Chapter 19   SINGAPORE STRAIT: AN URBAN PORTRAIT

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Urbanisation processes driven by the Port of Singapore in combination with the city-state, exert a powerful influence on both Singapore's sea edge and the entire Strait. Milica Topalović shares the results of her groundbreaking study and stresses the urgency of addressing the sea from an urban design perspective.

Milica Topalović is an Associate Professor of Architecture and Territorial Planning at the ETH Zurich Department of Architecture. Her work is concerned with territories beyond-the-city and urgent transformation processes they are exposed to, through the movement of capital, social restructuring, and environmental change. She undertook a range of territorial studies around the world, in remote regions, resource hinterlands, and countrysides, in an effort to decenter and "ecologise" architect's approaches to the city, the urban, and urbanisation. In her recent work, she looks at regions whose social and environmental qualities have been degraded through unsustainable agriculture and resource harvesting practices, with intention to design their transitions toward territories organised around the principles of agroecology.

Singapore is one of the world's largest ports located on a strategic part of the global shipping belt. Every year, around 130,000 vessels pass through the Strait, translating into one every two minutes. In 2014, we estimated there were 1000 boats in the Strait at any given time, some of them 300–400 m long [Fig. 1, p. 273]. These vessels appear to dictate the architecture of the coastline and the sea bed—they determine water depth, the length of berths, and the arrangement of quays. Zoning and regulation further describe a hierarchy of use of the sea surface comparable to urban blocks separated by streets, with primary and secondary waterways, zones of activity, anchorages, and controlling infrastructures across all areas. The sheer occupation density, the frequency of movements, and the degree of control of the sea surface are astonishing.

Through the encounter with the Singapore Strait, the urbanisation of the sea became one of the crucial themes in our study. Carried out at the ETH Zurich and the Future Cities Laboratory Singapore from 2012 to 2015, the study was originally conceived as research on the hinterlands of Singapore.(1) The island city-state of Singapore, a city and a state ostensibly conceived in the mainstream political imagination as being "without a hinterland," actually mobilises a vast network of resource extraction, manufacturing, processing, and trade agents, across Asia and other parts of the world. The Singapore Strait continues to play a crucial role in these hinterland geographies and networks, a piece of sea with a unique geo-political advantage, which has afforded Singapore a role among the primary nodes in the global economic network. The sea came into the foreground as a central space within a cross-border metropolitan region formed around the Singapore Straits and encompassing Johor Bahru in Malaysia, Batam in Indonesia, and Singapore itself.(2)

Looking at the character of urban transformation across this tri-national territory, one of our research insights was that in recent history, a land-based logic of organisation of territory and the functioning of urban networks has replaced what would have been the historical experience of a sea-based or archipelagic logic underlying the organisation of settlements and connections among them. In the second half of the twentieth century, instead of connecting the region, the sea has become a divider, through hardened national borders. The older archipelagic experience of life with and by the sea has been largely lost.

In the same period, everyday life in Singapore has become removed from the port and the sea, with Batam and Johor following a similar path. Cast back inland behind reclaimed lands and heavy infrastructures, the centres of all three cities in the region have formed at a distance from the coast. Networks of car and rail transport have been pulled to the land, and as an echo, the sea has gradually exited the stage of consciousness to occupy a periphery of cultural interest. While it has become more urban—more occupied

and controlled—due to stringent border regimes and automated port activities, the sea has also become less populated. Excluding the cruise ship industry, at a given moment only around 20,000 crewmembers serve ships on the Strait, many without permission to disembark. Over time, various technologies have enabled the profiling of this maritime space as grounds for logistics, trade, and economic globalisation, while everyday human interaction with the sea has been discouraged. The sea has become part of the extended territories of freight transport and industrial production—a space whose social significance has moved from a cultural to an economic medium, and its definition transforming from fluid to hard borders. The formation of borders emerges as a correlate or enabler of urbanisation processes, and as a result, the land-based territorial logic is consolidated, even at sea.

The maritime border along the Singapore Strait operates de facto as a wide borderzone territory that extends from the sea onto the land. Militarised and securitised, the borderzone has absorbed the techno-zones of industrial and logistical activities and is corroborated by them: military, industry, and cargo act as urban functions in synergy. As a result, the coastline of Singapore has become largely separated from the publicly accessible urban areas. Port operations are central to this change: although increasingly efficient and automated, they still exert ever-increasing spatial demands, and are thus pushed out of the city centre, into the borderzone. Historically a cosmopolitan site at the core of a growing city, the contemporary port is an autonomous entity, kept at a distance from urban quarters by an elaborate security system with special access regimes. Consumed by restrictions dictated by the port and the borderzone, the entire sea space of the Singapore Strait has become largely non-public, while still fully instrumentalised.

Together with military installations and the airport, the water-dependent urban functions of shipping and petrochemical industries have been major forces exerting physical pressure on the littoral zone; through land reclamation and dredging, they have sculpted the coastal topography to their needs.[3] Over the last century, more than a quarter of Singapore's land area has been artificially constructed and added to the "national territory"—a process which has escalated since the 1970s. Owned by the state, the port and the airport are motors for the production of wealth. We have calculated that 42 percent of Singapore's GDP is earned on reclaimed land. The coastline can be seen as an artificial structure, a spatial product of industrial modernisation, in which a condition of "flatness"—a tabula rasa, a surface of historical and cultural amnesia—is produced as a site of the modern city.

Compared to the first British topographic survey in 1924, Singapore's present-day land-sea topography shows a staggering difference. Land and water ecologies are not static, but are viscous, malleable, and interrelated. Today they are highly operationalized

and exploited, with both human and non-human communities and ecosystems largely expelled from the coast. These processes are not neutral; they create friction and resistance in particular through the work of the younger generation of artists.

Our research was also concerned with a projective perspective —how to formulate a possible urban agenda for the sea and the Singapore Strait— based on the underlying ethos we have described. The maritime context, unfamiliar to an architect and an urban designer, presents the opportunity to rethink and recalibrate settled approaches. The case of Singapore Strait leaves no doubt that the relationship with the sea is crucial not only for the ports and shipping, but for the three cities, their quality of life, and their relationship with the environment. Yet, the urbanisation of the sea and coastal areas remains understudied, and is yet to be included in current urban planning and design discourses. Urban design for the sea will be concerned with the fact that the sea has been relegated as a territory of industrial urbanisation. A sea-centred view gives us the possibility to experience a cultural, historical, and ecological sense of this territory, as well as a more cosmopolitan perspective.

Buckminster Fuller developed his Dymaxion projection of the world in order to show, among other novel perspectives, that "the whole world is one ocean."[4] Just as the Mediterranean was one of the pools where civilizations brewed, the sea is the planetary figure that connects people and places. Today the sea is an historically unprecedented space of separation and has become an instrument for enforcing stronger geo-political demarcations of our world. This makes the sea the theatre of a different kind of violence, recently and dramatically wielded against refugees and migrants and against the EU in the case of the Brexit division of the North Sea. It is urgent that we as architects and urbanists develop local situated projects where, if we have the right perspective, we can work against these geopolitical forces.

(1) Milica Topalović, (ed.) *Hinterland: Singapore Beyond the Border* (Zurich: ETH Zurich and Singapore-ETH Centre, forthcoming 2021); Milica Topalović, "Beyond the Limits of the City: Urbanizing Territories", in *New Geograhies 08 Island*, New Geographies 08 (Cambridge, Mass: Harvard University Graduate School of Design, 2016), 164–75.
(2) Milica Topalović, Hans Hortig, and Stefanie Krautzig, eds., *Architecture of Territory. Sea Region* (Zürich: ETH Zürich DArch, FCL Singapore, 2015).
(3) Milica Topalović, "Land as Project: On Territorial Construction", in *Infrastructure Space*, ed. Andreas Ruby and Ilka Ruby (Berlin: Ruby Press, 2017).
(4) Richard Fuller Buckminster, "Fluid Geography", *American Neptune–A Quarterly Journal of Maritime History and Arts* IV, no. 2 (April 1944).