

CCGL9065: Our Responses to Climate Change | HK2100

Week 8 Ocean, Decolonized

Logistics and Housekeeping

Reflective Writing and Individual Submissions

- Grades up until W5 on reflective writings are now available on Moodle
 - Window of clarification opens from today and onwards **within this week**
 - Questions and queries directed @Yichun/Johnson (slack/email)
 - Missing submissions: proof-of-submission to be included.
- Final Exhibition of Individual Submissions
 - Interactive deck of personal reflection/collage/YouTube video link (20/20/20)
 - Submission due in-class during last session aka **Apr.30th**
 - Last make-up opportunity for *Participation*
 - Reach out to TAs in tutorials if you want critique/suggestions on your draft

“critical state of the oceans and the intersection of marine science, colonial legacies, and indigenous knowledge”



**71 % Earth Surface Covered
83 % CO2 Circulated
30 % CO2 Absorbed
90 % GHG Heat Trapped**

Ocean's Plight

Understandings

- **Regulating the Climate**
 - Ocean as climate regulator
 - Absorbing solar radiation
 - Carbon Sequestration
 - Vulnerability to overexploitation
- **Biodiversity Loss**
 - Plastic pollution
 - Coral reef degradation
 - Decline in marine biodiversity
 - Consequences of global ecosystems



William W. Rossiter / WWF

Coral reefs protect coastlines from storms and erosion, provide jobs for local communities, and offer opportunities for recreation. Over **0.5 Billion people** depend on reefs for food, income and protection. (NOAA)

Losing the coral reefs is not only losing coastal line/development and the job opportunity, it will be an **economic disaster**.

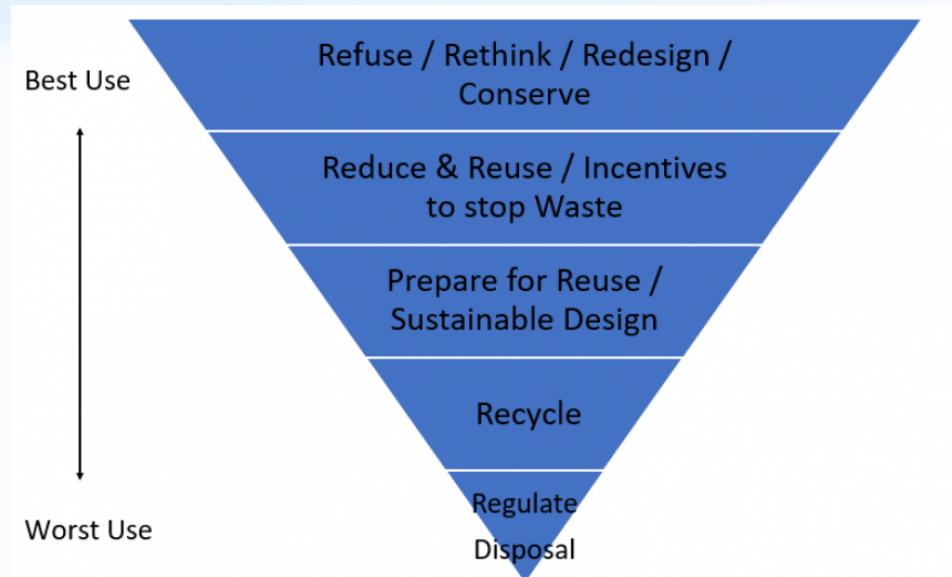


Anthropogenic Plastic

Pollution through production/ disposal

- Synthetic organic polymer made from petroleum
- Over 400 million tons produced each year
- Sources:
 - stormwater runoff, sewer overflows, littering, inadequate waste disposal and management, industrial activities, tyre abrasion, construction and illegal dumping
- Breaks down to microplastics under UV light ($\leq 5\text{mm}$ in length)
 - Can be ingested/aggregated/accumulated in bodies (found in human blood)
 - Possible biomagnification
- Degrades slowly (hundreds to thousands years)

SHORELINE PLASTICS	SEA SURFACE PLASTICS	PLASTICS IN MARINE ORGANISMS
SEAFLOOR / SEDIMENT PLASTICS	WATER COLUMN PLASTICS	
<i>Adapted from The Mediterranean: Mare Plasticum</i>		



Plastic pollution threatens ocean health, the health of marine species, food safety and quality, human health, coastal tourism, and contributes to climate change.

Plastic Is Turning the Ocean Into a Minefield

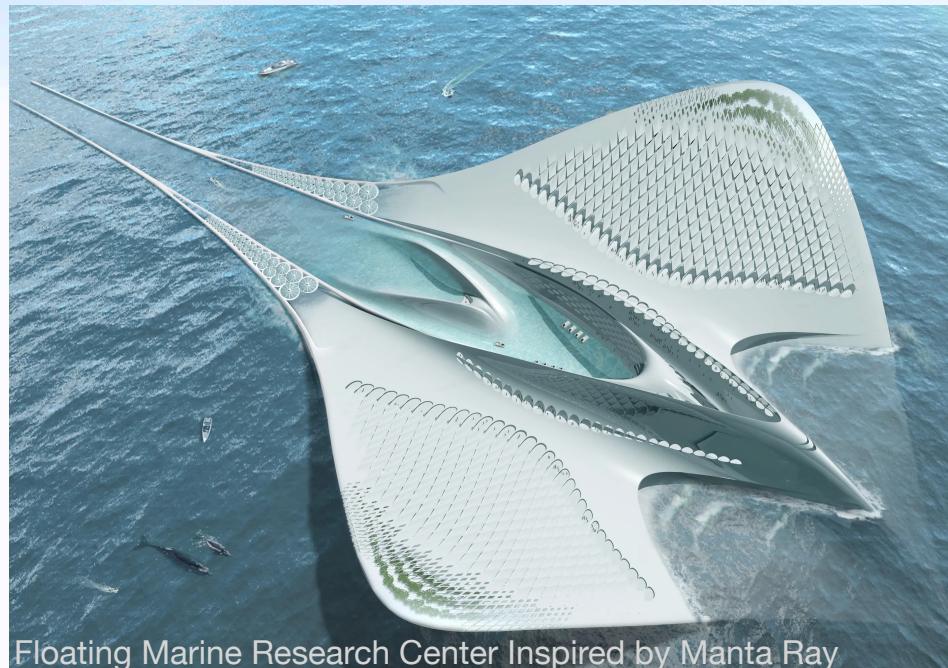


**This week: Story-telling
with ONE image/punchline.**

Status-quo & Issues with Marine Research

Why studying and protecting the ocean is particularly difficult

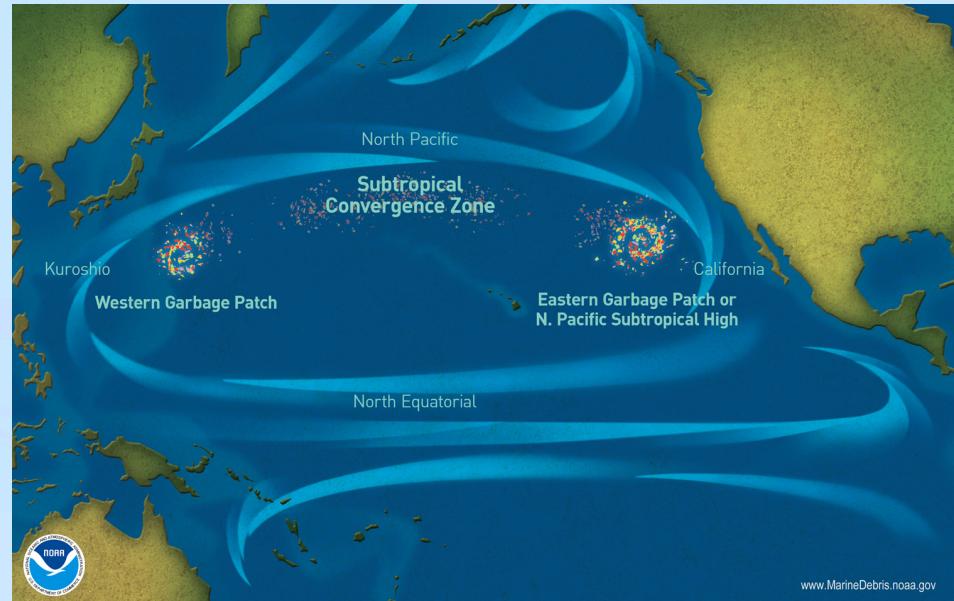
- High costs & tech demands
 - Natural challenges from natural, observation-based scientific research
 - Research output dominated by G7 Countries (Canada, France, Germany, Italy, Japan, United Kingdom, USA)
 - China rose up post 2010 following USA
 - Extractive model
- **Colonial Legacies Unkept**
 - Less-resourced waters perpetuate colonial dynamics
 - Scientific approaches often viewed as more superior and civilized than indigenous ones



Rendering: Jacques Rougerie Architecture

The Great Pacific Garbage Patch

- World's largest collection of floating trash
 - “Larger than Texas”
 - Filled with floating plastic debris (94% microplastics, abandoned fish gear)
 - 46% of the patch (in tonnage) is from fishing nets
 - **Consumer plastics not the no.1 culprit**
- Sea of plastic that will not grow smaller.



Debris and oil in the Santa Barbara surf. National Geographic

Rethinking and restructuring the way marine research is conducted

- Historical Context and Colonial Legacies
 - ocean exploration and science, especially in less financially-resourced regions **focus on extracting resources or data,**
 - often **without fair compensation or involvement** of local communities.
- Marginalization of Indigenous Knowledge
 - Indigenous peoples have a deep understanding of marine environments developed over millennia.
 - Often overlooked or undervalued by mainstream marine science.
- How to Decolonize Ocean Science?
 - Inclusive Research Collaborations
 - Benefit Sharing
 - Integrating Knowledge Systems
 - Policy and Governance
 - Education and Capacity Building

Rethinking and restructuring the way marine research is conducted: Examples

- Community-Based Monitoring:
 - In the Arctic, Inuit communities have been involved in **monitoring sea ice changes**, combining traditional knowledge with scientific methods to track climate change impacts.
- Co-Managed Marine Protected Areas:
 - In places like the Pacific Islands, marine protected areas are **co-managed by indigenous communities** and governments, blending traditional conservation practices with scientific research.
- Coral Reef Restoration:
 - In regions like the Caribbean, **local and indigenous practices** in managing fisheries and protecting marine habitats are integrated into coral reef restoration projects.



Overfishing in Hong Kong

A Quick Case Study

- Historical Fishing Grounds:
 - Once rich, Hong Kong's surrounding waters have seen a significant decline in fish populations due to overfishing.
- Modern Pressures:
 - The rise in **commercial fishing practices**, coupled with **increased demand** from the city's populous, exacerbates the problem.
- Biodiversity Loss:
 - Key species have been depleted, affecting the marine ecosystem's balance and resilience.
 - Potential cuts to obvious traditional food options (fish balls)
- Indigenous Fishermen Knowledge:
 - Traditional Practices:
 - Local fishermen possess generational knowledge on sustainable fishing practices, seasonal cycles, and the behavior of local fish populations - unbeknownst to commercial fishing ops.
 - Observational Insights: Recognizing early signs of ecosystem changes or stress.

Overfishing in Hong Kong

Case Study Continues

- Connecting Indigenous Knowledge and Overfishing Solutions:
 - Collaborative Management
 - No-Take Zones
 - Seasonal Restrictions
 - Sustainable Techniques
- Challenges and Opportunities:
 - Regulatory Integration
 - integrating traditional practices within modern regulatory frameworks, policies should be on-the-ground realities.
 - Cultural and Knowledge Preservation
 - Community Involvement: local fishing communities involved in decision-making can foster stewardship and compliance with sustainable practices.

On Decolonizing Ocean Science

Embracing Perspectives: Role-Play Activity

- *What We Are Doing:*
 - Engaging in a **role-play activity** that simulates a debate around the theme of **Decolonizing Ocean Science** within the Hong Kong context.
 - You will assume roles advocating for “pro-climate-change” (**Pro-CC**) policies and anti-climate-change (**Anti-CC**) viewpoints, as well as various **stakeholder positions** (Local Fishermen, Marine Scientists, Policy Makers, Conservation NGOs or whatever you may see fit).
- *Why We Are Doing It:*
 - To **explore diverse perspectives** on complex issues that intersects ocean conservation, traditional knowledge, and modern science.
 - To understand the **implications** of policy decisions and scientific practices on different communities and the environment.
 - To foster **empathy** and **critical thinking** by stepping into the shoes of various stakeholders affected by these issues.

On Decolonizing Ocean Science

Embracing Perspectives: Role-Play Activity (Cont')

- How does these activities help:
 - They highlights the **nuances** in the climate change debate on decolonizing science—a key discussion in ensuring that marine conservation is inclusive, equitable, and effective.
 - Encouraging **informed discussions** on how traditional and scientific knowledge can complement each other in addressing pressing environmental challenges.
- Our Classroom Environment:
 - This is a **safe space** for exploration and discussion. There are **no wrong answers** here, only opportunities to learn and understand different viewpoints.
 - Respect and **open-mindedness** are our guiding principles. Every opinion shared is valued and contributes to our collective learning.
 - **Feedback** and **reflection** are encouraged. This is a chance to voice thoughts, ask questions, and grow from the experience.

**Pro-Climate Change -> Progressive
Actions to address Climate Change**

Pro-Decolonization (Pro-CC)

Talking Points

- **Urgent integration** of indigenous knowledge on par with scientific data for holistic ocean conservation.
- **Drastic policy reforms** recognizing indigenous rights and community leadership in marine resource management.
- **Adoption of inclusive research models** that disrupt traditional hierarchies and empower local communities.
- **Economic redistribution** to ensure equitable benefits from marine resources for indigenous and local communities.

**Anti-Climate Change -> Conservative
Actions to address Climate Change**

Anti-Decolonization (Pro-CC)

Talking Points

- **Economic risks** associated with rapid policy shifts, emphasizing stability for marine-dependent industries.
- **Efficiency and scalability** concerns of traditional methods vs. scientific approaches.
- **Regulatory complexities** in reforming marine governance to incorporate indigenous rights.
- **Risk of over-romanticizing** indigenous practices, potentially sidelining scientifically proven conservation strategies.

Other Group Cheatsheet

Talking Points

- **Local Fishermen (Pro-CC):**
 - Advocate for *sustainable traditional fishing* and urgent policy changes based on *observed ecological shifts*.
- **Marine Scientists (Anti-CC):**
 - Emphasize *scientific rigor* and a balanced approach incorporating traditional knowledge without compromising standards.
- **Policy Makers (Pro-CC):**
 - Push for *bold legislative actions* for indigenous rights and innovative, equitable resource management policies.
- **Conservation NGOs (Anti-CC):**
 - Stress *pragmatic conservation strategies* and caution against diluting efforts with overly ambitious decolonization goals.