

Engineered Ecologies of the Pearl River Delta

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The Pearl River Delta (PRD) region is one of the densest urban areas of the world with a complex hydrological system that blurs, stretches, and redefines the traditionally binary relationships between artificial and natural. Engineered processes such as land reclamation, dredging, and aquaculture have altered the natural cycles of erosion and sedimentation, salinity levels, and ultimately the ecological systems of the delta.

This study examines the interdependency between human settlements and biophysical systems of the Pearl River Delta beginning from the Southern Song Dynasty (1127-1279 AD) to the present day through historical maps, original Chinese texts, and GIS data. This information is compiled through a series of scaled drawings that reveal continuously shifting ecologies that are as natural as they are artificial.

These unique relationships are illustrated through three case studies that document environmental change over the past millennia. First, land use changes during the political unrest of the Southern Song Dynasty initiated large-scale shifts in natural sedimentation cycles that naturally expanded habitable areas of the PRD. Contemporary land reclamation is constructed with dredged sand from the upper reaches of the Pearl River, further modifying its hydrological conditions. Second, flood protection infrastructure in the PRD change the salinity levels of the estuary and aquaculture practices move south of the delta to maintain productivity. Oyster farming, particularly, is sensitive to fluctuating salinity of the delta, and leaves unique architectural and landscapes remnants in its wake. Lastly, the change in political regimes in 1949 once again moves population south to Hong Kong where migrant shrimp farmers build tidal shrimp ponds (Gei Wai's) that ultimately become a crucial RAMSAR site along the East Asia-Australasian Flyway.

These case studies demonstrate the inseparable relationship between human beings and the environment. Each modifies the other and eventually collaborate for productive ecologies that are engineered and natural simultaneously.