxically, the term SEZ, now widely adopted in and beyond China to describe a dominant mode of neoliberal development, originated in the Chinese Communist Party's guerrilla past: During World War II and the War of Liberation, communist-occupied territories were known as "special zones."

3. Geng Yuan, *Shekou: Zhongguo kaifang yu gaige de shiguan* [Shekou: The test tube of China's economic reform] (Hong Kong: Center for Contemporary Asian Studies, Chinese University of Hong Kong, 1986).

4. *Baijie Guangjiaohui* [The first 100 sessions of the Canton fair] (Guangzhou: Guangzhou Municipal Archive, 2006), 1–21. See also, Ke Song, *Modernism in Late-Mao China: Architecture for Foreign Affairs in Beijing, Guangzhou and Overseas, 1969–1976* (Abingdon, UK: Routledge, 2023), 106–112.

5. R. Buckminster Fuller, *BF Speaks to Office Staff about Trip to China*, 1979, Series 17, Box 121, R. Buckminster Fuller Papers.

6. Adam Williams, "U.S. Inventor Takes China by Storm," *South China Morning Post*, 30 May 1979.

7. See Julian Gewirtz, "The Futurists of Beijing: Alvin Toffler, Zhao Ziyang, and China's 'New Technological Revolution,' 1979–1991," *Journal of Asian Studies* 78, no. 1 (February 2019): 115–140; and Isabella Weber, "Origins of China's Contested Relation with Neoliberalism: Economics, the World Bank, and Milton Friedman at the Dawn of Reform," *Global Perspectives* 1, no. 1 (April, 2020). Other invitees included Alvin Toffler and Milton Friedman.

8. Jian Zhong, *A Great Experiment: History of the Establishment of China's Special Economic Zones* (Beijing: Commercial Press, 2010), 31–38.

9. R. Buckminster Fuller and Anwar S. Dil, *Humans in Universe*, 1st American ed. (New York: Mouton, 1983), 15.

10. Williams, "U.S. Inventor."

11. Fred Turner, "R. Buckminster Fuller: A Technocrat for the Counterculture," in *New Views on R. Buckminster Fuller*, ed. Hsiao-yun Chu and Roberto G. Trujillo (Stanford, CA: Stanford University Press, 2009), 146–160; Felicity Scott, "Fluid Geographies: Politics and the Revolution by Design," in *New Views on R. Buckminster Fuller*, 160–176; Eva Díaz, "Dome Culture in the Twenty-First Century," *Grey Room* 42 (Winter 2011): 80–105; and Alec Nevala-Lee, *Inventor of the Future: The Visionary Life of Buckminster Fuller*, 1st ed. (New York: William Morrow, 2022), 371.

12. See Jacques M. Downs, *The Golden Ghetto: The American Commercial Community at Canton and the Shaping of American China Policy, 1784–1844* (Hong Kong: Hong Kong University Press, 2014), 317–318. China's official historical narrative frames the nineteenth century as a "century of humiliation," during which all treaties signed with Western powers were considered unequal. As Downs notes, the Qing dynasty's lack of understanding of Western technologies and trade systems ensured that the treaties signed in the 1840s would be fundamentally one-sided.

13. Robert Nield, *China's Foreign Places: The Foreign Presence in China in the Treaty Port Era, 1840–1943* (Hong Kong: Hong Kong University Press, 2015), 3. In Chinese, the

system is called Yi Kou Tong Shang in contrast with the new Treaty Port System, which is known in Chinese as Wu Kou Tong Shang.

14. The earliest SEZs include Shenzhen, Shantou, Zhuhai, and Xiamen. The first three are in the Pearl River Delta.

15. Paul Arthur Van Dyke, *The Canton Trade: Life and Enterprise on the China Coast, 1700–1845* (Hong Kong: Hong Kong University Press, 2005), 20, 39.

16. Jacques M. Downs, *The Golden Ghetto: The American Commercial Community at Canton and the Shaping of American China Policy, 1784–1844* (Hong Kong: Hong Kong University Press, 2015), 25–27.

17. Downs, *The Golden* Ghetto, 315.

18. Albert Feuerwerker, *China's Early Industrialization: Sheng Hsuan-Huai and Mandarin Enterprise* (Cambridge, MA: Harvard University Press, 1963), 172.

19. Feuerwerker, *China's Early Industrialization*, 97.

20. See Jiang Chen, "Recent Chinese Historiography on the Western Affairs Movement: Yangwu Yundong, ca. 1860–1895," *Late Imperial China* 7, no. 1 (1986): 112–127. Scholars have debated whether the self-strengthening movement was intended to suppress domestic unrest (such as the Taiping Rebellion) or to resist foreign aggression. See also Houquan Zhang, *Zhaoshang ju shi: Jindai bufen* (Beijing: Renmin Jiaotong Chuban She, 1988). In my article, I pay attention to the relationship between the CMSN and the free-flowing market over China's domestic political conflicts. Nield, in *China's Foreign Places*, his study of China ports in the nineteenth century, however, argued that the CMSN was established because the Taiping ended Qing control of tribute rice shipping routes.

21. Feuerwerker, *China's Early Industrialization*, 242–251.

22. Ezra F. Vogel, *One Step Ahead in China: Guangdong under Reform* (Cambridge, MA: Harvard University Press, 1989), 130.

23. Zhang, *Zhaoshangju yu Shenzhen* [China Merchants Group and Shenzhen] (Guangzhou: Huacheng Press, 2007), 19–22.

24. Yuan, "Guanyu chongfen liyong Xianggnag zhaoshang ju wenti de qingshi," 1978, quoted from Tianxiang Ju, *Zhengyi yu Qishi: Yuan Geng zai She-Kou Ji Shi* (Beijing: Zhongguo Qingnian Chuban She, 1998), 21–22.

25. See Zhang, *Zhaoshangju yu Shenzhen*, 36. CMSN paid HK$4 million to Shenzhen each year, in the initial five years of the zone's development.

26. Vogel, *One Step Ahead,* 132–134.

27. Fuller, "How for What: A Discussion of Specific Function of Engineering in Certain Phases of Economic Warfare," 31 December 1942, Box 5, Folder 5, R. Buckminster Fuller Papers.

28. Fuller, *Designing a New Industry* (Wichita: Fuller Research Foundation, 1946), 32.

29. Fuller, *Grunch of Giants* (New York: St. Martin's Press, 1983), 89.

30. Fuller, *World Design Science Decade 1965–1975. Phase I (1964) Document 2: The Design Initiative* (Carbondale: Southern Illinois University, 1963), 112.

31. Snyder, *Autobiographical Monologue/Scenario*, 30.

32. Lee de Forest, *Father of Radio: The Autobiography of Lee de Forest* (Wilcox & Follett Co., 1950), 4. This order would become, in de Forest's words, "as solid as granite."

33. Fuller, *World Design. Phase I, Document 2*, 112.

34. Fuller, "Fluid Geography," *American Neptune* 4, no. 2 (April 1944): 119–136. Fuller discusses how "sailorman" of the water world could be distinguished from "landlubber," with a clear preference for the way sailorman traveled around the water without

being tied down to either immobile properties or state boundaries. See also, Fuller, "City of the Future," *Playboy* 15, no. 1 (January 1968): 168.

35. Sadao, *Buckminster Fuller and Isamu Noguchi: Best of Friends*, exh. cat. (New York: The Isamu Noguchi Foundation and Garden Museum, 2011), 187.

36. Fuller, "City of the Future," 168.

37. Fuller, "Man with a Chronofile," *Saturday Review*, 1 April 1967, 16.

38. Fuller, "City of the Future," 168.

39. Sadao, "Buckminster Fuller's Floating City," *Futurist* 3, no. 1 (February 1969): 14.

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