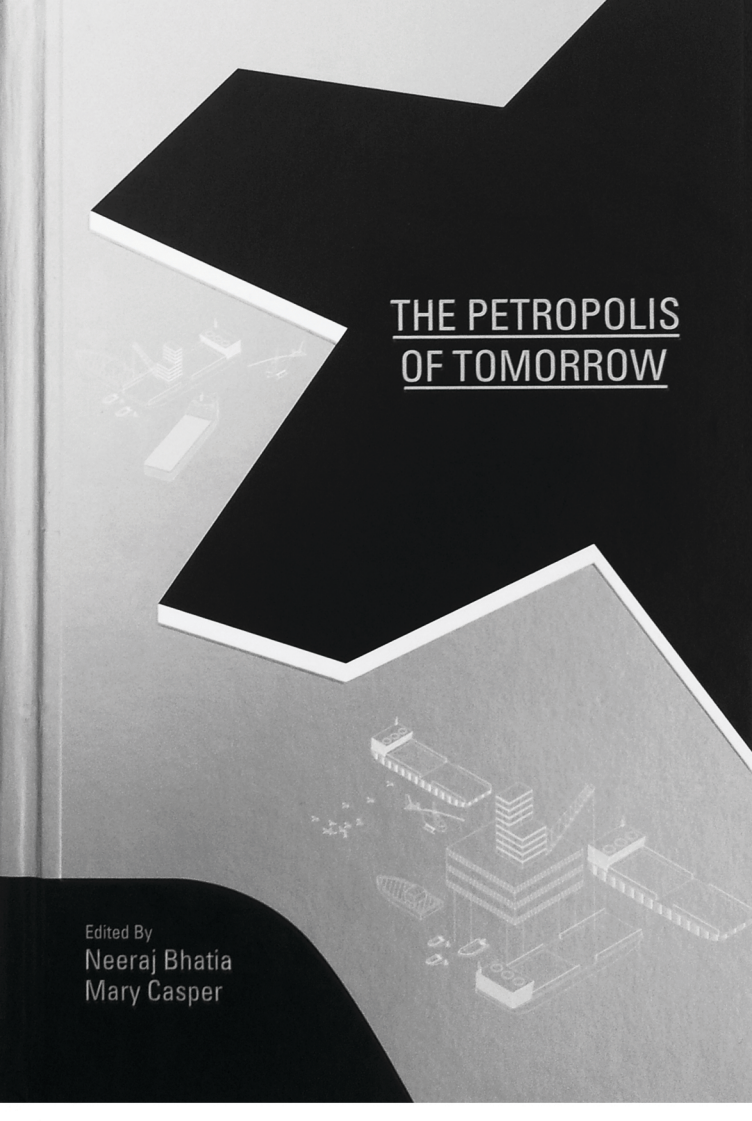


CITY APPS

Koen Olthuis

With a population of over seven billion people and rapidly rising sea levels, the world must soon reimagine the construction of its cities. In this era of increasing climate change, redefining traditional processes is critical to informing widespread transformations in service of the environment. The calibration of the relationship between humans and their environment remains paramount to the cultivation of a healthy, happy, and productive community.

Fuelled by climatic concerns and the rapid evolution of technology, the social, political, and economic relationships in the city are evolving daily, making it increasingly difficult to predict the future needs of the metropolis and its citizens. In such a state of uncertainty, architects and engineers struggle to design with permanence—while static designs have been historically successful, new construction demands a more multifaceted and dynamic approach to design.

When infrastructure no longer serves the city's needs, for instance, demolition and reconstruction often become the most economical solutions, even if the structures have not fulfilled their expected lifespan. In light of new knowledge on the negative environmental impact produced by traditional construction and demolition methods, architects are now tasked with designing buildings that can remain relevant through adaptive and responsive systems. Water-based urbanism offers an alternative environmental model that can reconfigure the city continually according to its inhabitants' needs.

Water's unique chemical properties make it a useful architectural material, ripe for optimization. When water solidifies it becomes less dense, allowing its frozen state to float. Further, large amounts of mass can float and be moved through water with relative ease. Water also offers a solution to rigidity; as the universal solvent, it softens, cleanses, unifies, and makes things pliable. Water allows the weight of architecture to be overcome.

Just as the invention of the elevator facilitated taller buildings, buoyant technology has already enabled an emergent urbanism at sea. For instance, floating foundations constructed of foam and concrete now allow almost anything typically built on land to be built on water. Water, as a surface, offers the range of occupiable configurations, forms, and mobility currently sought after by contemporary designers and urban planners. Scalable floating structures bring amenities available on land, including road infrastructure, permanent residences, economic zones, schools, and public parks, to water-based environments where they can be reconfigured in complex arrangements.

The process of constructing water-based structures is faster than traditional on-site (land-based) construction and of lower cost because they are often built in controlled warehouses and floated to their sites. Floating developments follow a closed loop, cradle-to-cradle design philosophy.[1] The system can be used, modified, restructured, dismantled, moved, and reused until its component parts have been completely exhausted, at which point the individual unit is recycled. As a prefabricated system, floating developments offer a dynamic, minimally invasive method of construction to expand our cities.

Consumption urbanism describes the unstable environment that has evolved from the temporary accumulation of consumer goods. Similar to how modern technology provides tools to organise and seamlessly integrate virtual amenities into an individual's life; mobile, water-based urban components known as *City Apps* make sense of such consumption urbanism by lending concrete support to certain urban functions through a deliberately impermanent system. A floating app modifies the city, just as an application modifies a smart phone. City apps can offer changing functions to transform the city into a flexible, reusable, and complex system. Floating apartment complexes, cruise terminals, car parks, forests, or even energy plants can be easily introduced and relocated.

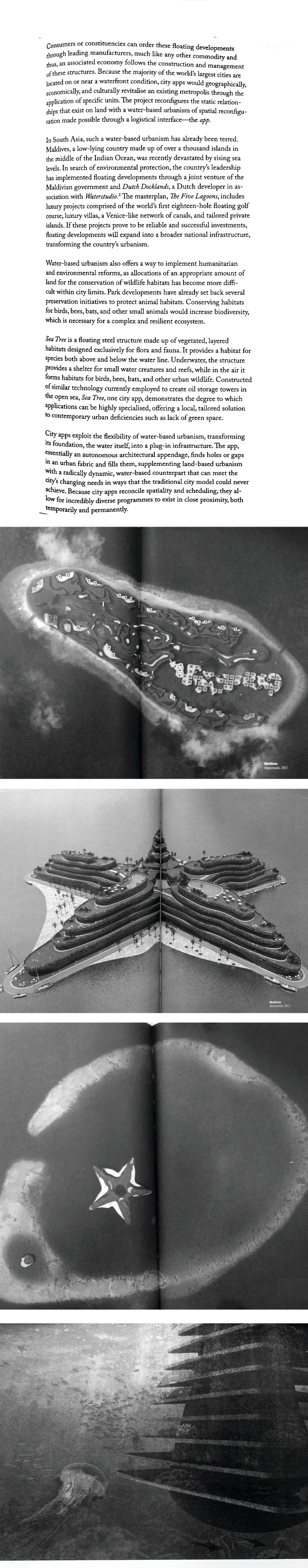
Consumers or constituencies can order these floating developments through leading manufacturers, much like any other commodity and thus, an associated economy follows the construction and management of these structures. Because the majority of the world's largest cities are located on or near a waterfront condition, city apps would geographically, economically, and culturally revitalise an existing metropolis through the application of specific units. The project reconfigures the static relationships that exist on land with a water-based urbanism of spatial reconfiguration made possible through a logistical interface—the *app*.

In South Asia, such a water-based urbanism has already been tested. Maldives, a low-lying country made up of over a thousand islands in the middle of the Indian Ocean, was recently devastated by rising sea levels. In search of environmental protection, the country's leadership has implemented floating developments through a joint venture of the Maldivian government and *Dutch Docklands*, a Dutch developer in association with *Waterstudio*.[2] The masterplan, *The Five Lagoons*, includes luxury projects comprised of the world's first eighteen-hole floating golf course, luxury villas, a Venice-like network of canals, and tailored private islands. If these projects prove to be reliable and successful investments, floating developments will expand into a broader national infrastructure, transforming the country's urbanism.

Water-based urbanism also offers a way to implement humanitarian and environmental reforms, as allocations of an appropriate amount of land for the conservation of wildlife habitats has become more difficult within city limits. Park developments have already set back several preservation initiatives to protect animal habitats. Conserving habitats for birds, bees, bats, and other small animals would increase biodiversity, which is necessary for a complex and resilient ecosystem.

Sea Tree is a floating steel structure made up of vegetated, layered habitats designed exclusively for flora and fauna. It provides a habitat for species both above and below the water line. Underwater, the structure provides a shelter for small water creatures and reefs, while in the air it forms habitats for birds, bees, bats, and other urban wildlife. Constructed of similar technology currently employed to create oil storage towers in the open sea, *Sea Tree*, one city app, demonstrates the degree to which applications can be highly specialised, offering a local, tailored solution to contemporary urban deficiencies such as lack of green space.

City apps exploit the flexibility of water-based urbanism, transforming its foundation, the water itself, into a plug-in infrastructure. The app, essentially an autonomous architectural appendage, finds holes or gaps in an urban fabric and fills them, supplementing land-based urbanism with a radically dynamic, water-based counterpart that can meet the city's changing needs in ways that the traditional city model could never achieve. Because city apps reconcile spatiality and scheduling, they allow for incredibly diverse programmes to exist in close proximity, both temporarily and permanently.



Water-based urbanism, catalyzed through the design of infinite city apps, is set to transform cities around the world. The city of tomorrow will, undoubtedly, be temporary, flexible, complex, and most certainly, water-based. ◘

Notes

1 For more information on cradle to cradle, see: William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: North Point Press, 2002).

2 *Waterstudio* is a Dutch architecture firm specialising in the development of floating structures.