Urban Regeneration-Is it possible for the environmental regeneration of Hong Kong to begin from Kau Yi Chau Island?

Laurent Gutierrez[1], Hee Sun (Sunny) Choi[2]
1. BA, March, PhD, Professor and Course Director at MDes (Urban Environments Design), School of Design, The Hong Kong Polytechnic University
2. BA MA PhD, Adjunct Assistant Professor, MDes (Urban Environments Design), School of Design, The Hong Kong Polytechnic University, Director at Choi-Comer Asia Architecture and Urban Design

Abstract

A Transitional Environment is a term recently used to describe a new form of hybrid space and habitat that has emerged within and around the contemporary city. During the last few decades in Hong Kong and China there has been an increased design focus on the distinct social, spatial, and economic characteristics and challenges that emerge in these spaces that sit both between the rural and the urban and the land and the sea. Now, a more holistic and regenerative perspective for urban design is under way, focusing on environments with an ecological mindset.

Within the urban design and planning context of Hong Kong in particular, as an archipelago of islands attached to China's mainland, these transitional environments include existing rural islands that are being adapted to and expanded as part of development proposals. These proposals tend to offer only a limited acknowledgement and engagement with their island or coastal locations and surrounding natural habitats, in favour of dense and environmentally unsustainable podium and tower schemes.

With global challenges and specifically climate change and a growing number of threats to both the environment and our way of life there has been an increased focus on new approaches to problem solving that look to the natural world for solutions. This short paper includes case study projects from students at the Hong Kong Polytechnic University for the urban habitat island of Kau Yi Chau in Hong Kong. Supported by a review of relevant precedents and theories, this case study is used to discuss and reflect on the global and local issues and opportunities highlighted in the sustainable development goals (SDGs) established by the United Nations.

Introduction

Within the field of design education, institutions are focusing on this climate change emergency by seeking to develop courses that can prepare students for the interdisciplinary range of skills and understanding that will be required to ad- dress this. Working between and across the established educational disciplines of urban design, landscape design, geography and biology, Carnegie Mellon University in Pittsburgh established the Transition Design Institute and has been offering courses in Transition Design since 2014. From 2022 the Hong Kong Polytechnic University will begin offering a Master's programme in Transitional Environment Design.

By taking inspiration from natural, biomimicry, uninhabited conditions, this design direction takes a quite different approach to the contemporary directions in urban regeneration that have emerged since the mid-twentieth century, from Jane Jacobs onwards. In linguistic terms, regeneration refers to making something as good or successful as it was before, and in this sense regeneration can be linked to sustainability and localism. When looking to nature for inspiration we look to the natural habitats, systems and species that were functioning and successful long before the arrival of the city and assess the ways in which these can be learned from and adapted to become part of the contemporary city.

Case study development context

Kau Yi Chau is an Island located between Lantau Island and Hong Kong Island - the physical epicentre of Hong Kong territory - that is approximately 400 meters in diameter rising 120 meters from the sea level. The island is not currently inhabited or publicly accessible, but with its location between the business and administrative centre on Hong Kong Island and the Hong Kong International Airport it has long been identified as a location for land reclamation through an expansion of the island for development purposes. A proposal was first put forward in the 1980s by local Hong Kong developer Hopewell Holdings chairman Gordon Wu and it has now an integral part of the government's proposals for "Hong Kong 2030+" (see figure 1)

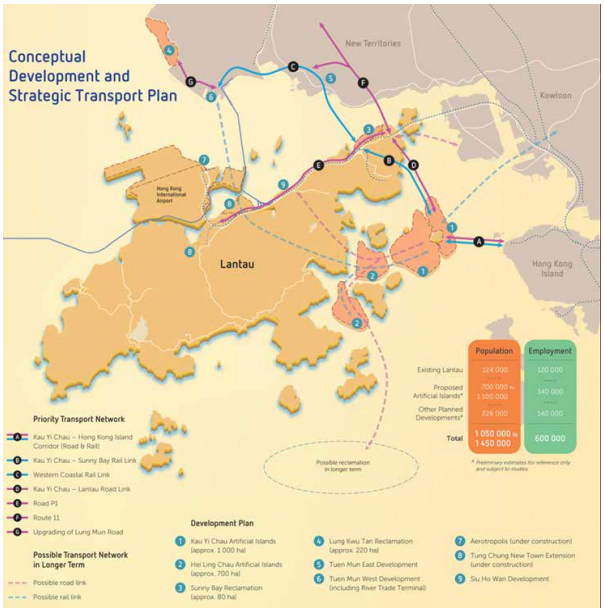

Figure 1. Lantau 2030+: Towards a planning vision and strategy transcending 2030 (source: Hong Kong Planning Department, 2021)

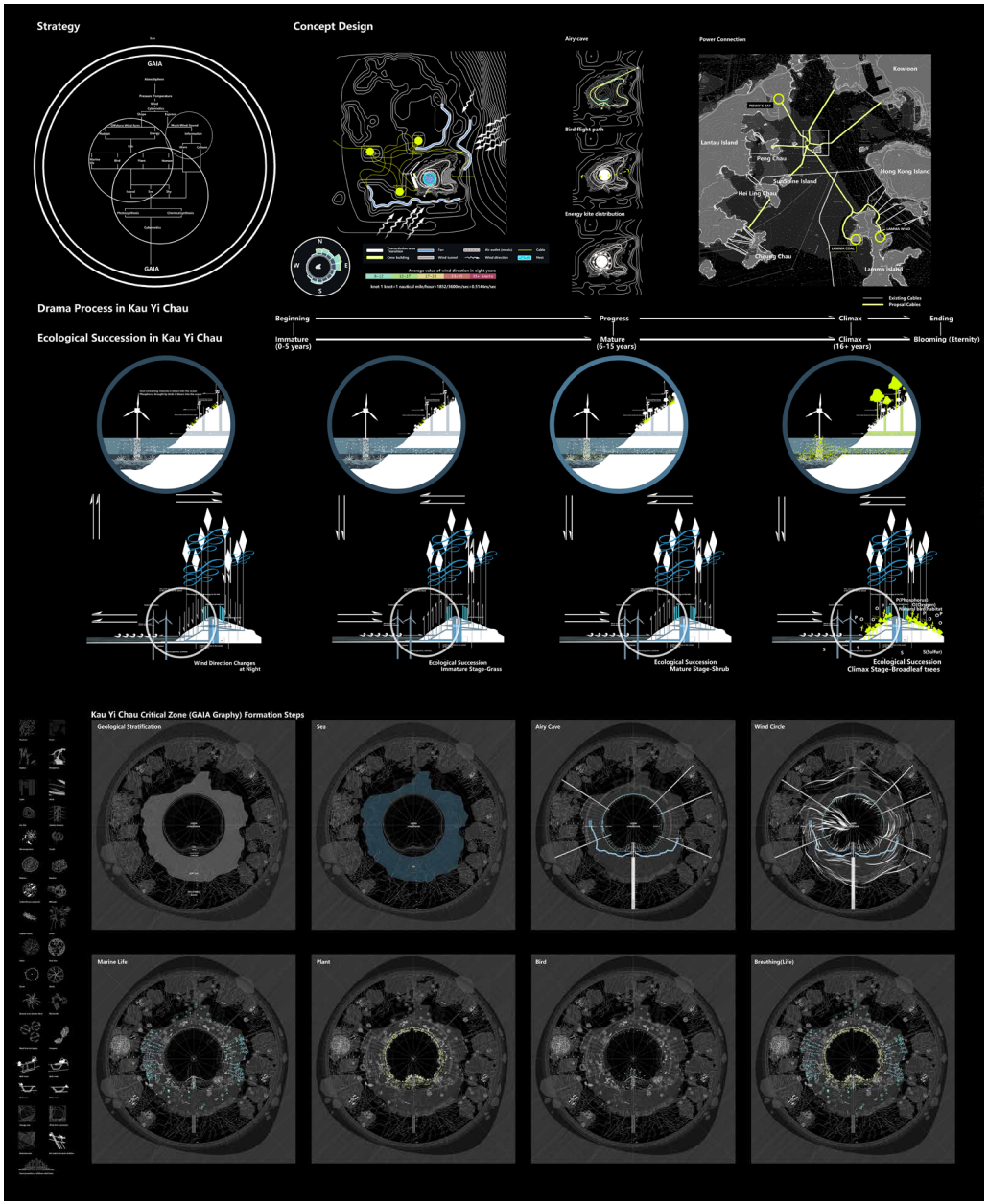

Figure 2a. Gaia's wind (source: Liu Yapeng, Urban Environments Design, PolyU, 2021)

Case study projects

A project involving a group of 14 students from Polytechnic University were asked to provide alternative proposals for the development of Kau Yi Chau Island.

The first project from Liu Yapeng (Figure 2a+2b) applied recent theoretical framework of Bruno Latour about the Critical Zone and the Gaia theory to a proposal for how living organisms can interact with their inorganic surroundings on Earth to form a synergistic and self-regulating complex system that helps to maintain and perpetuate the conditions for life on the planet. The final perspective depicts the ecosystem of the island (micro) to the universe (macro) as a representation of this symbiotic relationship with Gaia.

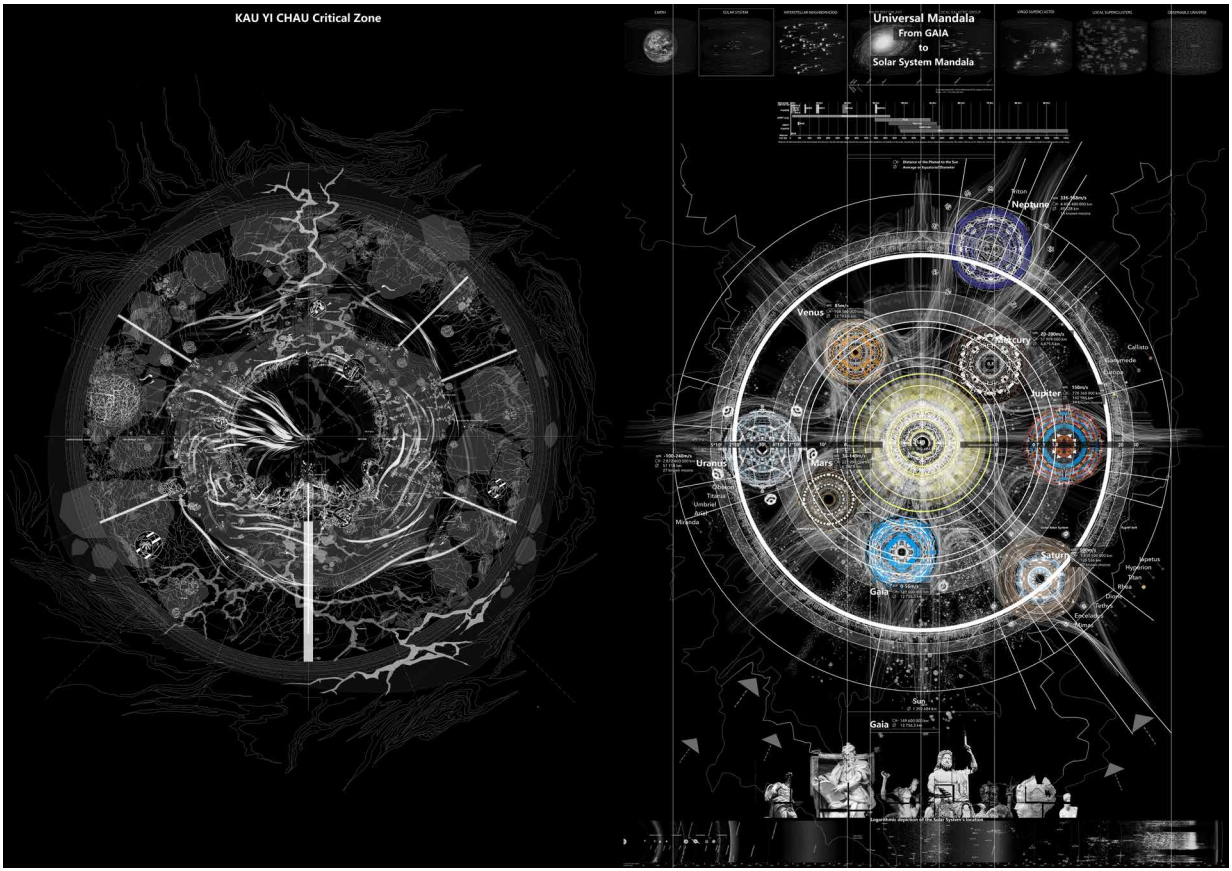

Figure 2b. Gaia's wind (source: Liu Yapeng, Urban Environments Design, PolyU, 2021)

This design from Liu Pengnan (figures 3a and 3b) uses Kau Yi Chau Island as a test project for how, if applied to the other 252 islands within Hong Kong's archipelago, 2000 kilotons of co2 emission could be absorbed per year. The proposal imagines a filter island with the visible and invisible natural barriers designed to purify the air and the ocean from plastics and other solid trashes.

The water purified by floating cells will provide a clean water source for the people of the Southern region, keeping them healthy, and supporting and strengthening the participation of local communities in improving water and sanitation management and working towards SDGS goals. The floating plastic collected from the floating island is transported by boat to a nearby waste collection factory where it is picked up, processed and moulded. In the process of picking, the food-grade packaging will be unified for follow-up processing, and other types of garbage will be classified and transported to different recycling processing factory for recycling and reuse.

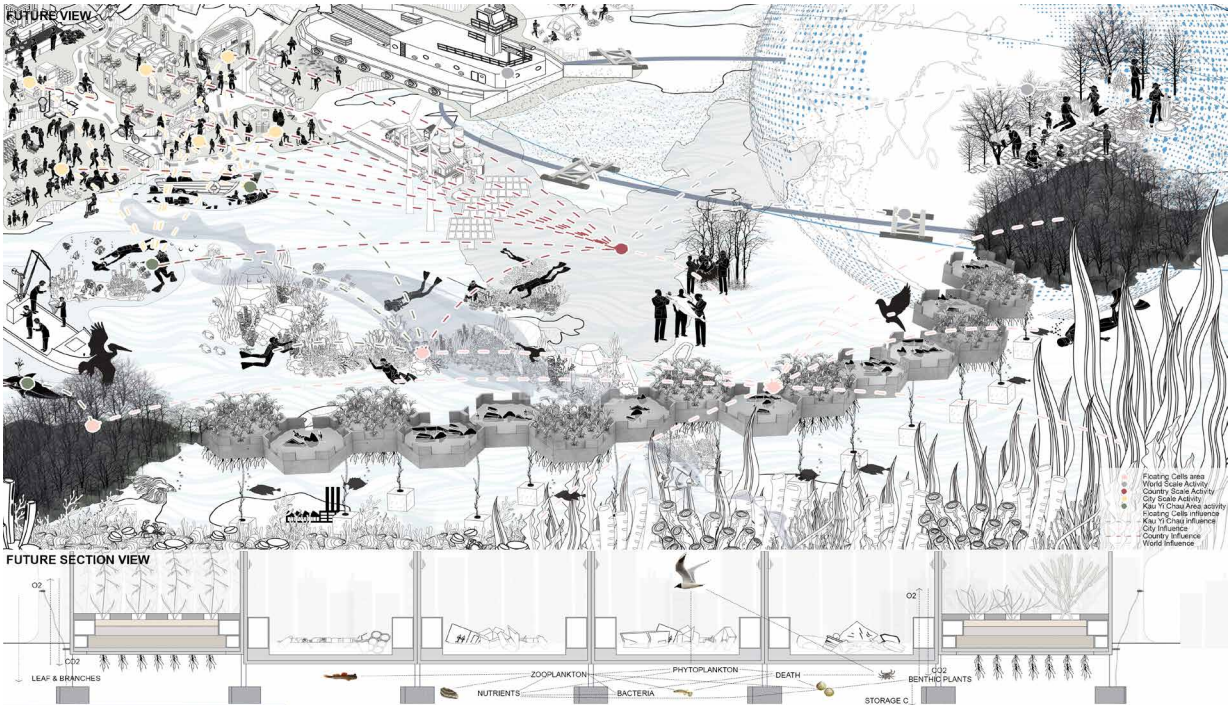

Figure 3a. Filter Island (Liu Pengnan, Urban Environments Design, PolyU, 2021)

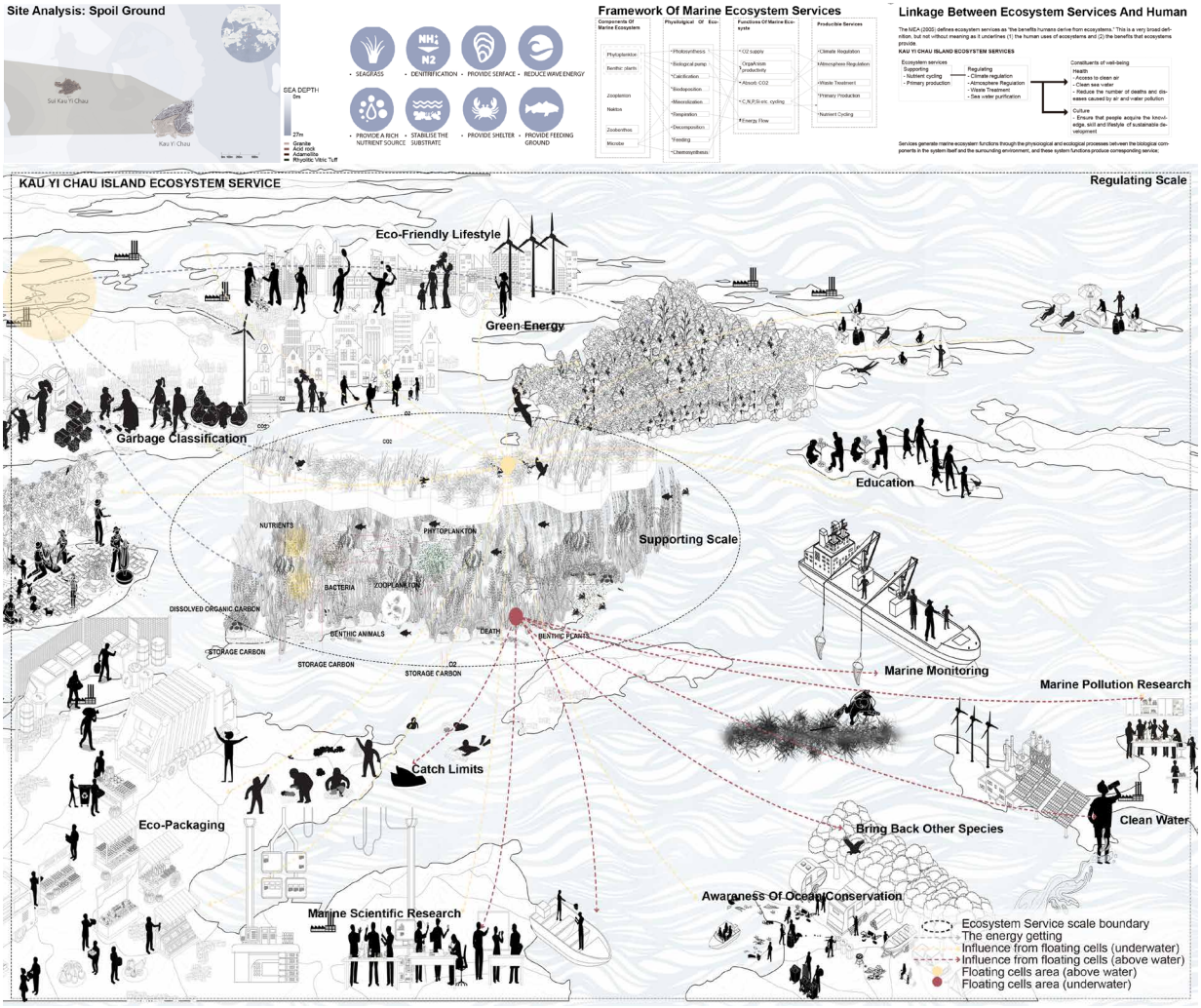

Figure 3b. Filter Island (Liu Pengnan, Urban Environments Design, PolyU, 2021)

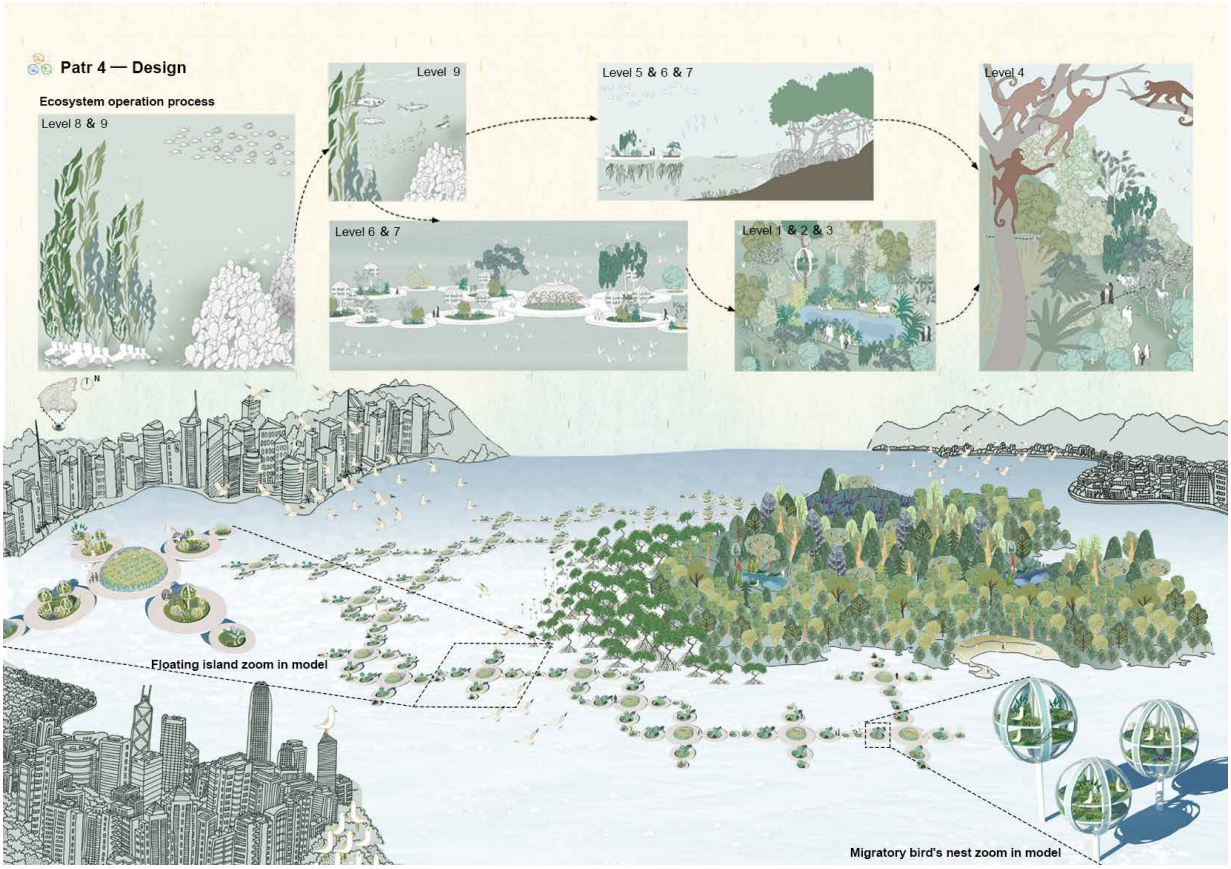

Figure 4. Multi-level Island (Cao Qian, Urban Environments Design, PolyU, 2021)

This project from Cao Qian (figure 4) proposes a new ecosystem populated by migrant birds and marine animals based on the theory of natural metabolism. The proposal includes a mangrove nursery, kelp planting and an oyster farm designed around a grid of floating devices that creates a self-sustaining, resilient, natural, and organic food supply system.

The project from Mo Huiru (figure 5) responds to rising food insecurity brought about through conflict and economic recession, COVID-19 and extreme weather. This project aims to address the UK SDG objectives of zero hunger (UN Habitat, SDG 2), Good health and well-being (SDG 3), Ensure sustainable consumption and production patterns (SDG 12), and Life below water (SDG 14). The design approach creates a 5000 m radius centered from Kau Yi Chau, with the potential for 1000 residents on a float-

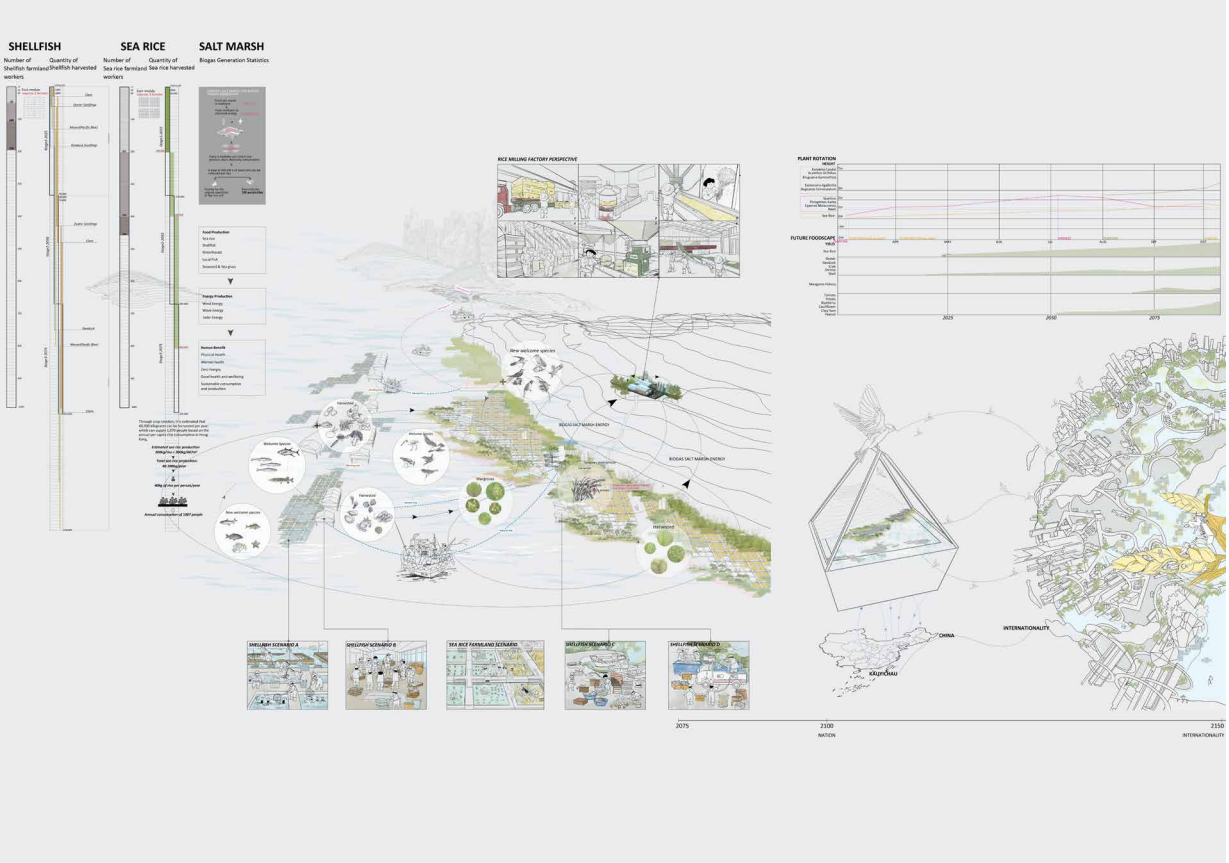

Figure 5a. Microcirculation of Mariculture_Future Food scape (Mo Huiru, Urban Environments Design, PolyU, 2021)

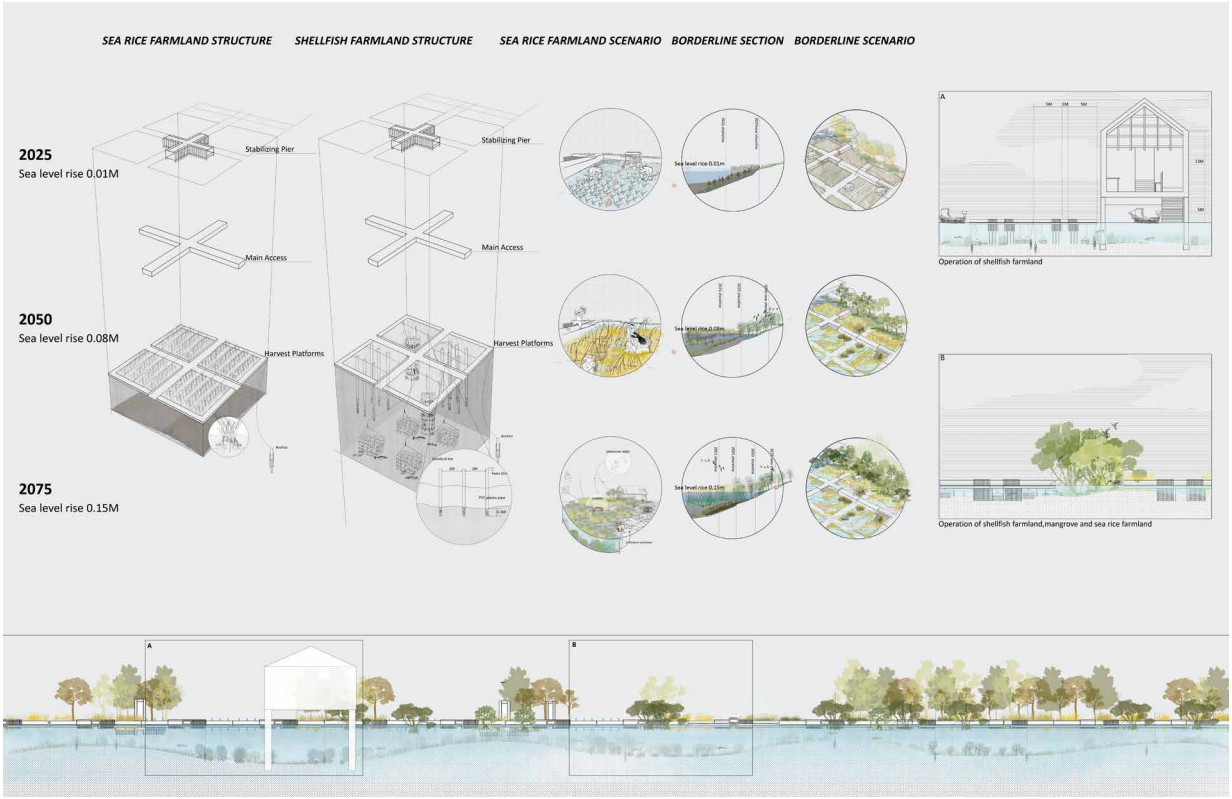

Figure 5b. Microcirculation of Mariculture_Future Food scape (Mo Huiru, Urban Environments Design, PolyU, 2021)

ing rice farm. Future high-yield farms are to be operated by well-trained professionals to help maximize food production and yield and are also open to the public for learning techniques to replicate the sea rice production model to other Islands.

In Conclusion, these urban rejuvenation projects for Kau Yi Chau Island seek to bring back underutilized natural assets and redistribute opportunities and improve various quality of life indicators in relation to health and well-being (UN-Habitat, 2021). The projects within these transitory environments seek preservation, modernization and valorization of the rich historic, cultural, and environmental resources that Hong Kong has, with sustainable design approaches that can offer opportunities at a local level that are applicable at an international level.

References

1. Rademacher Anne and Sivaramakrishnan, K, 2017, Places of Nature in Ecologies of Urbanism, Hong Kong University Press

2. UN Habitat, Sustainable Development Goals (SDGs), available from: www.ubhabitat.org, [accessed 12 September 2021]

3. Cheung Gary, Kau Yi Chau Island: Hong Kong tycoon Hordon Wu unveils gran reclamation plan to link land masses and create 2600 hectares for housing near Lantau Island, Sounth China Morning Post, Society, Available from: www.scmp.com, [accessed 30 August 2021]

4. Max-Neef, M., 1992b. Development and human needs. In: Ekins, P., Max-Neef, M. (Eds.), Real Life Economics. Routledge, London, UK, pp. 197–214.

5. Hong Kong 2030+: Towards a Planning Vision and Strategy Transcending 2030",Transition Network, a community-based movement founded in Totnes, UK by Rob Hopkins in 2005

6. Hamington, Bruce, Transitions Design_Carnegie Mellon University, iasdr 2021 conference keynote speak, Hong Kong Polytechnic University 5-9 December 2021, iasdr 2021.org

7. Hong Kong Planning Department, 2021, Lantau 2030+: Towards a planning vision and strategy transcending 2030, available from: www.pland.gov.hk, [accessed 11, December. 2021]

8. Wu Gordon, 1987, Artificial islands proposal, South China Morning Post

9. Loh Christine, 2018, Underground Front: the Chinese communist party in Hong Kong, second edition, HKU Press

10. Sze Julie, 2015, Fantasy Islands: Chinese Dreams and Ecological Fears in an Age of Climate Crisis, university of California Press

11. Liu Yapeng, 2021, Gaia's wind Liu Yapeng, Urban Environments Design, School of Design, Master of Urban Environments Design Capstone Project, Hong Kong Polytechnic University, unpublished

12. Liu Pengnan, 2021, Filter Island, Urban Environments Design, School of Design, Master of Urban Environments Design Capstone Project, Hong Kong Polytechnic University, unpublished

13. Cao Qian, 2021, Multi-level Island, Urban Environments Design, School of Design, Master of Urban Environments Design Capstone Project, Hong Kong Polytechnic University, unpublished

14. Mo Huiru, 2021, Microcirculation of Mariculture_Future Food scape, Urban Environments Design, School of Design, Master of Urban Environments Design Capstone Project, Hong Kong Polytechnic University, unpublished

Author's biographies:

Hee Sun (Sunny)Choi Following higher education at RMIT in Melbourne, the AA School and UCL in London, Dr Sunny Choi completed her PhD in urban design at Oxford Brookes University and conducted Post-doctoral research at Oxford University. A specialist in urban morphology, cultural identity and environmental sustainability, she has practiced as an urban designer and architectural designer in the UK, Hong Kong and in Seoul, South Ko-

rea, and within the design and master planning department of the United Nations Head- quarters in New York. Currently she is working as an editor of U+U journal, adjunct assistant professor at Polytechnic University of Hong Kong and founding partner at CHOI-COMER ASIA Ltd, and architecture and urban design practice and research lab in Hong Kong.

Laurent Gutierrez is co-founder of MAP Office. He earned a Ph.D. of Architecture from RMIT. He isa Professor at the School of Design, The Hong Kong Polytechnic University where he leads theMaster of Design Programs and the Master of Design in Design Strategies as well as the Master of Design in Urban Environments Design programs. He is also the co-director of Urban Environments Design Research Lab. MAP Office is a multidisciplinary platform devised by Laurent Gutierrez and ValŽrie Portefaix. This duo of artists/architects hasbeen based in Hong Kong since 1996, working on physical and imaginary territories using variedmeans of expression including drawing, photography, video, installations, performance, and literaryand theoretical texts. Their entire project forms a critique of spatio-temporal anomalies anddocuments how human beings subvert and appropriate space.