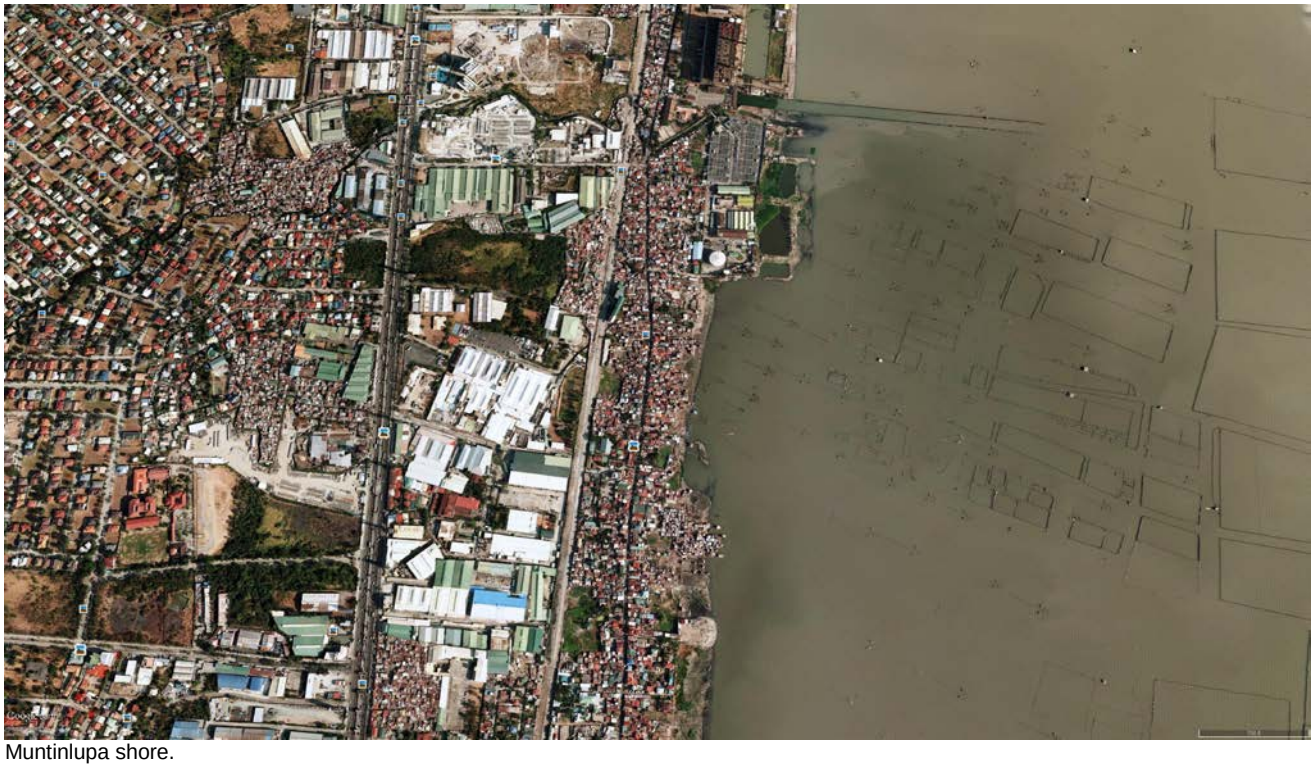
11.304J/4.255J Site and Environmental Systems Planning
Credits: 15 units
Schedule: TR (2:00-5:00)

11.S953 Special Course
Credits: 6 units
Schedule: TR (5:00-7:00)
This is taken only by the students enrolled in 11.304 for p/f


Muntinlupa shore.

UNDERWATER: THE CASE FOR METRO MANILA (DRAFT SYLLABUS)

SITE AND ENVIRONMENTAL SYSTEMS PLANNING AND DESIGN

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TA:	TBD
SCHEDULE:	Tuesday and Thursday 2 pm -7 pm | Rm 10-485
CLIENT:	Yan Zhang, World Bank
DELIVERABLE:	Resettlement Strategy for Muntinlupa, Philippines Report
CLASS:	Open to planning and architecture students (pending approval)

PREMISE

In recent years, we have witnessed rapid environmental changes and an increasing frequency and severity of natural disasters impacting densely populated areas. In 2013, Typhoon Haiyan became the strongest tropical storm recorded at landfall, costing thousands of lives, displacing millions of people, and destroying cities, towns, and neighborhoods in the Philippines. Vulnerabilities to natural disasters have long been part of the country's history, shaping society, culture, and the physical environment. However, the combination of population growth, rapid urbanization, climate change, and more severe storm events underscore an urgent and critical need for resilient strategies that account for issues of flooding and human settlement for the archipelago.

The confluence of these challenges is most evident in Metropolitan Manila. As the political, economic, and cultural center of the Philippines, Metro Manila accounts for almost 12% of the country's total population with 12 million people. Comprised of 16 cities and 1 municipality, Metro Manila generates nearly 40 percent of the

country's gross domestic product and 13 percent of the country's total employment. For the last four decades, flooding occurrences are increasing, and the estimated costs in damages and the number of people affected are increasing. Flood impacts affect 3.4 million people and have caused $160 million USD in damages annually.[1] Existing flood management facilities have proven inadequate in protecting the growing population and economic assets that are perennially affected by flooding. As one of the world's most densely populated and largest mega cities, and with a growing population of increasingly vulnerable low-income populations, this studio will ask:

- In a context of increased urbanization where the catastrophic effects of climate are increasing in frequency and severity, **how can Metro Manila be better prepared for future storm events**?
- Where should future development and redevelopment occur and where should it not?
- What are the benefits to public, private, and non-profit sector collaborations?
- How can integrated resettlement strategies balance considerations for natural systems, the existing city form, and socio-spatial realities?

PROJECT

The subject of this studio is to explore urban resiliency strategies in Metropolitan Manila that reduce human vulnerability to flooding and climate change in the community of Muntinlupa. Many of the communities in Metro Manila with high exposure to natural disasters are informal settlements characterized by poor living conditions. Due to rapid urban growth in recent years, over 60,000 Informal Settler Families (ISFs) seeking refuge and jobs within the city now populate the banks of urban waterways (esteros), exposing the most vulnerable populations to recurrent and intensifying flooding. The World Bank's Metro Manila Citywide Slum Upgrading Project seeks to establish a "Citywide Development Approach to Slum Upgrading (CDA) as a viable solution for reducing vulnerability and improving the resilience of flood affected informal settlers in Metro Manila…. by pilot-testing and showing demonstrable benefits of CDA in three flood-prone cities in Metro Manila: Caloocan, Muntinlupa, and Quezon City. Students participating in this studio will be tasked with developing replicable physical resettlement strategies for residents in Muntinlupa that build upon the work of the World Bank and support the goals of this project.

Located in the southernmost city in Metro Manila and adjacent to Laguna de Bay, the largest freshwater lake in the Philippines, the studio will engage a Muntinlupa community sited along the lake's shoreline. As part of a regional study of waterways and water bodies known as the "Eight Esteros" project, the Laguna de Bay/Muntinlupa site has approximately 4,000 informal settlers living along the marge. According to the World Bank's Metro Manila Citywide Slum Upgrading Project Supplementary Note, many NGOs have achieved successful community-driven interventions, but they have fallen short in reaching scale (i.e. Habitat for Humanity, Homeless People's Federation Philippines Inc. (HPFPI), Foundation for the Development of the Urban Poor (FDUP), and Foundation for Development Alternatives (FDA)). There are also notable Local Government Units (LGUs) that have demonstrated exemplary achievements (i.e. Cebu, Iloilo, Mandaue, Naga, and Quezon City), but even these remain one-off successes. The private sector has been mostly disengaged to date, and although some developers have interest in expanding their own markets to include ISFs for in-city medium-rise buildings, they come up against barriers to gap financing due to a lack of affordable mortgages for those who are not employed in the formal economy. Although the student work will focus on physical interventions, the studio will take into account both social and economic vulnerabilities when considering the devastating impacts of flood-related natural disasters as well as how the public and private sectors engage.

[1] The Republic of the Philippines Department of Public Works and Highways: Metro Manila Integrated Flood Risk Management Master Plan.

Partnering with students and faculty at the University of the Philippines with Mary Ann A. Espina and Mario R. Delos Reyes (Deans of the College of Architecture and College of Urban and Regional Planning, respectively), economists and engineers at the World Bank with Yan Zhang (MIT alum and Senior Urban Economist), and the Bases Conversion Development Authority with Arnel Casanova (CEO and President of BCDA), this studio will be a collaborative effort, relying on local knowledge, professional expertise, and current efforts. Interdisciplinary interaction within MIT will include presentations and workshops with Associate Professor Christopher Capozzola (School of Humanities, Arts, and Social Sciences) and Katja Schechtner (MIT Media Lab and researcher in the Urban Development and Transport Technologies at the Asian Development Bank).

The work of this studio seeks to address Metro Manila's vulnerabilities through scenario modeling and by testing ideas for what a more resilient Metro Manila could look like. Through a collaborate approach, MIT and the University of the Philippines (UP) will build upon existing and on-going work prepared by the World Bank, exploring zoning regulations, resettlement processes, and policy ideas for low-lying informal settlement communities located on land deemed at high risk for flooding. In addition to this study, previously American-occupied military bases, largely undeveloped land today, will be evaluated for their potential redevelopment as new economic centers with housing and integrated sustainability strategies. A study of the benefits between public, private, and non-profit organizations will be assessed. The primary goals for the spring 2015 course will be to contribute to an improved resiliency narrative by developing strategies for **integrated urban development** and testing **new forms of urbanity that can accommodate natural systems**.

A previous military base, Fort Bonifacio is currently being developed as a major economic center for Metro Manila.

This studio will build upon recent and ongoing work by the World Bank (mapping, documenting housing and land needs, community-based upgrade planning, capacity building, and introduction of financing products), and students will analyze the current physical and social conditions in flood prone communities. There would be potential visits to the Department of Public Works and Highways and the Metropolitan Manila Development Authority to understand the proposed flood control projects and the "Convergence Approach" to housing and resettlement proposed by the Department of Interior and Local Government. In addition to data and information

supplied by the World Bank, the studio will collaborate with the University of the Philippines's School of Urban and Regional Planning and the School of Architecture to utilize the university's recent Socioeconomic Profiling (SEP) and investigate how Informal Settler Families (ISFs) are currently living.

The studio project will not attempt to reform public policy or existing economic and financial structures, it will seek to engage communities residing along the waterways, learn from recent successes, analyze the physical conditions of the waterways/esteros/water bodies and adjacent urban development, and propose planning strategies and physical urban design scenarios that support a systematic approach to risk reduction through an integrated resettlement strategy. The studio will culminate in a report that provides analysis, stakeholder interviews, planning principles, and concept alternatives for the rethinking of Muntinlupa's Laguna de Bay shoreline and community resettlement.

STUDIO OBJECTIVES

Site Planning is the process of analyzing and understanding the cultural, natural, and morphological characteristics of a place and translating this comprehensive profile into meaningful design and development proposals. It is an inherently iterative process that involves shifting between regional, city, district, and localized scales in order to appropriately respond to the various environmental, economic, political, and social forces at play.

There are three primary studio goals:

Knowledge and Awareness | Create a body of research and analysis that provides the base material for creating awareness for flood mitigation strategies and climate change in Metro Manila, including policy, development patterns, localized infrastructure, and resilient construction techniques. Four scales of studying Metro Manila will include regional, district, neighborhood, and architectural analysis that will cultivate a vulnerability-based approach to planning and design.

- Learn a process for land evaluation
- Understand spatial and temporal relationships between individual site factors and local and regional contexts
- Identify basic relationships between natural and cultural processes and how they influence site planning decisions
- Learn and apply a variety of methods for "reading" sites through research and analysis

Technology and Collaboration | Potential to coordinate with MIT's Urban Risk Lab and other MIT Philippines Recovery groups, municipal agencies, and institutions to share urban resilience knowledge and build a repository for shared information. Material that is generated as a result of this studio can contribute to a "Resiliency Library" in the form of an interactive website and engagement tool.

- Learn important technical skills needed in the site planning process

Exploration and Innovation | Develop strategies for improving resiliency through planning and urban design workshops and project coursework in the spring of 2015, with the goal of having MIT planning and design students engage with Filipino students. By teaming with other institutions, there is an opportunity for sharing experiences and knowledge to generate new and innovative ideas for future Metro Manila.

- Evaluate and critique alternative site development proposals
- Practice techniques commonly utilized by planning and design professionals
- Develop team and interdisciplinary skills
- Work in a client-based project