SUPPLEMENTS FOR DIPLOMACY

REVISITING THE SOUTH CHINA SEA MARINE PARK

by
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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

ABSTRACT

With its reputation of its diverse fisheries, latent oil reserves, and its strategic economic position in global trade, the South China Sea has historically been a site of contention between states. Today, we find this contention in the intersection of multiple claims between regional powers: China, Vietnam, the Philippines, Malaysia, Brunei, and Taiwan. The lack of consensus regarding how to delineate territory has led states to view the region as a 'petri dish' – experimenting with de-facto delineations of territory. Each state attempts to build a case to justify their claim to the sea by using an arsenal of spatial tools that brings agency to the built form. We see civilian occupied islands like Pag-asa Island, which is owned by the Philippines, and the militarized artificial islands like Fiery Cross Reef, constructed by China. Naval flotillas and *FONOPs* (Freedom of Navigation Operations) begin to act as quasi-informal boundaries of sovereignty, as they inform the spatial mobility in the sea.

As a result of the territorial and maritime dispute in the South China Sea, an evident gap has formed in the management of resources, leading to the neglect of the region's ecosystem and maritime security. The lack of coordination among countries has led to unregulated fishing, thereby contributing to overfishing in the region - to the point where its fisheries are on the brink of collapse. Along with the depleting fish stocks, the activity of illegal poachers has deteriorated the health of the coral reefs. These habitats serve as critical spawning grounds for marine species in the South China Sea. State-run infrastructural projects veiled under "national security" have compromised the well-being of the region's ecosystem. This includes the construction of artificial islands, which involves extensive land reclamation techniques that have contributed to the declining health of coral reefs.

Supplements for Diplomacy reframes the agency of the built-form in the South China Sea. It advocates for a shift, from state-centric to non-state-centric processes - specifically resources that support marine species. This thesis revisits a proposal brought forth by marine biologist John McManus, who advocated for transforming the region into an international marine protected area.[1] This proposal calls to organize state and non-state actors in a collective body that acknowledges the region's economic dependency on its ecosystem and biodiversity. By using this proposal as a framework to bridge environmental objectives with state incentives, this thesis illustrates the implementation of the marine protected area's planning, governance, and infrastructure. *Supplements for Diplomacy* presents a scalable model that can transition existing occupied islands into environments that serve as spawning grounds for endangered marine species. It relies on the incremental phasing of infrastructure that aims to monitor, build ecological resilience, and to establish a sustainable economy through tourism and revenue from long-term conservation of fish stocks. Through the reprogramming of state-occupied islands, this thesis poses a new relationship we have with the disputed region - one where we take on the role of the steward. Territory is no longer seen as strategic token exploited by the state, rather it consists of large moving systems involving nutrient flows and tidal patterns that serve the overlooked stakeholders of the South China Sea.

1 Mcmanus, John W., Kwang-Tsao Shao, and Szu-Yin Lin. "Toward Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Collaborative Activities with an Emphasis on the Role of Taiwan." *Ocean Development & International Law* 41, no. 3 (2010): 270–80. https://doi.org/10.1080/00908320.2010.499303.

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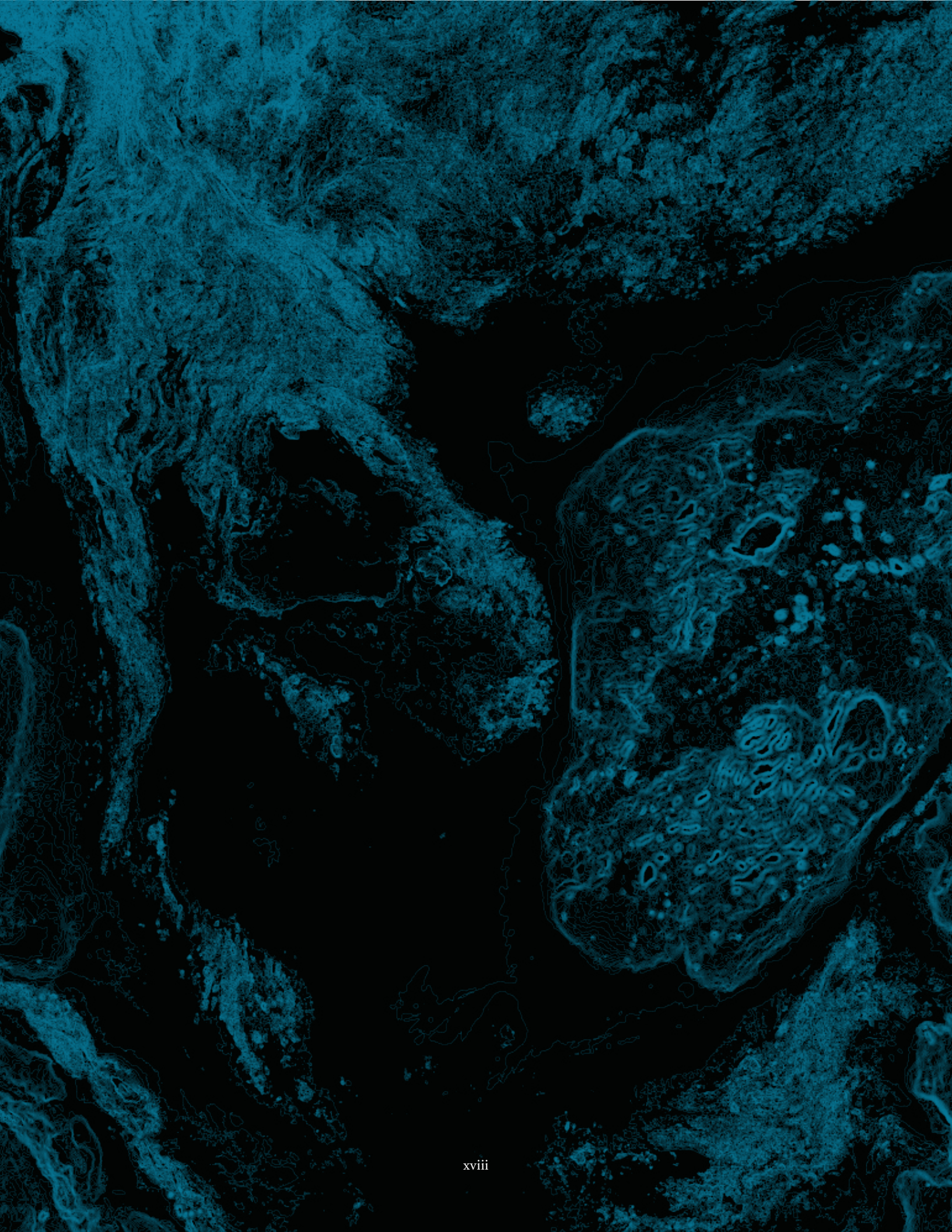
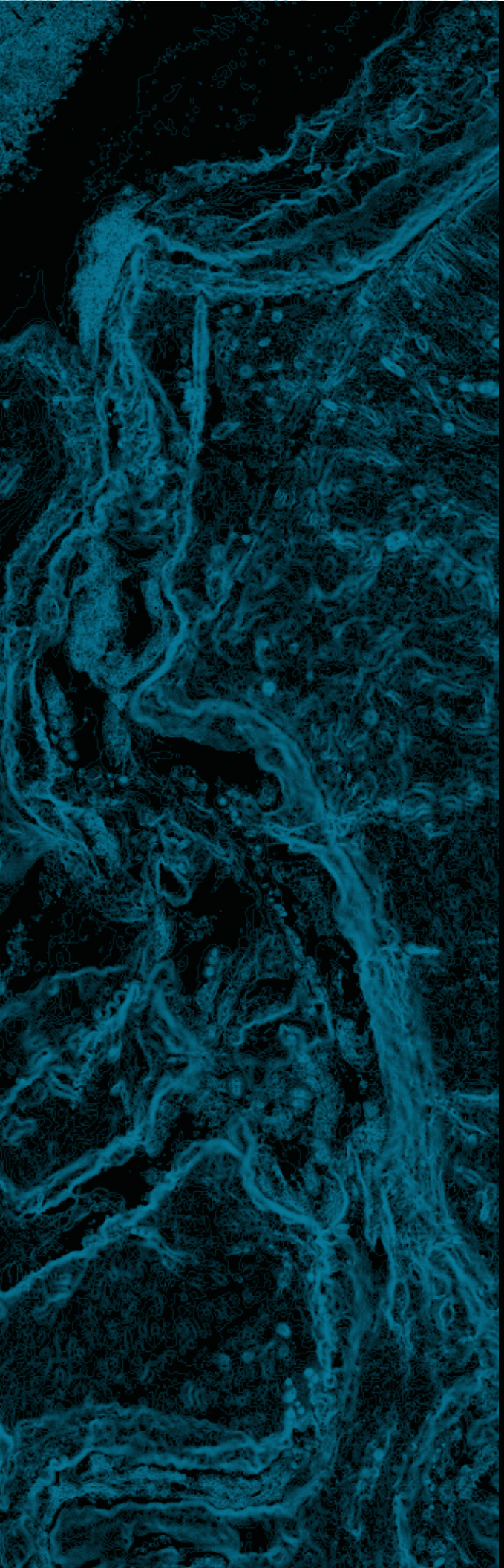




PART I: MODERN CLAIMS IN THE SOUTH CHINA SEA

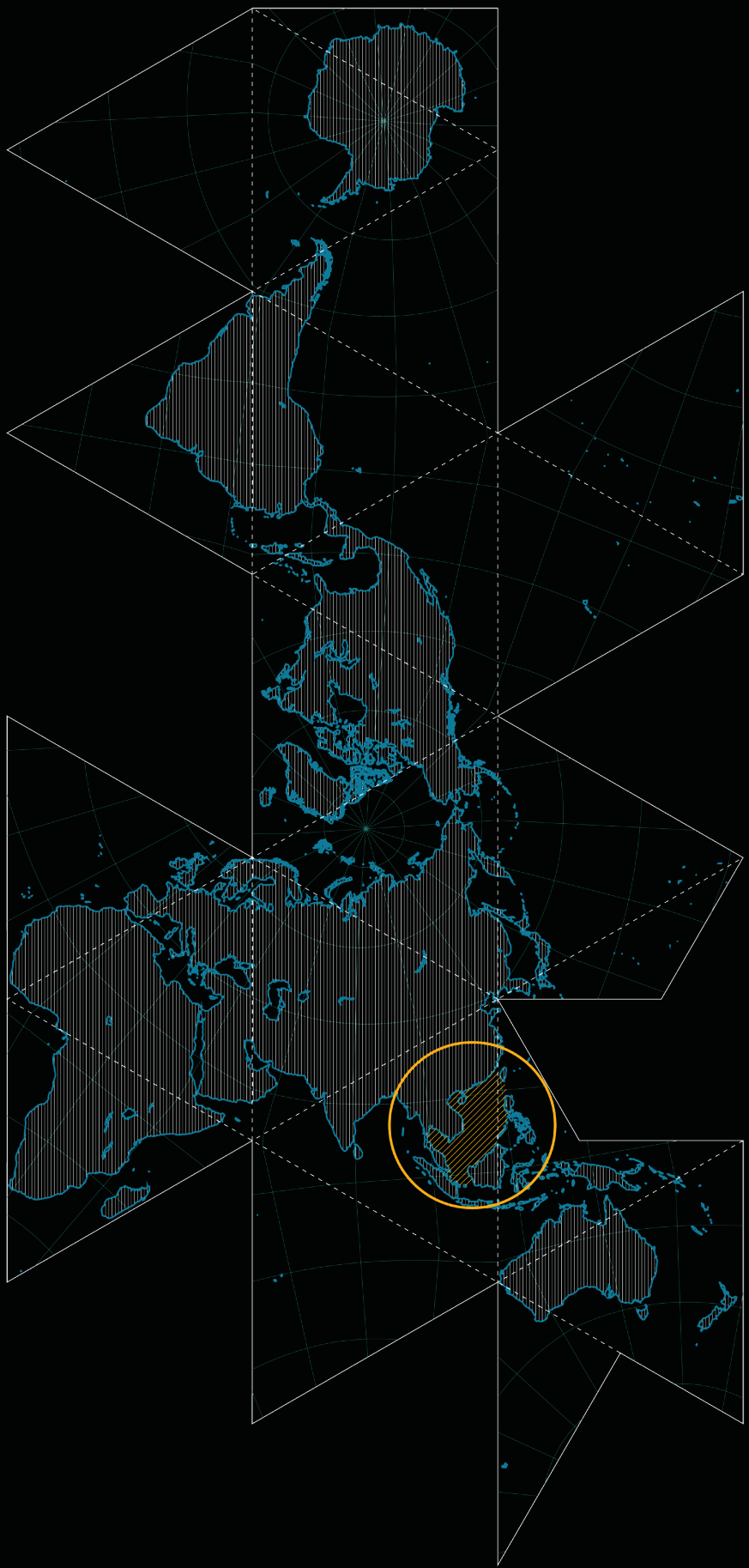
OVERVIEW OF THE GEOPOLITICS

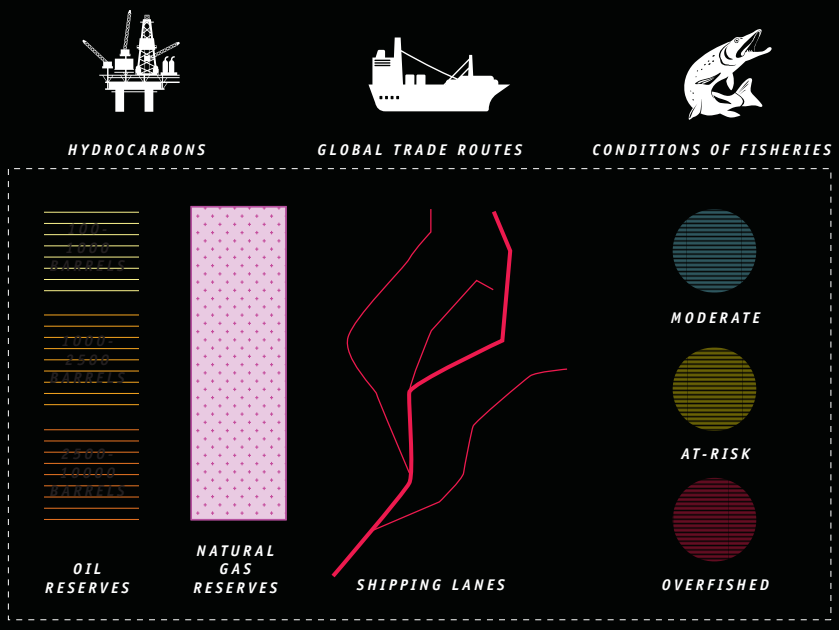
Located in the Asia-Pacific region, the South China Sea sits between two important maritime chokepoints, the Strait of Malacca and the Strait of Taiwan. Encompassing an area of around 3,500,000 km², this marginal sea is bordered by China, Vietnam, Malaysia, Brunei, the Philippines, and Taiwan - all of which are involved in the regional dispute. The physiographic features of the disputed sea include 5 main collections of landforms: the Spratly Islands, Paracel Islands, Pratas Islands, Scarborough Shoal, and Macclesfield Bank - altogether consisting of over 250 islands, atolls, shoals, and reefs.[1]

Fig. 1 *Regional map of the South China Sea*

Fig. 2 *Dymaxion projection showing the location of the South China Sea*

1 Roy, Nalanda. *The South China Sea Disputes: Past, Present, and Future*. Place of publication not identified: LEXINGTON Books, 2018. 11-18





Conducting more than a third of the world's maritime trade, the South China Sea region handles over $3.37 trillion dollars worth of trade annually.[2] This presents the users of this lucrative trade network and their access to the region's resources a pivotal seat in global trade. The South China Sea also acts as a lifeline for the countries in the region, supplying around 60% of the energy needs for South Korea, Japan, and Taiwan as well as 80% of China's crude oil. Apart from the hydrocarbons traded across the sea, the region itself holds tremendous wealth lying beneath its seabed. It is estimated that the South China Sea contains 11 billion barrels of oil and 190 trillion cubic feet of natural gas, waiting to be drilled and sold on the global market.[3] As for its other notable natural resource, the South China Sea population heavily relies on its regional fisheries in both domestic consumption and exports. With a yearly catch of 16.6 million tons, the fishing industry in the region employs over 3.7 million people but this figure doesn't consider the vast illegal and informal workforce.[4] With this unregulated activity, lack of enforcement regarding catch rates, and the absence of a regional resource management program, the region has greatly suffered from overfishing. This has begun to compromise the region's biodiversity, threatening the livelihood of over 3000 fish species, 1766 crustacean species, and 571 reef species.[5]

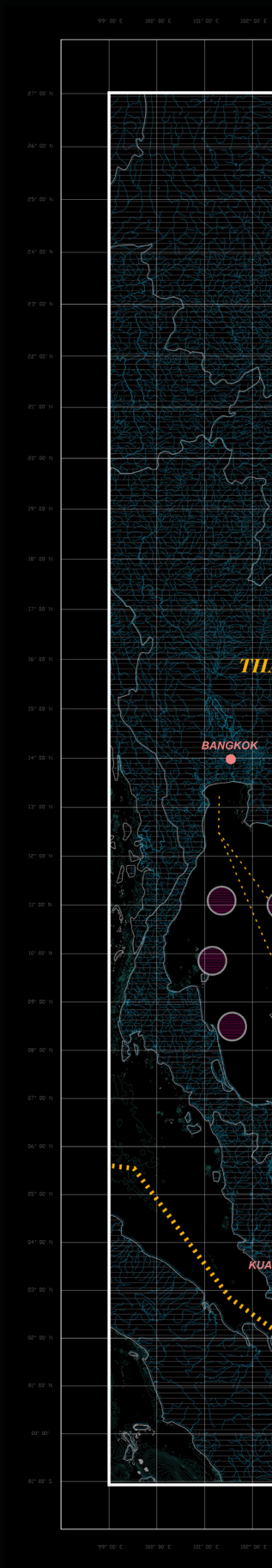
2 "How Much Trade Transits the South China Sea?" ChinaPower Project, October 10, 2019. https://chinapower.csis.org/much-trade-transits-south-china-sea/.

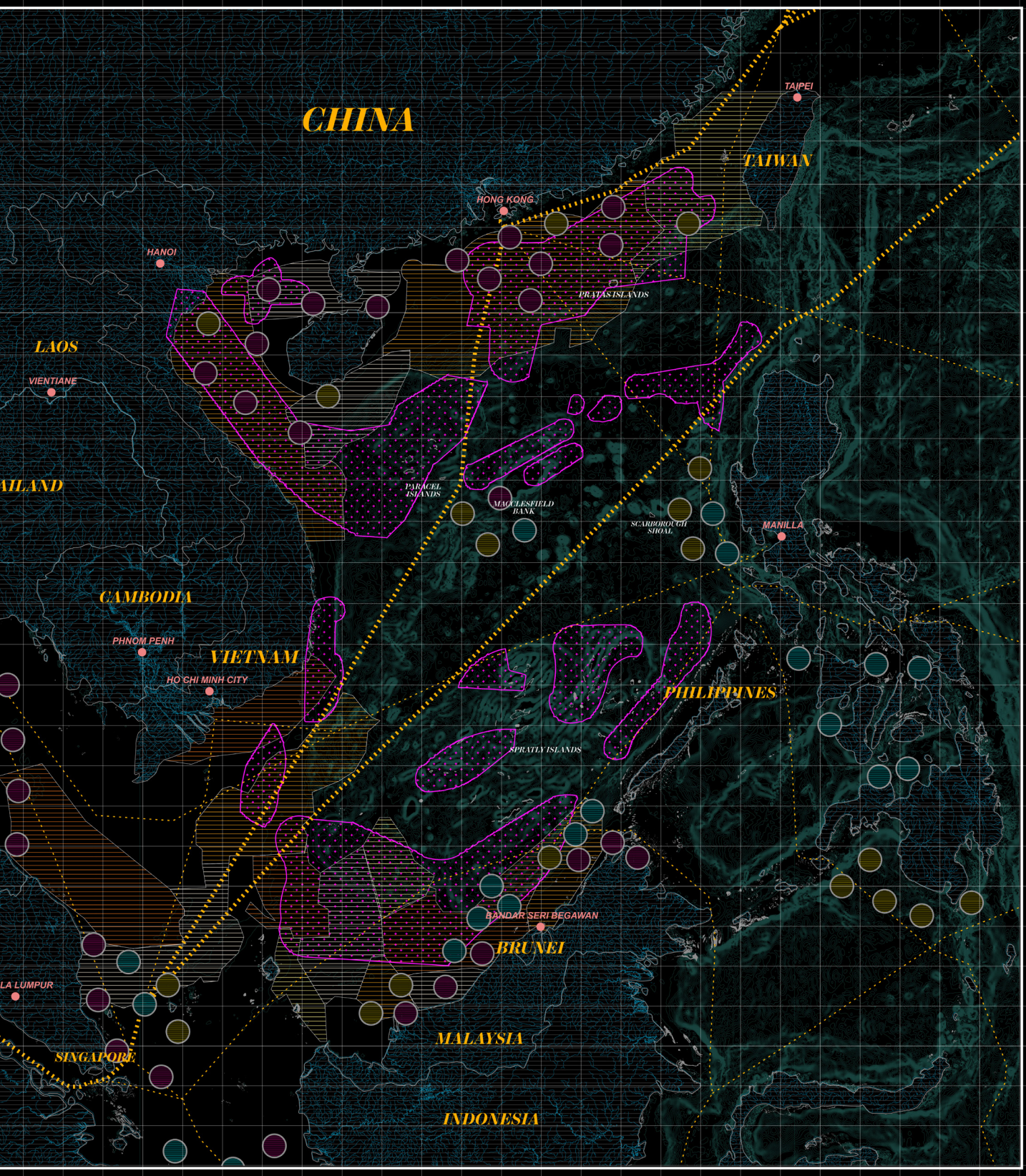
3 "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis." Contested areas of South China Sea likely have few conventional oil and gas resources - Today in Energy - U.S. Energy Information Administration (EIA). Accessed October 6, 2018. https://www.eia.gov/todayinenergy/detail.php?id=10651.

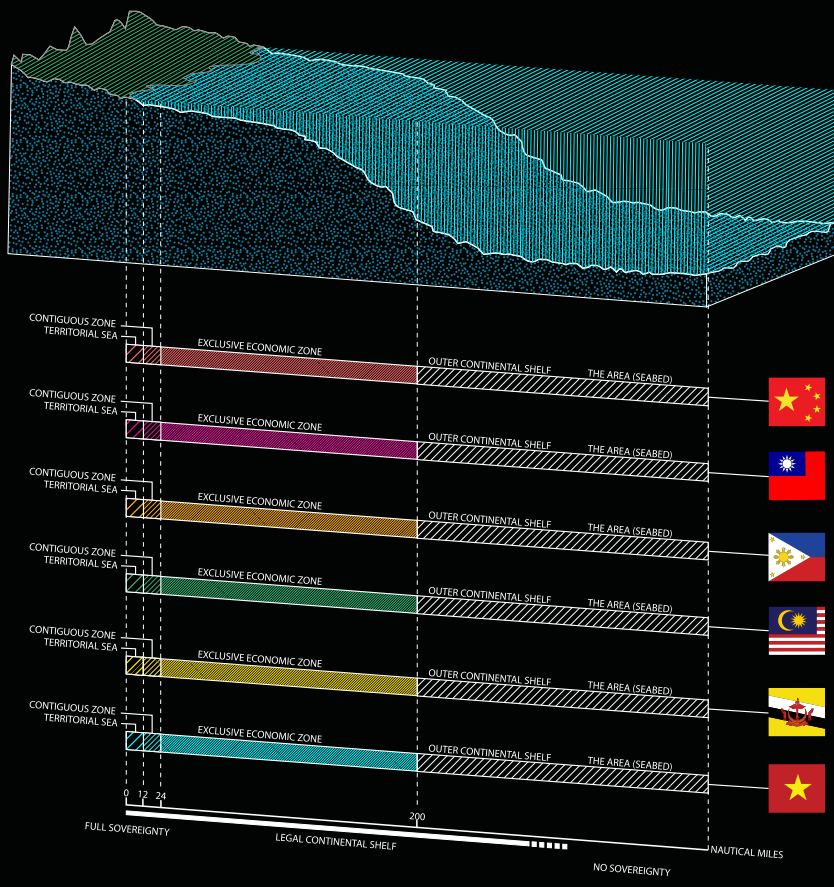
4 Poling, Gregory. "Illuminating the South China Sea's Dark Fishing Fleets." Stephenson Ocean Security Project. January 9, 2019. https://ocean.csis.org/spotlights/illuminating-the-south-china-seas-dark-fishing-fleets/.

5 McManus, J., E. Gomez, S. Wells, S. Norman, and S. Jupiter. "Coral Reefs of the South China Sea – a Need for Action." International Society for Reef Studies, 2016. http://coralreefs.org/wp-content/uploads/2019/01/SCS_Briefing_ISRS_20161711_revised_v3.pdf.

Fig. 3 *Economic importance of the South China Sea*



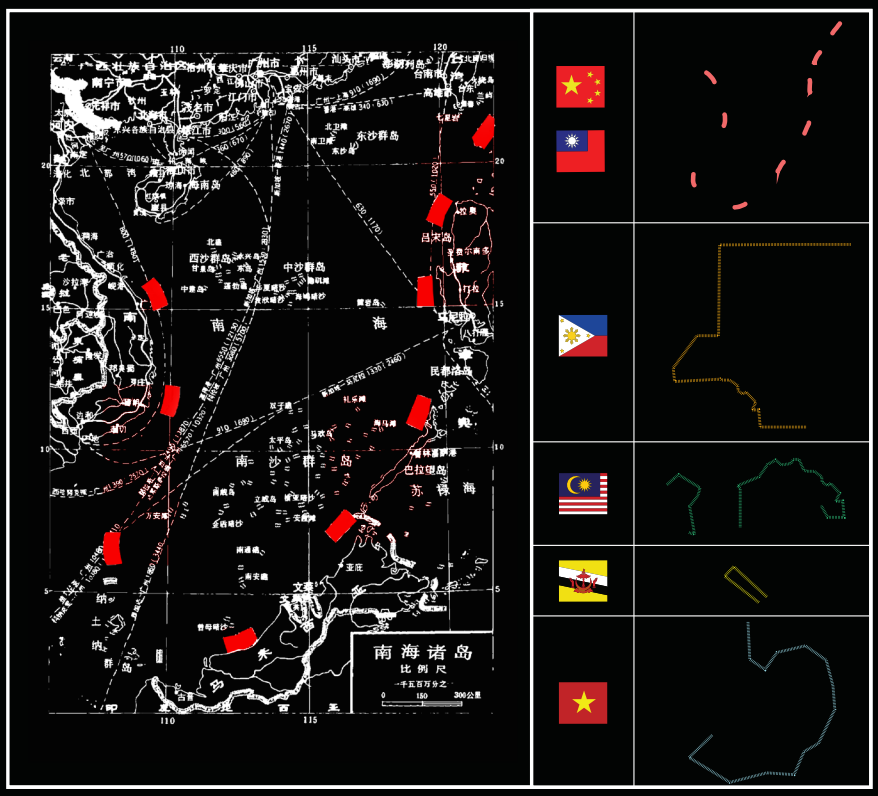

CHINA
TAIPEI
TAIWAN
HONG KONG
HANOI
PRATAS ISLANDS
LAOS
VIENTIANE
PARACEL ISLANDS
MACCLESFIELD BANK
SCARBOROUGH SHOAL
MANILLA
CAMBODIA
PHNOM PENH
VIETNAM
HO CHI MINH CITY
PHILIPPINES
SPRATLY ISLANDS
BANDAR SERI BEGAWAN
BRUNEI
MALAYSIA
SINGAPORE
INDONESIA



The latent wealth of the South China Sea has become a point of contention as the disputing nations make their claim for the sea. It is important to note that this conflict is split between two types of categories: maritime claims and territorial claims. The difference being, the maritime claims deals with the countries right to exploit resources in their granted sovereign waters, which UNCLOS (United Nations Convention on the Law of the Sea) has defined as the EEZ (Exclusive Economic Zone). The EEZ is drawn from the area between a state's baseline coast and a 200 nautical mile projection from that baseline. However, in situations where multiple countries enclose the same body of water, as in the case of the South China Sea, we begin to see the overlapping of EEZs which causes a flashpoint. In these situations, UNCLOS advises states to work together to establish a mutually agreed upon maritime boundary.

Fig. 4 *UNCLOS EEZ projections in the South China Sea*

CHINA
TAIWAN
PRATAS ISLANDS
PARACEL ISLANDS
MACCLESFIELD BANK
SCARBOROUGH SHOAL
VIETNAM
PHILIPPINES
SPRATLY ISLANDS
BRUNEI
MALAYSIA



The other half of the dispute deals with the territorial claims, the ownership of the land features in the sea. As previously mentioned, the South China Sea is home to a diverse range of landforms, including islands, rocks, and reefs – some of which can grant an extension of a country's exploitation rights. This allows states to secure isolated pockets of sovereignty in the disputed sea which can be crucial when leveraging their claim. Hence these landforms essentially act as constellations that begin to outline a country's claim in the region, as they can extend one's EEZ. Most of these claims are based from the standards presented by UNCLOS, except for China's controversial claim, the *nine-dash line*.[6] China's claim doesn't conform to the international standard as it encompasses around 90% of the South China Sea. This begins to elude to the fundamental cultural differences between Western liberal order and traditional Chinese governance structures. The former strongly believe states as autonomous beings capable of practicing true sovereignty while the latter believes in a suzerain-tributary relationship where the dominant power limits the ability for a weaker power to self-rule.[7] China being the historic superpower in the region sees itself as the suzerain and the nations of ASEAN as its tributary states – justifying their bold claim to the sea through this relationship.

6 Heinzig, Dieter . Disputed Islands in the South China Sea. Hamburg: Institute of Asian Affairs, 1976. 47- 48.

7 Dillon, Dana. "Countering Beijing in the South China Sea." Hoover Institution, June 11, 2011. https://www.hoover.org/research/countering-beijing-south-china-sea.

Fig. 5 *Territorial claims in the South China Sea*

CHINA
TAIWAN
PRATAS ISLANDS
PARACEL ISLANDS
MACCLESFIELD BANK
SCARBOROUGH SHOAL
VIETNAM
PHILIPPINES
SPRATLY ISLANDS
BRUNEI
MALAYSIA

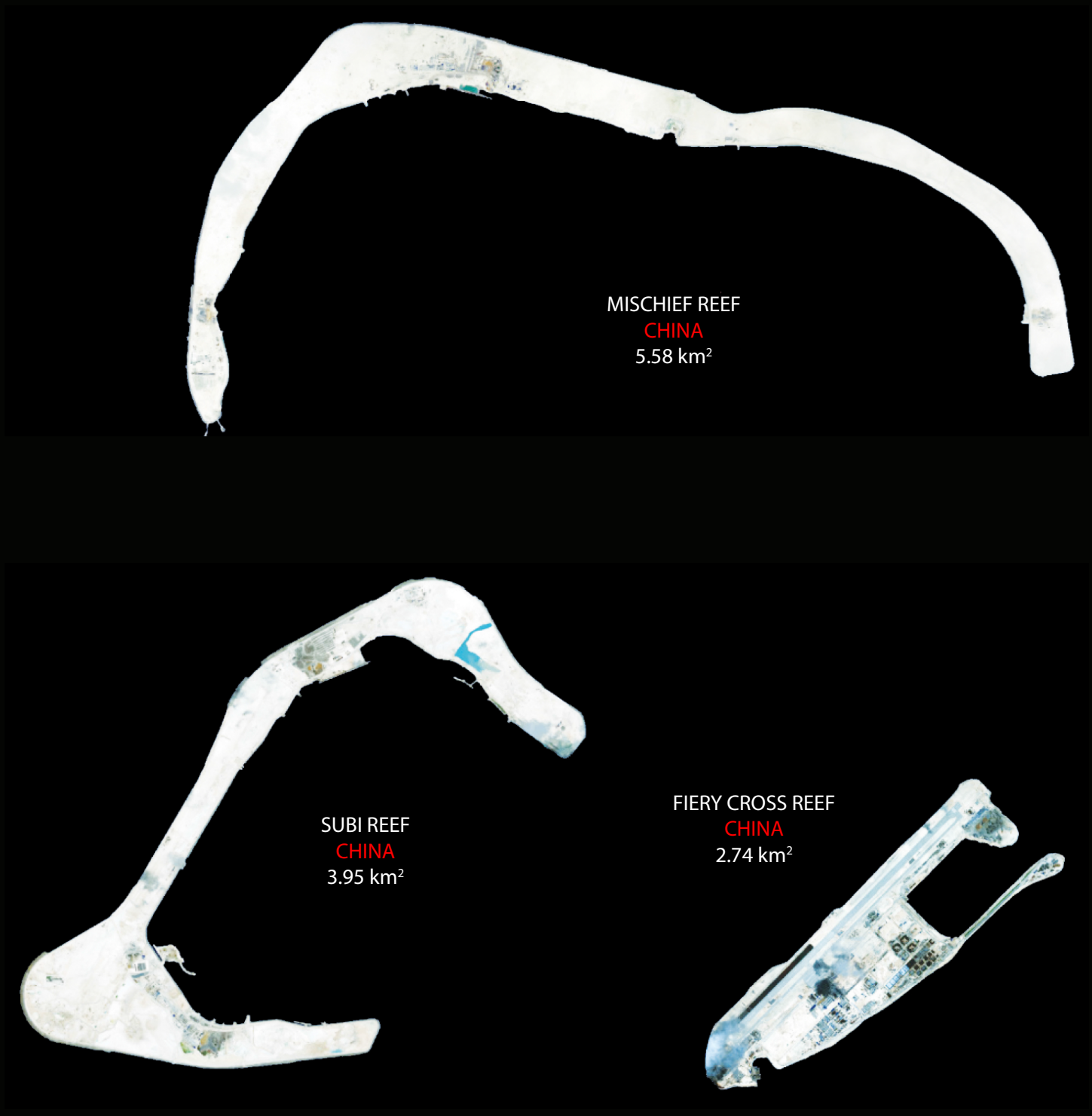


Fig. 6 *Catalog of the disputed islands in the Spratly archipelago*

ITU ABA ISLAND
TAIWAN
0.46 km²

THITU ISLAND
PHILIPPINES
0.37 km²

SWALLOW REEF
MALAYSIA
0.35 km²

CURATERON REEF
CHINA
0.23 km²

WEST YORK ISLAND
PHILIPPINES
0.18 km²

JOHNSON REEF
CHINA
0.11 km²

NAMYIT ISLAND
VIETNAM
0.09 km²

NANSHAN ISLAND
PHILIPPINES
0.08 km²

HUGHES REEF
CHINA
0.08 km²

WEST LONDON REEF
VIETNAM
0.07 km²

LOAITA ISLAND
PHILIPPINES
0.06 km²

SAND CAY
VIETNAM
0.02 km²

PEARSON REEF
VIETNAM

CENTRAL LONDON REEF
VIETNAM

AMBOYNA CAY
VIETNAM
0.02 km²

GRIERSON REEF
VIETNAM
0.01 km²

FLAT ISLAND
PHILIPPINES
5700 m²

MARIVELES REEF
MALAYSIA

ARDASIER REEF
MALAYSIA

ERICA REEF
MALAYSIA

INVESTIGATOR SHOAL
MALAYSIA

COLLINS REEF
VIETNAM

BARQUE CANADA REEF
VIETNAM

PIGEON REEF
VIETNAM

LADD REEF
VIETNAM

CORNWALLIS SOUTH REEF
VIETNAM

EAST LONDON REEF
VIETNAM

SOUTH REEF
VIETNAM

ALISON REEF
VIETNAM

DISCOVERY GREAT REEF
VIETNAM

PETLEY REEF
VIETNAM

REGIONAL STRUGGLE FOR POWER

The dynamics of the geopolitics in the region can be better understood when we analyze the asymmetric power relations between the disputing countries. This helps us understand both domestic and foreign influences that drives the claims for each country. By understanding these power relationships, we can see the divide between the Chinese superpower in the region and the developing powers: Vietnam, Malaysia, Brunei, and the Philippines. These smaller nations belong to the Association of Southeast Nations (ASEAN), a regional intergovernmental organization that aims to promote political, economic stability in the Asia-Pacific region. The collaborative policies between these developing countries aimed to meet domestic economic demands as well as promoting diplomatic relations, from its free-trade policies to visa-free travel programs.

ASEAN and other similar regional intergovernmental organizations have underlying principles that can be explained through theories from international relations. Borrowing from this discourse, the framework of regional governance can be used to understand cooperative models involving neighbouring states and non-state actors. Although most regional institutions focus on economic policy coordination, it relies on the *spillover* effect to strengthen ties in other areas of interest such as security measures, social agendas, and environmental initiatives.[8] It subscribes to the idea that states are less likely to engage in war when their economy relies on each other for trade. The spatial implications of a regional governance framework can be found within the intersection of borders, trans-continental infrastructure, and in special economic zones (SEZ). Regional governance presents an alternative model to globalization, where the latter loses the sense of space and operates under deterritorialized networks. The former brings attention to precise scale and allows the opportunity for developing nations to unite to compete with the developed nations in the global market - eventually creating a regional identity. This process creates a shift a nation's perception of sovereignty, as they participate and collectively form new policies through the respatialization of state power.

By consolidating as a unified bloc, ASEAN has leveraged its collective efforts to negotiate with China. In 2002, the Declaration of Conduct in the South China Sea (DOC-SCS) was signed between China and ASEAN, with the hopes of preventing further escalation and outlining a sentiment of peaceful maritime

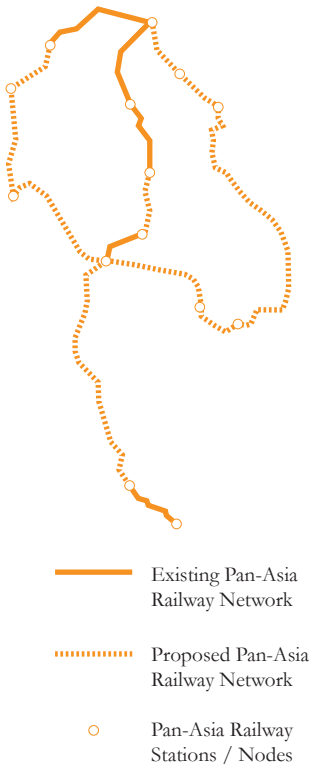
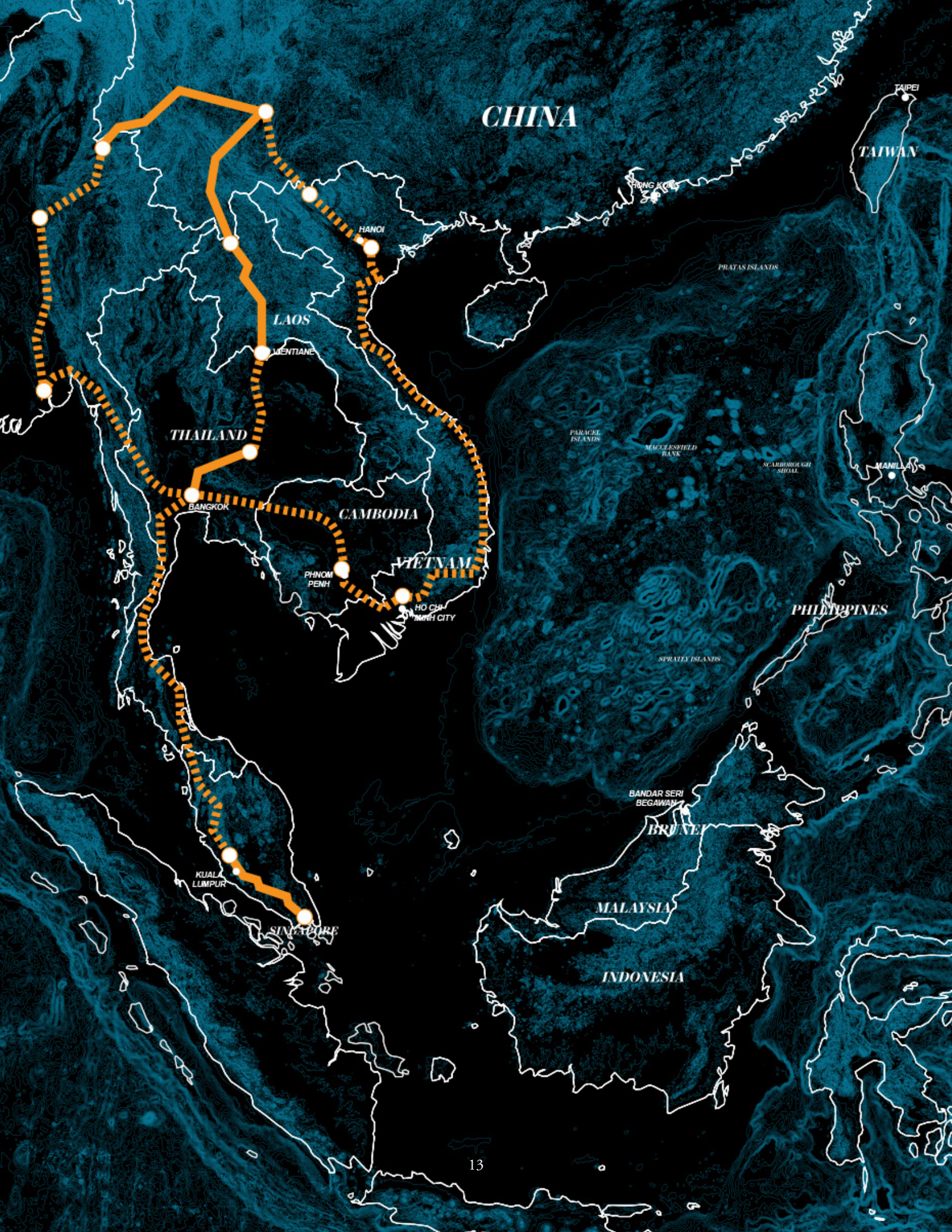


Fig. 7 *Economic corridors in the Greater Mekong Subregion (ASEAN - China)*

8 Weiss, Thomas G., and Rorden Wilkinson. "Regional Governance" in *International Organization and Global Governance.* Milton Park, Abingdon, Oxon: Routledge, 2018. 345-361.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PHILIPPINES
SPRATLY ISLANDS
BANDAR SERI BEGAWAN
BRUNEI
KUALA LUMPUR
MALAYSIA
SINGAPORE
INDONESIA

Fig. 8 *Kunming-Singapore (SKRL) railway under construction along with the rest of the 'Pan-Asian high-speed railway network'*

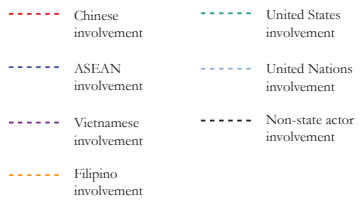
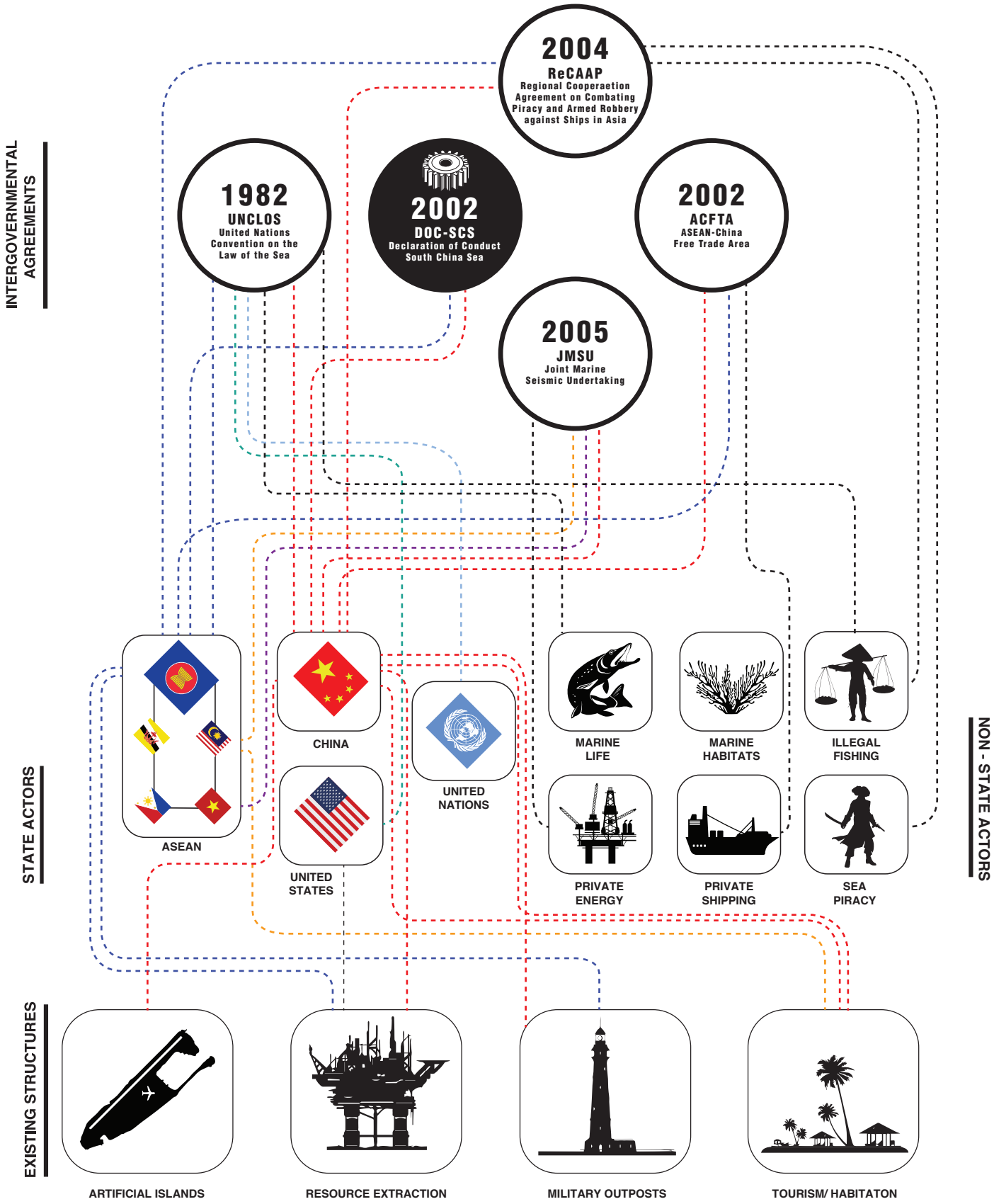


Fig. 9 *Existing regional governance framework in the South China Sea*

navigation.[9] Acknowledging the economic position of the developing nations in ASEAN, we begin to see that the driving motive of these countries is primarily to exploit the region's natural resources and its access to the global shipping network. With its vast bank of natural resources, the South China Sea can lead these developing powers on a path that can help them compete with the rest of the world. However, their trajectory is hindered by the bold Chinese claim to the sea. The superpower's extreme militarized presence not only stresses the region's maritime security but also stunts any economic opportunities in the sea. The relationship between ASEAN and China is quite contradictory given that in other contexts beside the South China Sea, we see countless number of partnerships between these disputing nations. Given that the South China Sea serves as the primary gateway between China and the rest of the world, the disputed sea becomes a potential weak spot for the regional superpower. China carries a more sensitive approach towards this front, securing the region through the deployment of naval forces and military bases. It is clear that China's involvement in this dispute isn't entirely for their economic interests, rather it responds to its underlying rivalry between its counterpart - the United States.

9 Quang, Nguyen Minh. "Saving the China-ASEAN South China Sea Code of Conduct." – The Diplomat. for The Diplomat, June 28, 2019. https://thediplomat.com/2019/06/saving-the-china-asean-south-china-sea-code-of-conduct/.


INTERGOVERNMENTAL AGREEMENTS
2004
ReCAAP
Regional Cooperaetion Agreement on Combating Piracy and Armed Robbery against Ships in Asia
1982
UNCLOS
United Nations Convention on the Law of the Sea
2002
DOC-SCS
Declaration of Conduct South China Sea
2002
ACFTA
ASEAN-China Free Trade Area
2005
JMSU
Joint Marine Seismic Undertaking
STATE ACTORS
ASEAN
CHINA
UNITED STATES
UNITED NATIONS
NON - STATE ACTORS
MARINE LIFE
MARINE HABITATS
ILLEGAL FISHING
PRIVATE ENERGY
PRIVATE SHIPPING
SEA PIRACY
EXISTING STRUCTURES
ARTIFICIAL ISLANDS
RESOURCE EXTRACTION
MILITARY OUTPOSTS
TOURISM/ HABITATON

HEGEMONIC RIVALRY

The United States enters this regional dispute through a trap door by utilizing the function of the "high seas" or better known as international waters. This zone is described by UNCLOS as the international region beyond a country's 200 nautical mile EEZ where any nation is free to navigate and exploit. As a power-play move fueled by their rivalry, the US leverages its relationship with ASEAN to maintain strategic military positioning, with the dual function of keeping China at arms length as well as strengthening ASEAN's claim to the sea. This is done through FONOPs (Freedom of Navigation Operations) which are essentially naval patrol routes that explicitly aim to defy China's claim to the sea. This dismissal of China's sovereignty has provoked China to retaliate with its rapid militarization and construction of artificial islands. What was once a regional issue between neighbouring countries, is now a global issue that informs the interface between the East and West. We start to see this rivalry being played on multiple fronts, from trade bans to breaches in cyber security.

The growing arms race between China and the US begins to elude to a much larger struggle for power. It looks beyond the context of the South China Sea, ultimately questioning whether two hegemonies can simultaneously coexist. The US being the incumbent global leader is now challenged by the rise of China as they struggle to fight for influence around the world. Through large infrastructural projects that span across continents like the *Belt and Road Initiative,* China begins to offer countries an alternative to the Western model of foreign investment.[10] Without the requirement for countries to liberalize their market and to adopt Western values, China's model proposes an attractive proposition for developing nations as they see this roadmap as a streamlined path to stimulate their economy. This competition between foreign investment can be further studied when we track the motives of the American lead Asian Development Bank (ADB) and the Chinese lead Asian Infrastructure Investment Bank (AIIB). The ADB was founded in 1966 and was modeled after the World Bank, aiming to reduce poverty in the Asia-Pacific region. However, with this slow pace reform and its limited representation of Chinese influence, China sought to create a bank where it would yield more authority and promote a more inclusive platform for other members of the Global South.[11] The AIIB was established in 2015 with its goal of long-term economic development in the form of infrastructure, alluding to the historic reforms of Deng Xiaoping. It

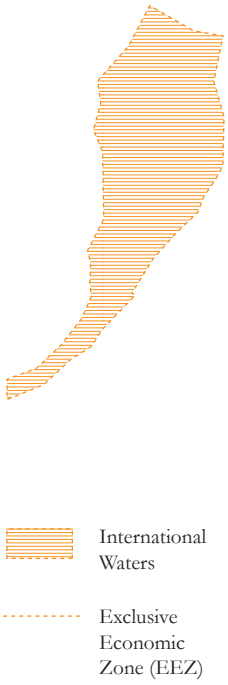
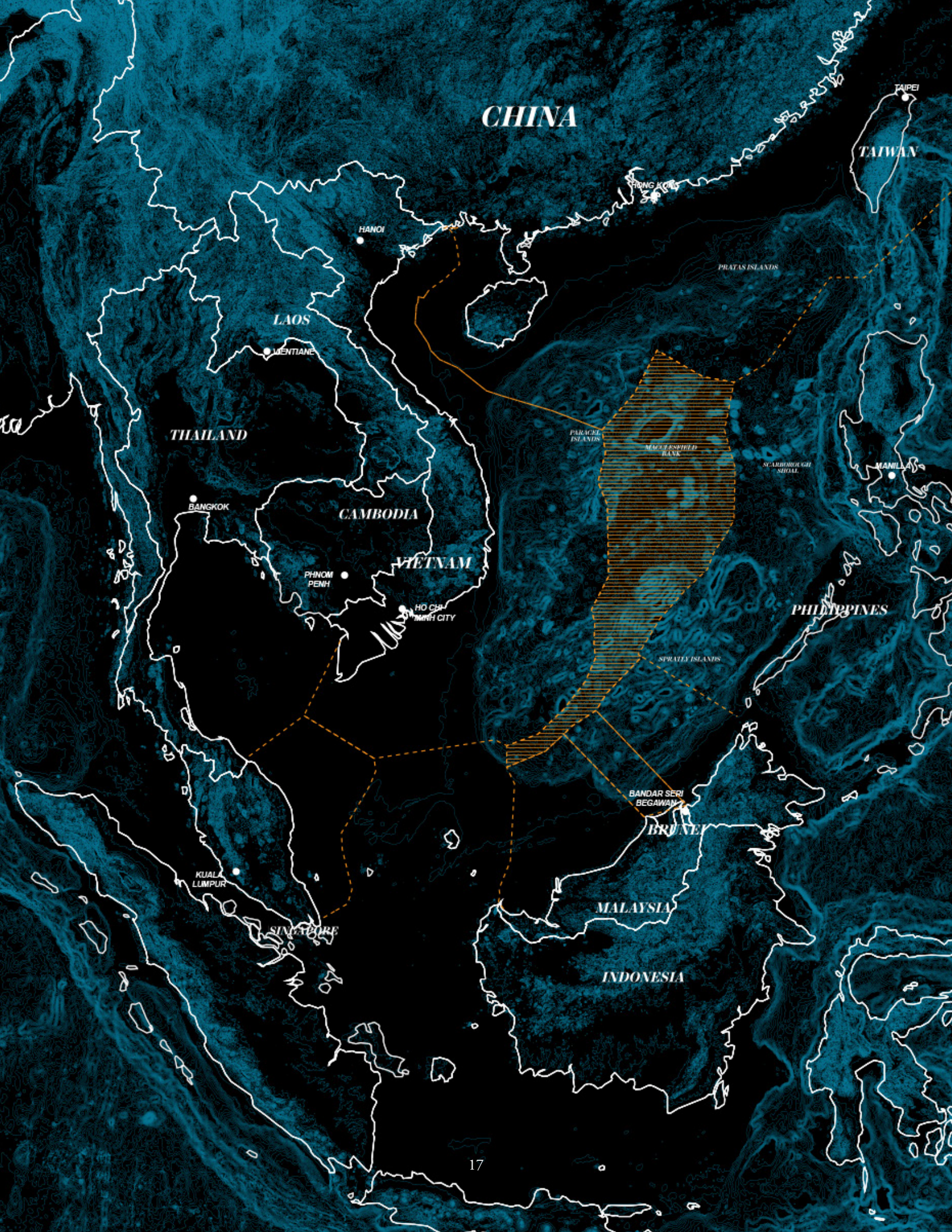


Fig. 10 *Highlighted swath depicts 'International Water' - where the US conducts FONOPS missions*

10 Dollar, David. "The AIIB and the 'One Belt, One Road'." Brookings. Brookings, September 7, 2017. https://www.brookings.edu/opinions/the-aiib-and-the-one-belt-one-road/.

11 *Ibid.*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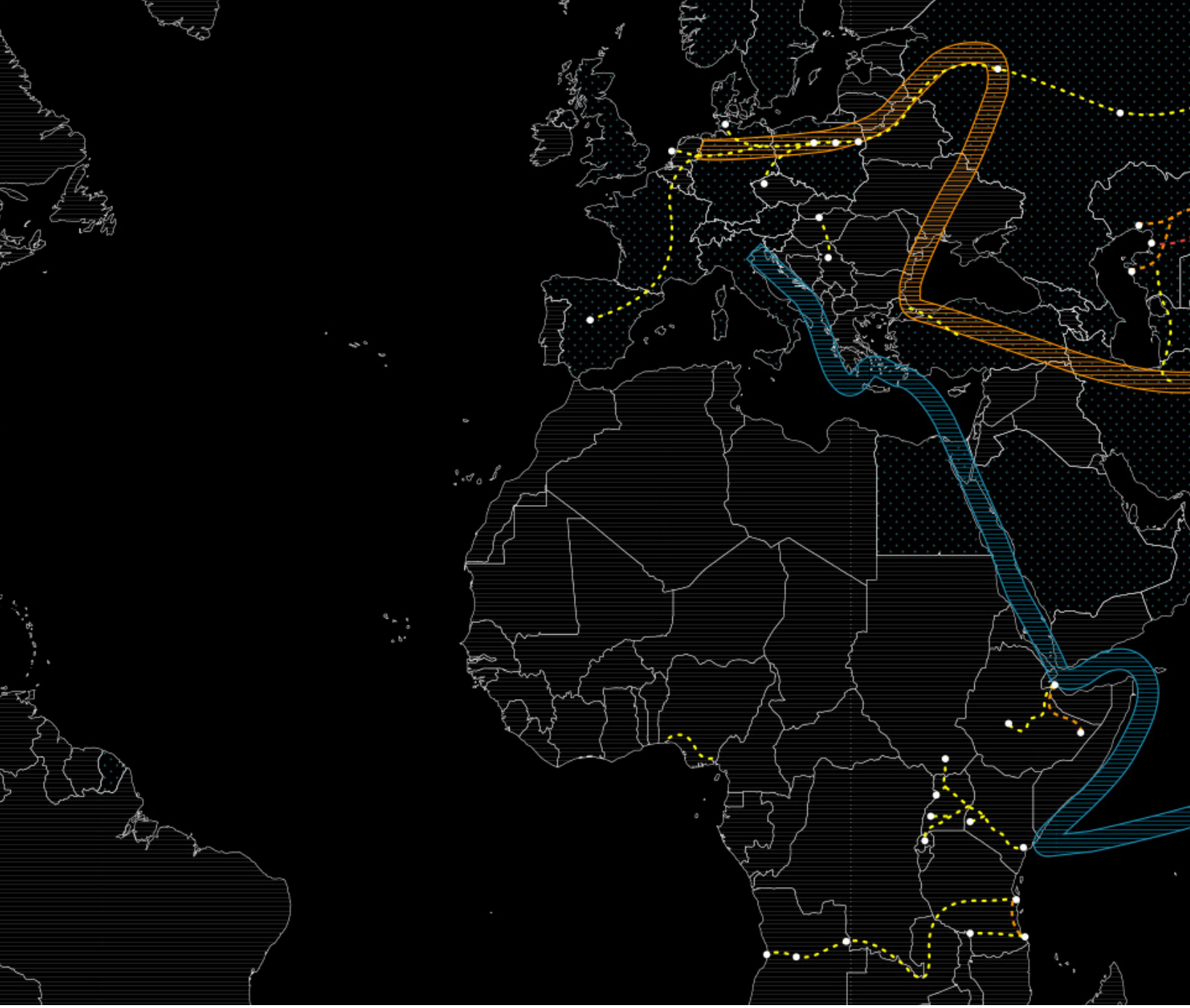
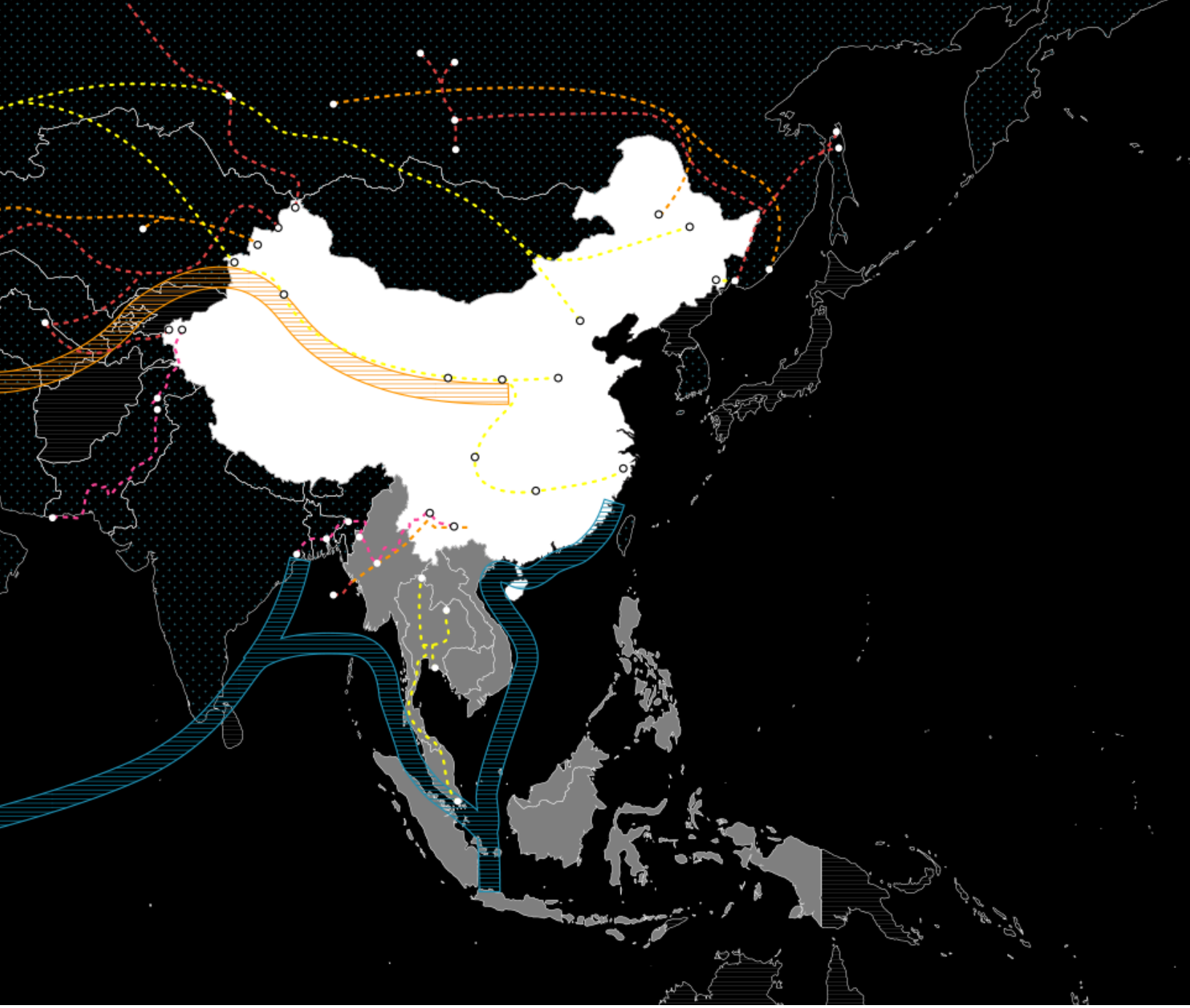


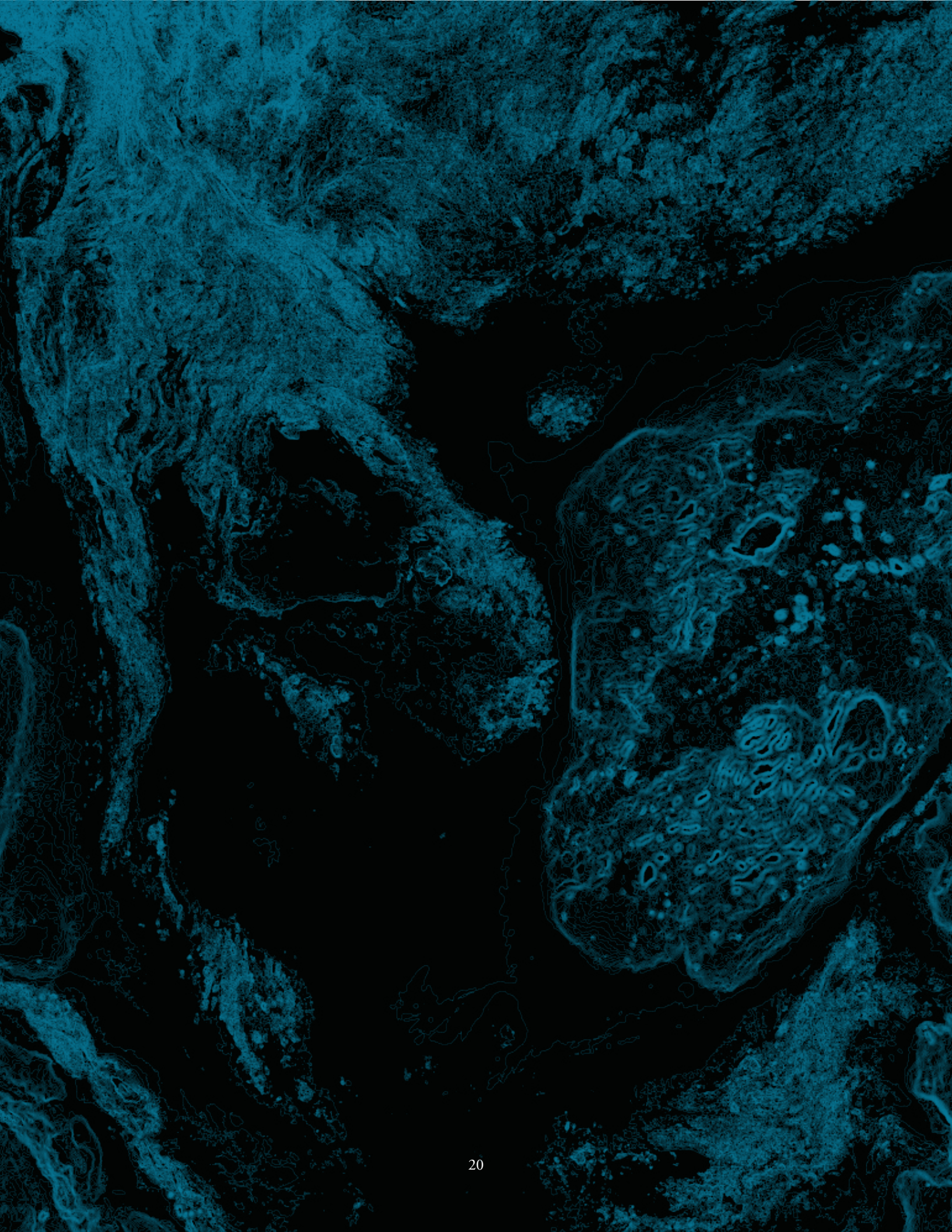
Fig. 11 *China's One Belt, One Road infrastructural development strategy, consisting of both land and sea economic networks*

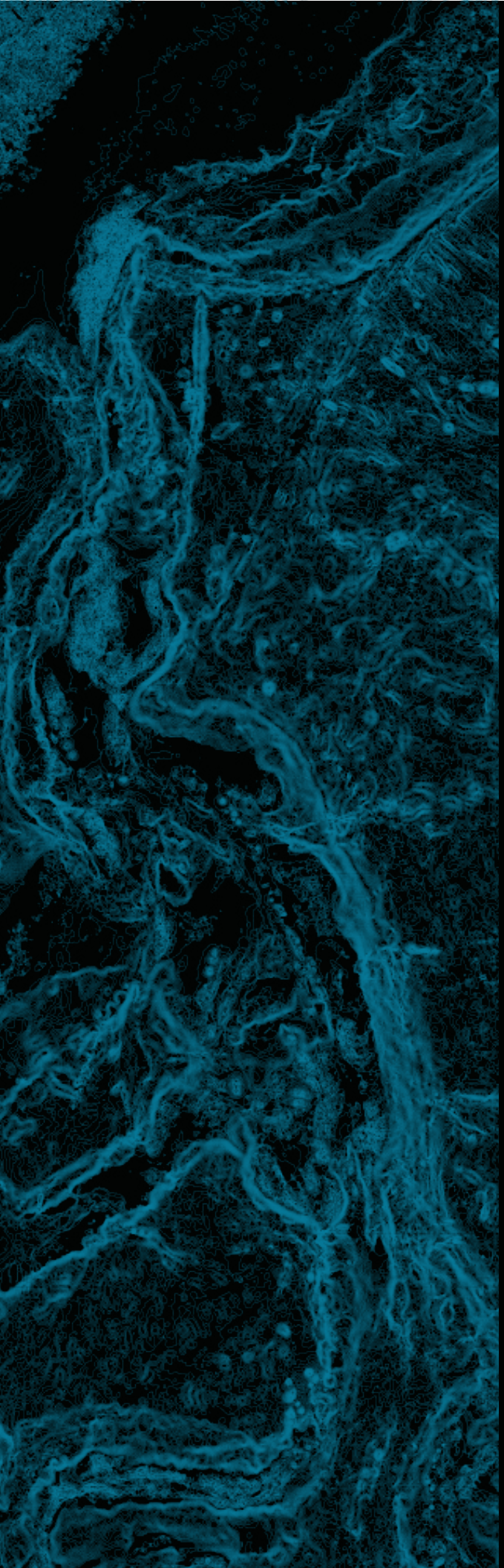


contrasted with the Western model, where it relied on short term, export driven, and domestic consumption strategies.

The tangible implications of these Chinese investments have taken the form of large-scale continental infrastructure, in both land and sea. The *Belt and Road Initiative* is one of China's most ambitious projects, aiming to construct an estimated $ 1.2 trillion worth of railroads, highways, bridges, and shipping lanes.[12] This would essentially recreate the ancient silk road that would tie together Asia, Africa, and Europe. With 71 countries planning to participate in this global project, China not only has diversified its investment portfolio but also shows on the world stage that it is willing to cooperate with other countries. Whether or not they can fill the role of becoming the next global hegemon is determined by the allegiances of the countries caught in between the two superpowers. As the increasing polarity between China and the US divides the countries in the South China Sea, the disputed region will soon play a crucial role in the future of development of the global order.

12 "Inside China's Plan to Create a Modern Silk Road." Morgan Stanley, January 30, 2018. https://www.morganstanley.com/ideas/china-belt-and-road.





PART II: EVOLUTION OF TERRITORIAL DELINEATION

This following chapter will highlight the layering of historical ideologies that has constructed our current perception of territory in the region. It will help frame today's state of affairs in the South China Sea by analyzing the evolution of tools used to delineate territory as well as the actors involved in these governance systems. This chronological study will also help frame this thesis proposal and position it in this larger narrative that's unfolding before us. It is important to note that this thesis doesn't offer a fixed perception of territory, rather its intention is to add to this constantly evolving construction.

TERRITORY AS RADIATION

Even before the arrival of colonial powers, the importance of trade in the South China Sea region was extremely pivotal in determining how this region was governed. The openness of trade allowed for ideas to shift back and forth which introduced Hinduism and Buddhism to Southeast Asia. These ideologies were heavily influential in shaping many of the civilizations in the South China Sea region in terms of city planning and the emergence of kingdoms. The kingdom of *Srivijaya* was one of the many rising powers in Southeast Asia that capitalized on the lucrative trading routes, securing the maritime choke point in modern day Sumatra.[1] However, the projection of sovereignty vastly differs from today's conception of power which stems from a Westphalian model that uniformly distributes sovereign rule over a strict, clear boundary. This model contrasts with the political system used in pre-1500 C.E. Southeast Asia where power was emanating radially from the center of a kingdom and as it reached the peripheries, power was diminished.

The "Mandala political system" was the term used to describe this alternative form of governance, which in fact gave agency to the communities that lived outside of the radial powers. These non-state actors wielded leverage due to their ability to quickly switch allegiances and their fluidity in their cultural identity.[2] Many of these communities were integral in this trade networks across India and China and operated in a semi-nomadic manner. They traveled continuously along coastlines either trading, smuggling, or even hired as mercenaries for regional kingdoms. Their relationship with land and sea was inverted, viewing land as hostile and plagued with thieves and tax collectors while the sea was abundant in food and mobility wasn't an issue. Their existence still echoes today with their descendants which can be linked back to the modern day Badjao of the Philippines, the Bajau of Malaysia, the Orang Laut of Indonesia, the Tanka of southern China, and the Dan of Vietnam.[3] These communities continue to live a semi-nomadic life, thriving off from fishing and trading. This historic precedent opens our eyes to see how this region was governed through blurred lines of territory among a population that was culturally ambiguous. Power was constantly shifting and diffusing throughout the region, without a clear dominant or weaker power.

Fig. 12 *Mandala governance structure diagram showing territory as a radiating power relationship*

Fig. 13 *Regional map of the South China Sea depicting the ancient central kingdoms* *(see next page)*

1 Hayton, Bill. The South China Sea: the struggle for power in Asia. New Haven: Yale University Press, 2014. 16.

2 Tambiah, Stanley Jeyaraja. "The Galactic Polity in Southeast Asia." *HAU: Journal of Ethnographic Theory* 3, no. 3 (2013): 503–34. https://doi.org/10.14318/hau3.3.033.

3 Hayton, Bill. The South China Sea: the struggle for power in Asia. New Haven: Yale University Press, 2014. 45.

ARCTIC
ANTARCTICA
EUROPE

ᓄᓇᕗᑦ ᓴᖅᑭᑦᑐᖅ
ᓄᓇᕗᑦ ᐃᓕᓴᕐᓂᖅ

TERRITORY AS FRONTIER

The age of discovery marked the arrival of colonial powers in the South China Sea. The Crown of Castile (modern day Spain), who were rivaled by the neighbouring Portuguese, was looking for an alternative route to China that avoided the Portuguese trading routes. Knowing that their maritime power was no match for the Portuguese, the Castile appealed to Pope Alexander VI to delineate the territory available to navigate.[4] Through a few iterations, two demarcation lines were drawn– splitting the world in two between the Portuguese and the Castile. This was known as the Treaty of Tordesillas and Treaty of Zaragoza. We begin to see the introduction of an arbitrator, a third party who settles disputes, when dealing with larger geopolitical conflicts. It is also important to note the medium used by the Pope to settle this dispute. During the age of discovery, cartography had drastically evolved alongside the Portuguese expansion. Portolan charts, which were early representations of maps that followed the wind rose lines of a compass, we used by the colonial powers as it began to accurately rationalize terrestrial boundaries through its relationship to wind systems.[5] This medium was also used during the drawing of the two demarcation lines, allowing for 2D lines to carry the spatial implications of colonialism. These lines inevitably advocated for viewing territory as a strict, rigid boundary used to fuel empires - eliminating its previous physiographic and cultural importance. It invokes the term used in international law, *Mare Clausum*, meaning "closed sea".[6] However, with the rise of the Dutch exploration and its rivalry with its Portuguese counterpart, this conception of a "closed sea" was challenged.

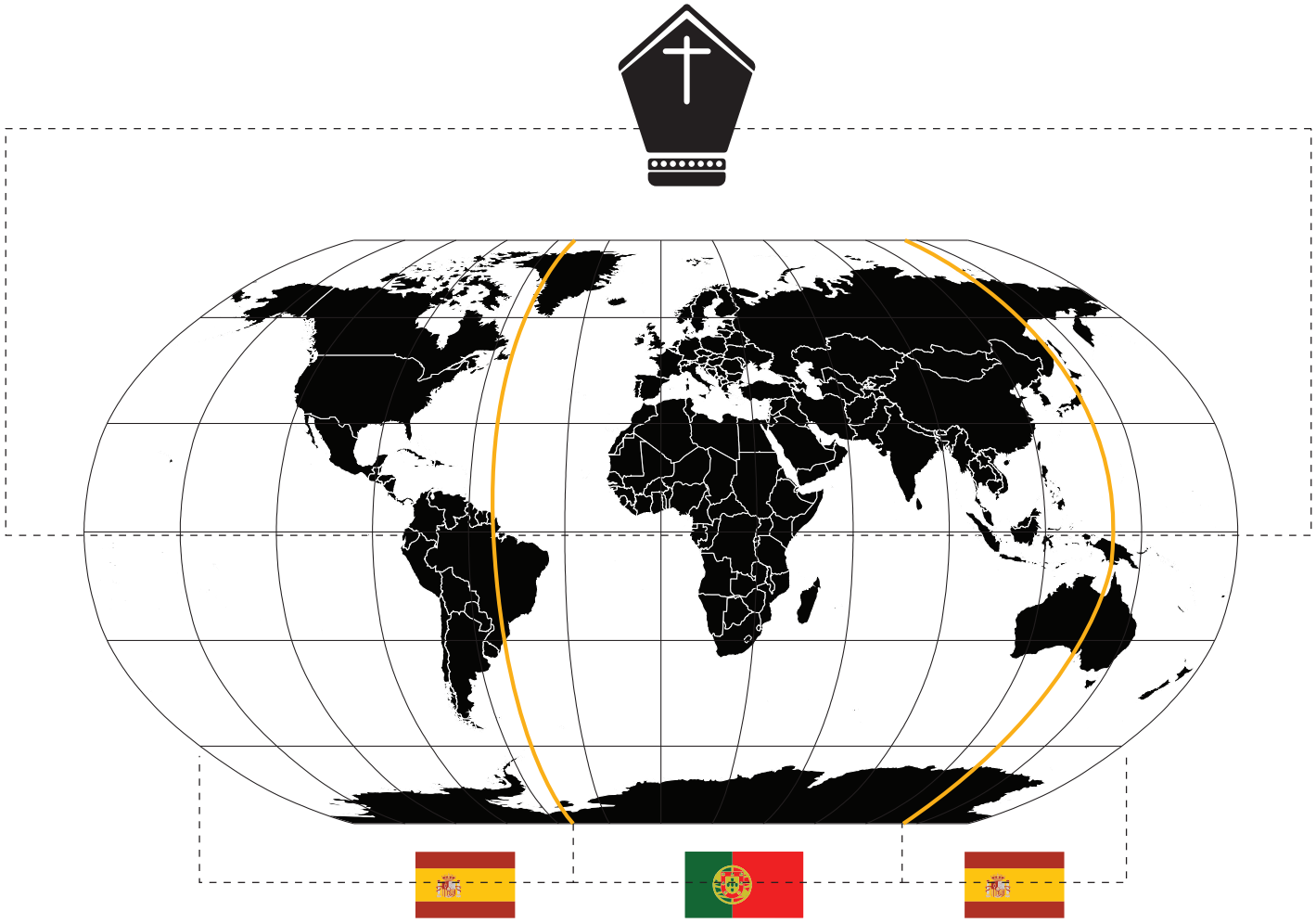
Fig. 14 *Territorial delineation determined by the Pope and demarcation lines - as it informs the two global halves, the Crown of Castile and the Portuguese*

Fig. 15 *Regional map of the South China Sea depicting colonial lore of the region* *(see next page)*

4 *Ibid, 92-93.*

5 Campbell, Tony. "'Portolan charts from the late thirteenth century to 1500 ". Map History / History of Cartography: THE Gateway to the Subject, November 11, 2019. http://www.maphistory.info/portolanchapter.html#terminology

6 Hayton, Bill. The South China Sea: the struggle for power in Asia. New Haven: Yale University Press, 2014. 38-39. .



Hugo Grotius was a Dutch jurist who was called upon by the Dutch East India Company to draft up a defense against the Portuguese monopoly. Grotius's manifesto, *Mare Liberum*, brought about a new principle that seen the sea as an international territory and that all nations can occupy it for seafaring trade.[7] This idea of "the free sea" denied any nation to claim sole ownership of the sea and advocated for nations to trade with each other without interference. His principles laid the foundations of international law and free trade. During the age of discovery, many questioned whom the seas belonged to, changing the narrative when it suits them best. These processes, along with the advent of cartography and the conflict-resolution tactics used by colonial powers, has intrinsically informed our perceptions of how we view territory today. Urging to expand one's empire and to look beyond to discover the unknown – the Frontier.

7 *Ibid.*

CHINA
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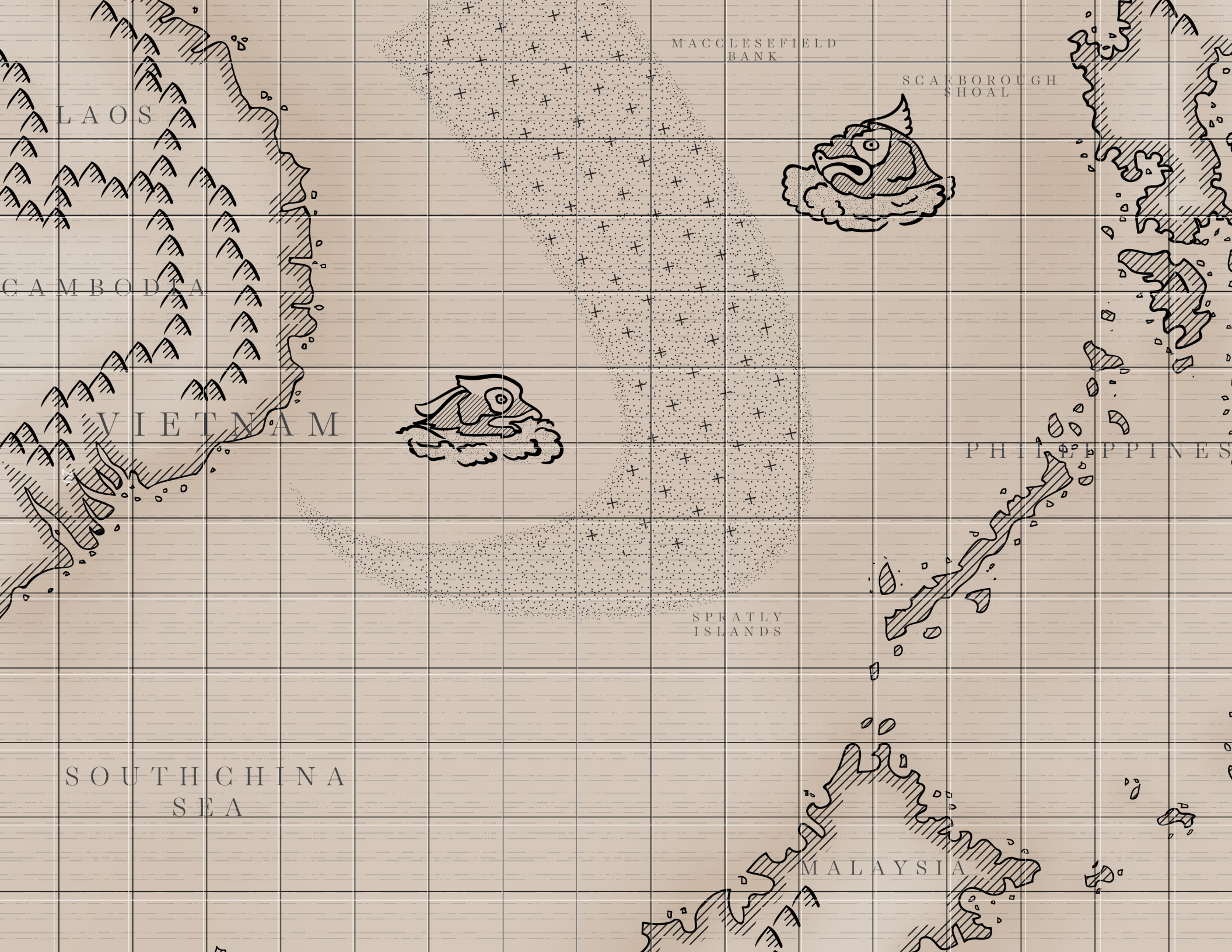
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MALAYSIA

TERRITORY AS GEOGRAPHY

During the rebuilding after the World Wars and with the conception of the UN, the global powers aimed to distance themselves from their colonial past and create mechanisms to prevent future disputes. One of these projects was UNCLOS, United Nations Convention on the Law of the Sea, which aimed to create a global standard in delineating territory among bodies of water. It recognized states as autonomous actors and understood territory as a relationship between a state and the natural physical features it owns- giving territorial entitlement to coastlines, islands, reefs, and rocks. They introduced policies that would clear up a sovereign's claim to a body of water with the projection of territorial lines from the baseline of a coastal state. These territorial lines defined internal waters, territorial waters, contiguous zones, and exclusive economic zones (EEZ).

In Part V, Article 65 of UNCLOS III, it touches upon the details of the EEZ:

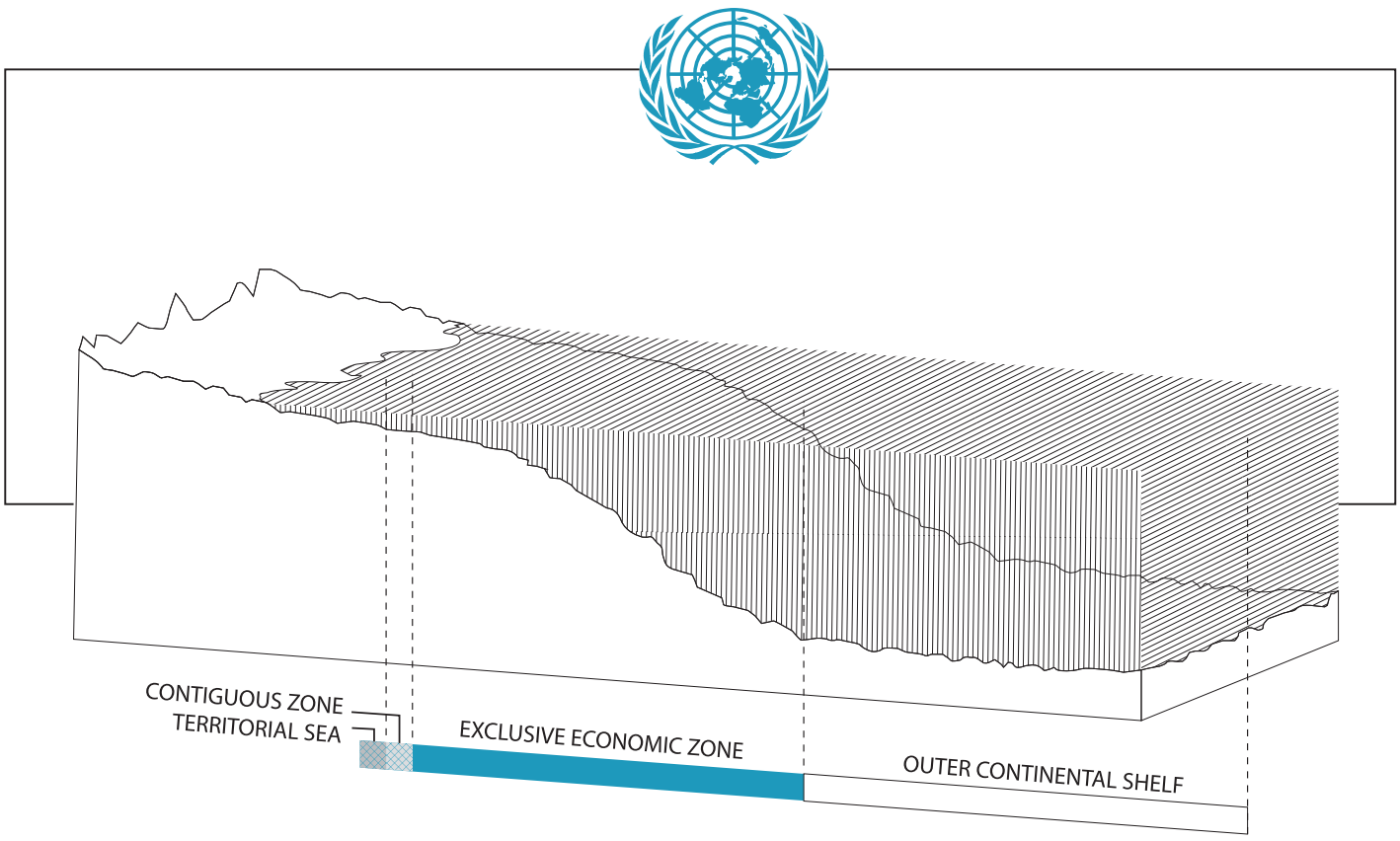
> *(a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds;*
>
> *(b) jurisdiction as provided for in the relevant provisions of this Convention with regard to:*
>
> *(i) the establishment and use of artificial islands, installations and structures;*
> *(ii) marine scientific research;*
> *(iii) the protection and preservation of the marine environment;* [8]

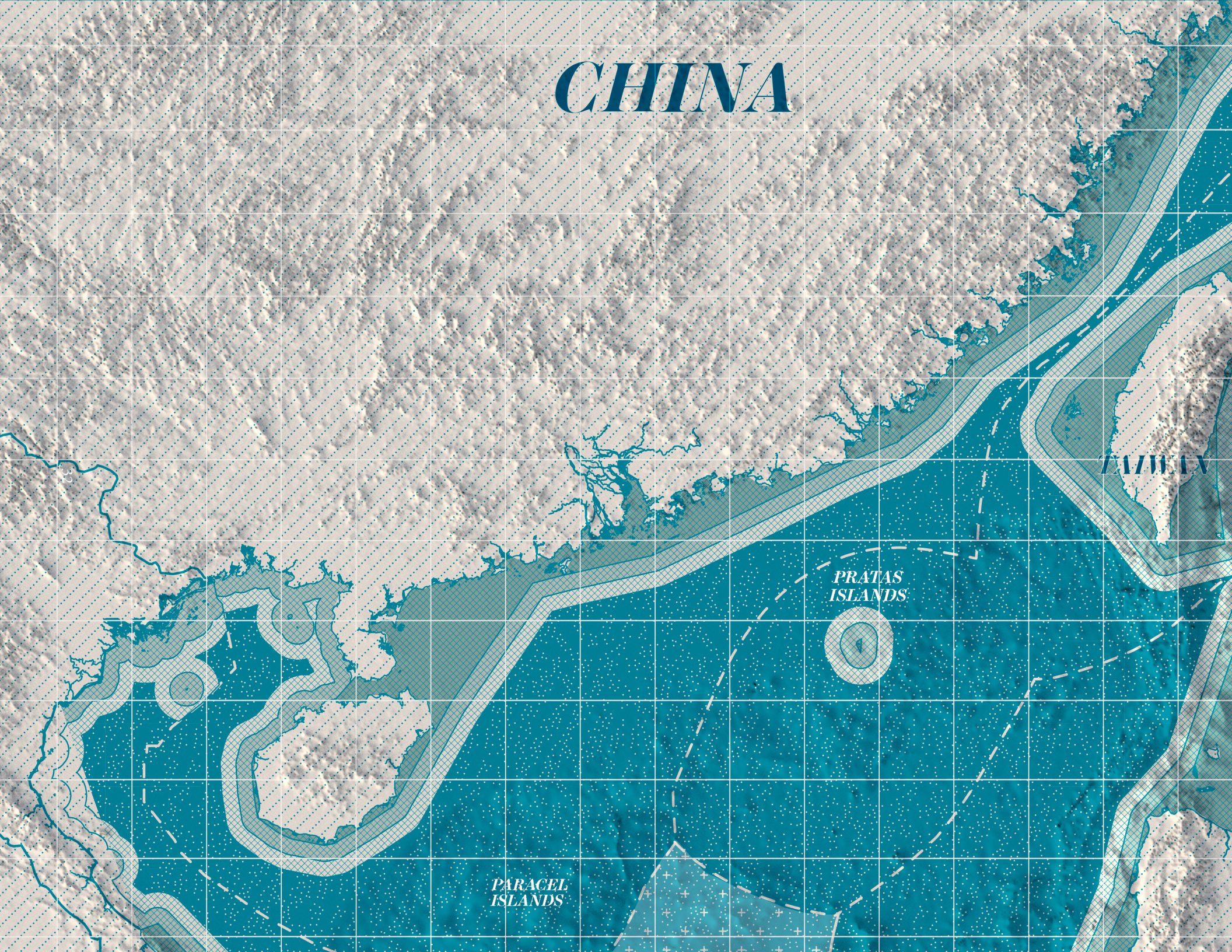
Also mentioned in UNCLOS is the notion of the "high seas" or international waters. This critical feature describes the region of sea beyond a countries EEZ, an area where nation is free to navigate, construct infrastructure, and exploit the region's resources. This concept of a common sea was founded after Hugo Grotius's *Mare Liberum*. Along with states, we begin to see now an intergovernmental organization has emerged as an actor that facilitates the delineation of territory.

Fig. 16 *Diagram depicting the relationship between a country's geographic features in regards to its sovereign entitlement*

Fig. 17 *Regional map of the South China Sea depicting UNCLOS delineation (see next page)*

8 UN General Assembly, Convention on the Law of the Sea, Part V, 10 December 1982


CONTIGUOUS ZONE
TERRITORIAL SEA
EXCLUSIVE ECONOMIC ZONE
OUTER CONTINENTAL SHELF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MALAYSIA

TERRITORY AS CAPITAL

In her publication, *Enduring Innocence*, Keller Easterling highlights *spatial products* around the world that defy and alter the control of state sovereignty. She organizes her case studies around the networks established by this neoliberal order. Globalization is seen as a force that transcends locality and views the world as a constant flow of data and capital. She introduces the *orgman* as a manager of logistics that operates in this global network.[9] From shipping ports to special economic zones, these spatial entities become a theater for logistical activity and are granted special privileges that exceed the power of the state. She interprets the absence of state sovereignty as operating in fiction - highlighting characters that bring life to this narrative. In this world of operational logistics, she also reveals actors that resist against the system, often categorized as errors or pirates.[10] Their actions work against the logic of the globalized systems but are extremely essential. They challenge these systems to become more robust and to rely on unpredictable factors that aren't accounted for in their code. Through her understanding of globalization as a supranational force that supersedes state sovereignty, she begins to emphasis the ambivalent nature of non-state actors. Depending on the circumstances, these actors toggle between aligning with state interests to working outside the realm of the state.

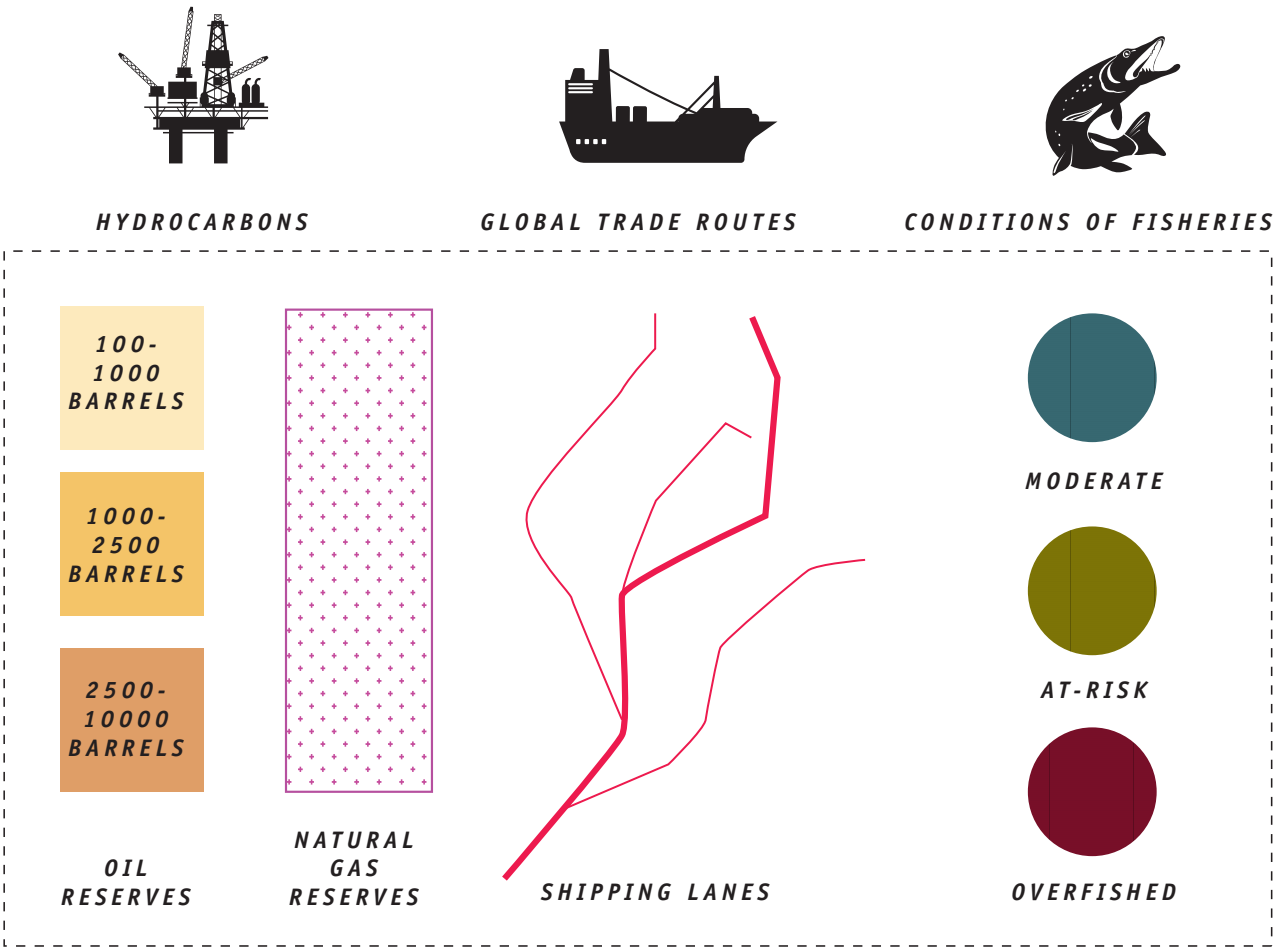
The South China Sea region is no exception, playing a crucial role in today's global logistics by conducting nearly one third of the world's maritime trade. The rise of multinational corporations (MNC) brings about the tools used to facilitate these global activities. These tools consist of shipping lanes, fibre optical cables, and special economic zones - each having the ability to bypass the power of the state either cutting through sovereign waters or circumventing around physical borders. These new spatial conditions begin to spawn "stowaways" who aim to capitalize on the weaknesses of this capitalist product. These actors comprise of illegal fisherman and sea hijackers, common threats to the South China Sea's maritime security.

Fig. 18 *Resources found in the disputed region: oil, natural gas, shipping lanes, and fisheries.*

Fig. 19 *Regional map of the South China Sea depicting parcels of territory dedicated for MNCs - global easements (see next page)*

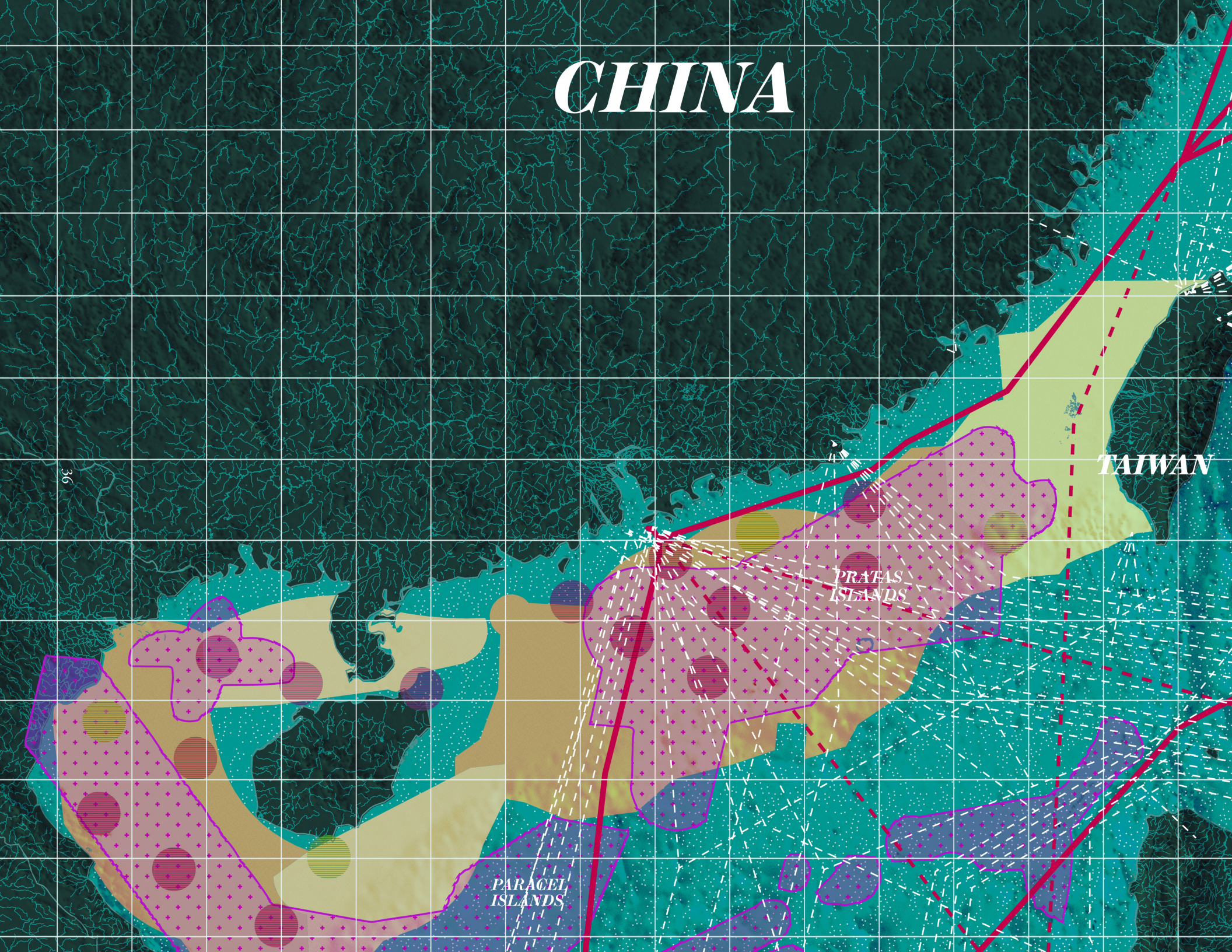
9 Easterling, Keller. *Enduring Innocence: Global Architecture and Its Political Masquerades*. Cambridge (USA): MIT Press, 2005. 2-5.

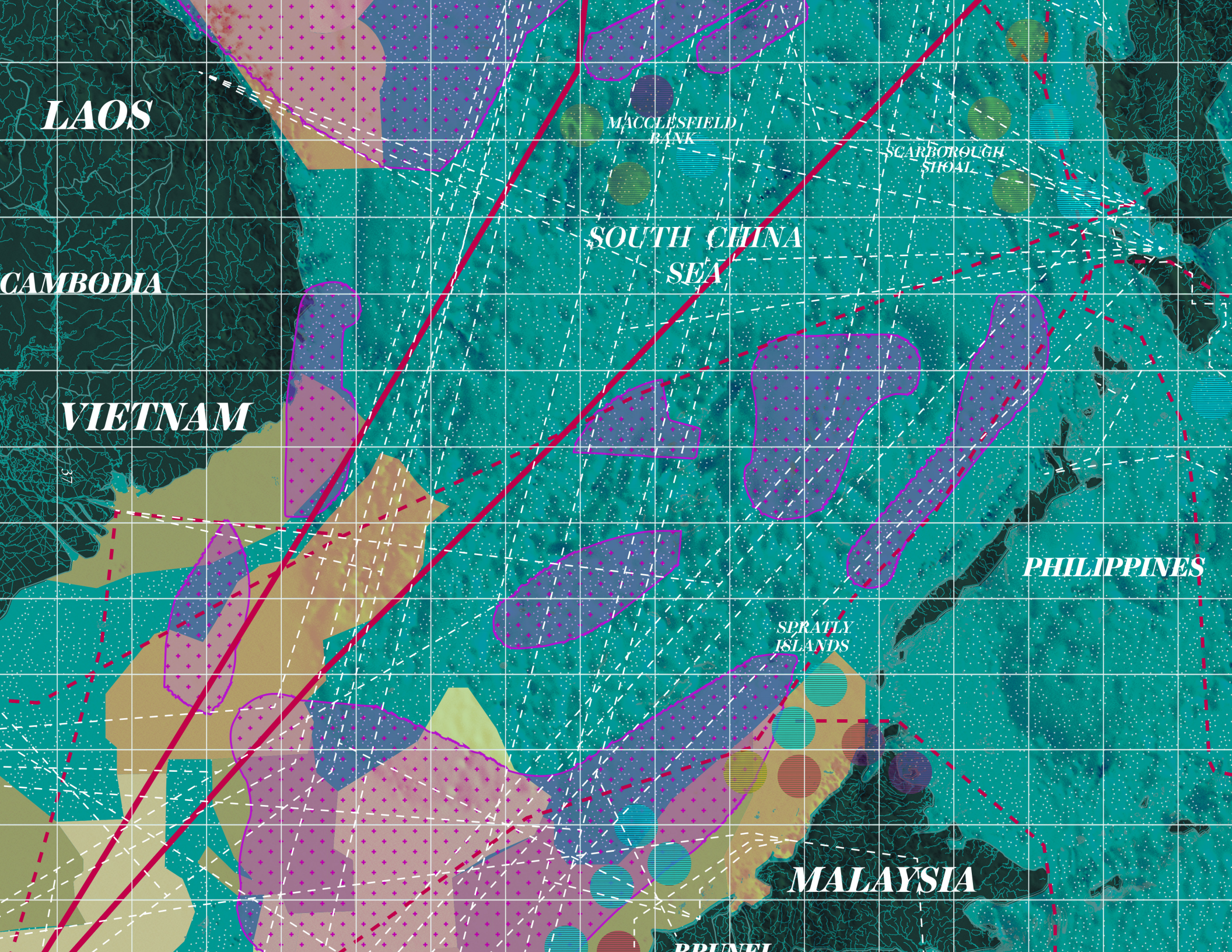
10 *Ibid, 124-134.*

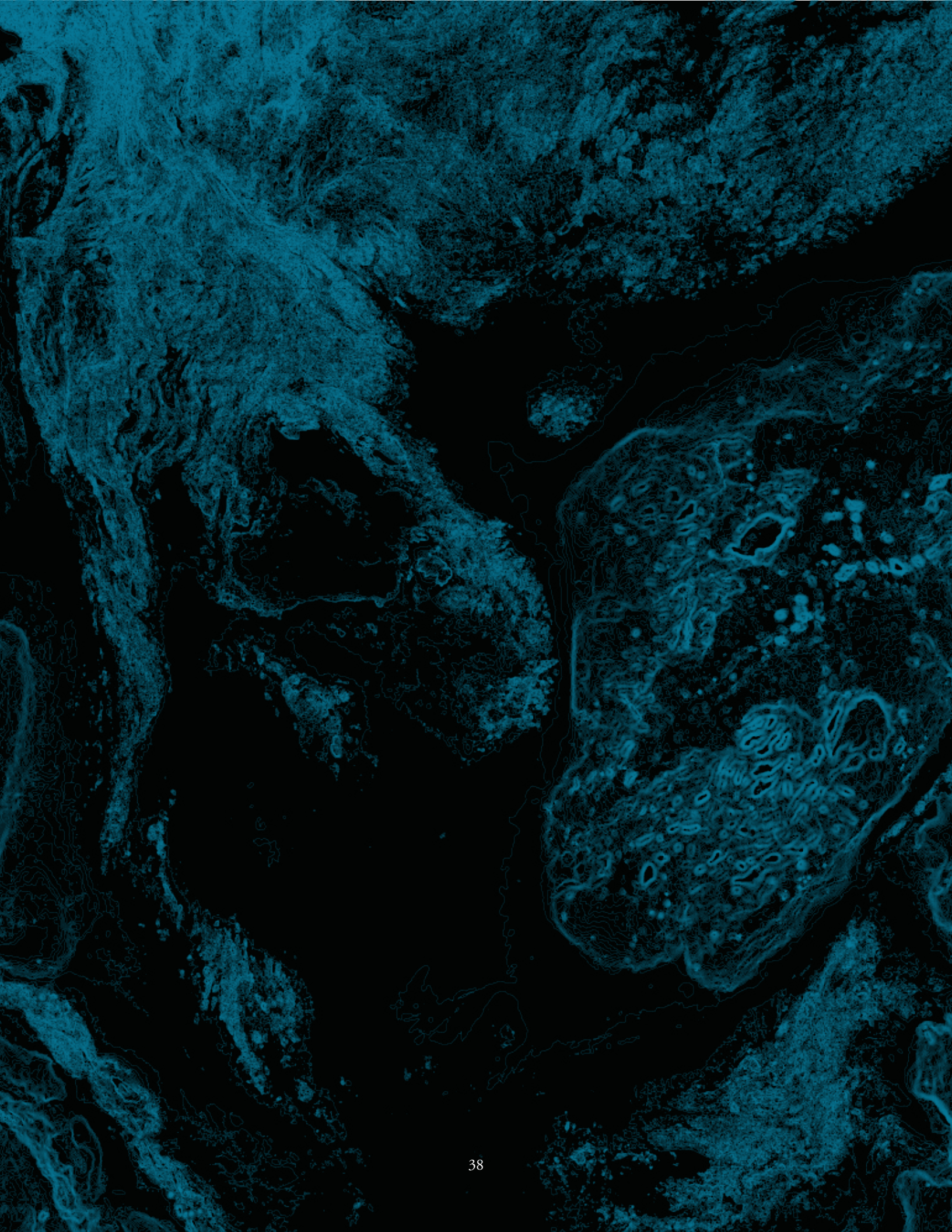


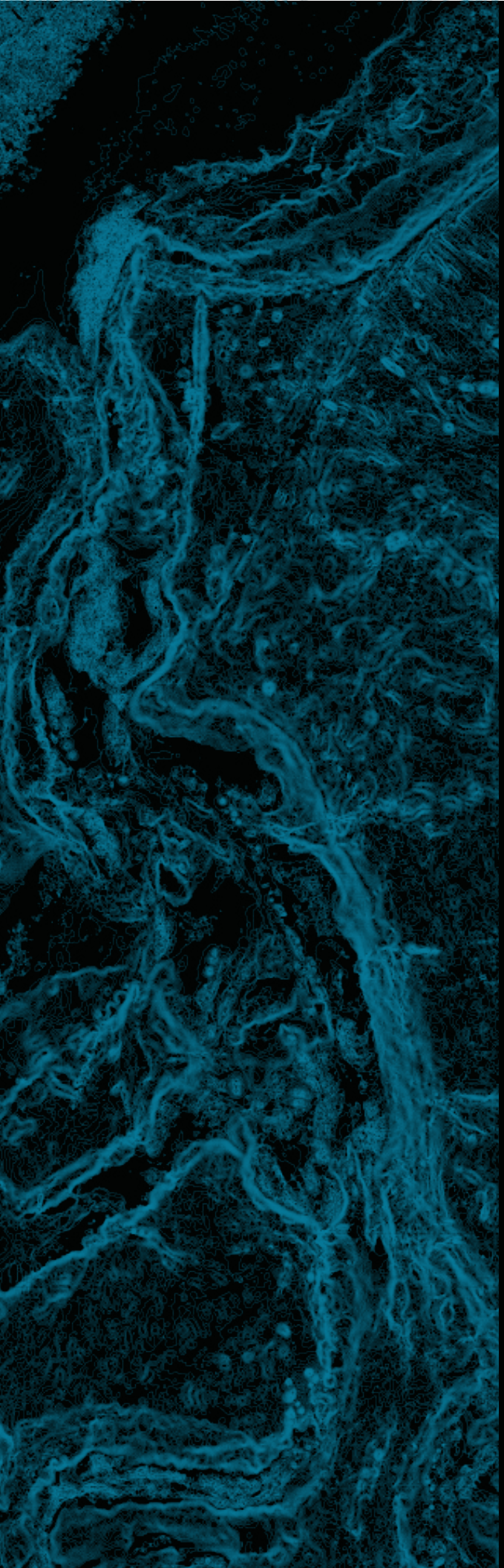
Illegal fisherman in particular, not only can undermine state policies regarding strict catch rates but can also align with state interests, serving as proxies that fight for a country's claim in the disputed sea.[11] In short, through the increasing reliance of global logistics infrastructure we start to see MNCs exercise their spatial agency through these acts of "global easements". These new spatial products also spawn unpredictable actors, or as Easterling refers to as errors and pirate, that aim to exploit the system. As the world becomes more connected and relies on the growing global network, these non-state actors are on a trajectory where they are projected to rival the influence of states - earning their stake in the South China Sea.

11 Hongzhou, Zhang. "The Dark Harvest of Chinese 'Black Ships.'" Lowy Institute. The Interpreter, January 24, 2019. https://www.lowyinstitute.org/the-interpreter/dark-harvest-chinese-black-ships.


CHINA
TAIWAN
PRATAS ISLANDS
PARACEL ISLANDS


LAOS
MACCLESFIELD BANK
SCARBOROUGH SHOAL
SOUTH CHINA SEA
CAMBODIA
VIETNAM
PHILIPPINES
SPRATLY ISLANDS
MALAYSIA





PART III: MODERN CLAIMS IN THE SOUTH CHINA SEA

CLAIMING SOVEREIGNTY: MILITARY OCCUPATION, CIVILIAN OCCUPATION, HISTORIC RIGHTS

As China continues to question the authority of the incumbent hegemon, the nations of ASEAN are caught in between this crossfire. As previously mentioned, the dispute can be understood through tiers of power relationships. The regional dispute between China and ASEAN is heavily informed by the larger hegemonic rivalry between the US and China. Thus, we can start to analyze the activity of states in the South China Sea in relation to their economic and military capabilities, utilizing tools that range from soft to hard power. Each state attempts to build a case to justify their claim to the sea, using an arsenal of spatial tools that brings agency to the built form. The three main tools currently used by states are: the military occupation of islands, civilian/ economic occupation of islands, and the claiming of historical rights.

Almost every nation in the dispute has militarized the landforms in the South China Sea in some capacity. These interventions range from small stilt-structured outposts to large scale land reclamation projects, each reflecting the economic and militaristic capabilities of its respective country. However, the recent construction of the Chinese artificial islands in the disputed area has sparked fear within the region. These extensive infrastructure projects houses runaways, hangars, observation towers, weather facilities, and in some cases missile launchers.[1] China's justification for these actions claim that they are necessary in order to prepare themselves from external threats of the West and from piracy within the South China Sea. As China continues to ramp up their military development on these artificial islands, they have caught the rest of the world's attention. With the help of satellite imagery, the growth of these islands can be monitored through commercial observation.

Fig. 20 *Fiery Cross Reef - Chinese constructed artificial island*

1 Wingfield-Hayes, Rupert. "China 'Has Deployed Missiles in South China Sea' - Taiwan." BBC News. BBC, February 17, 2016. https://www.bbc.com/news/world-asia-china-35592988.

3.1 KM CONCRETE RUNWAY
RUNWAY CONTROL TOWER
LIGHTHOUSE
RADOME AND WEATHER RADAR
MULTI-STOREY BUILDINGS
LAGOON
OBSERVATION TOWERS

Fig. 21 *Evolution of military installments on Fiery Cross Reef*

Fig. 22 *Chinese military efforts to produce a self-sustaining environment for military personnel*

湖南

In Part VIII Article 121 *Regime of Islands* of UNCLOS, it states "Rocks which cannot sustain human habitation or economic life of their own shall have no exclusive economic zone or continental shelf".[2] These international laws begin to shape how states build their claim, resorting to softer tactics like the civilian occupation of islands. Pag-asa island is a Philippine occupied island where most of its inhabitants are subsided citizens of the Philippines, solely brought there to strengthen the state's claim. We can see the political tactics used by the Philippine government to incentivise their citizens to relocate onto this island, bolstering their nationalistic interests.[3] Besides human occupation through settlement, a country can build their case through touristic means. Malaysia announced in 1991 that they transformed the island of Terumbu Layang Layang into a tourist resort. It consisted of a hotel and an airstrip that supports small civilian and military aircrafts. China also announced the opening of tourist attractions on the Paracel islands.[4] Woody island, the most well-known island in the Paracel archipelago, is home to an airport, broadcasting station, two museums, government offices, military facilities, and residential houses for long-term and short-term fisherman.[5]

2 UN General Assembly, Convention on the Law of the Sea, Part VIII, 10 December 1982

3 Hayton, Bill. The South China Sea: the struggle for power in Asia. New Haven: Yale University Press, 2014. 104.

4 Valencia, Mark J. China and the South China Sea disputes: conflicting claims and potential solutions in the South China Sea . Oxford: Oxford Univ. Press, 1995. 8-9.

5 Tiezzi, Shannon. "South China Sea Militarization: Not All Islands Are Created Equal." – The Diplomat. for The Diplomat, March 1, 2016. https://thediplomat.com/2016/03/south-china-sea-militarization-not-all-islands-are-created-equal/.

Fig. 23 *Layang Layang - Malaysian tourist island*

Fig. 24 *Tourist accommodations and amenities on Layang Layang island*

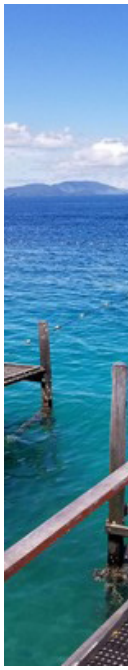
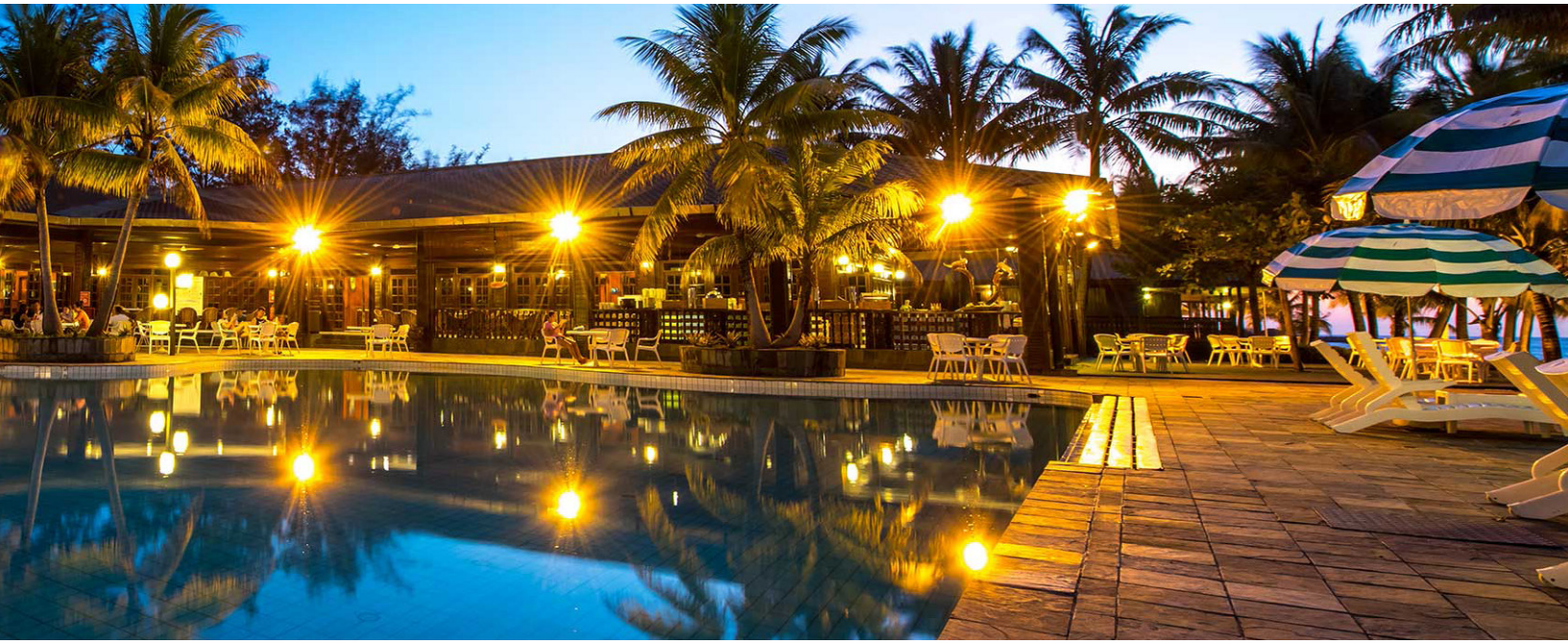


Fig. 25 *Recreational activities on Layang Layang island*



Lastly, we start to see countries like China rely on historic and cultural ties to the region in order to build their claim to the sea. Following the surrender of Japan in 1947, China published "Map of the South China Sea Islands" which indicated an arbitrary *nine-dash line* that depicted China owning 90% of the sea as well as most of its archipelagos.[6] This infamous nine-dash line has been China's most controversial claim in this conflict. The basis for their historical rights stems from the principle of first discovery. They claim that the Spratlys and Paracel archipelago were discovered by Chinese sailors around 100 AD. They provided forensic evidence such as axes and ceramics which were found on these islands- belonging to the Han dynasty which ruled China during the first and the second century.[7] Not to mention, traces of Chinese coins dating back to the reign of Emperor Wang Mang (3 BC to 23 AD) have been found on the Paracel islands.[8] China even pulls from its rich, archaic literature, *Han Shu* which was written about 100 AD. This chronicle speaks about long voyages made by Chinese mariners and mentions the existence of the islands in the South China Sea. Other literary texts reports voyages of monk Fa Hsien, who was returning from India in 414 AD and sailed through the Paracel islands- at a time where China's coastal and maritime shipping was blooming, rivaling the level of the Arab, Persian, and Indian fleet.[9] Thus we begin to see China pull from its rich past, constructing their claim from a variety of physical and literary mediums. The infringement of their territory creates an infringement on their culture, ultimately creating a link between territory and culture.

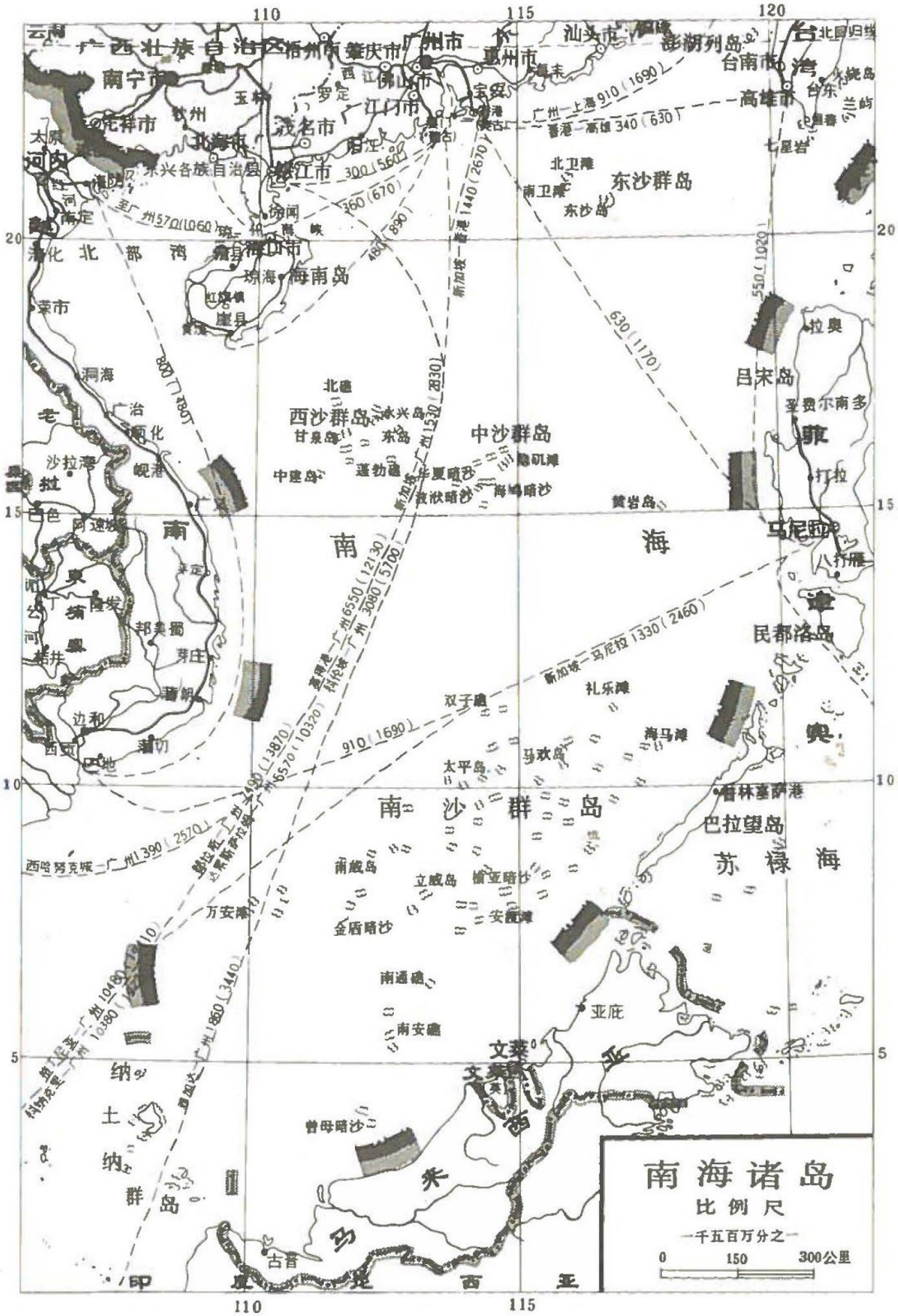
6 Zhen, Liu. "What's China's 'Nine-Dash Line' and Why Has It Created so Much Tension in the South China Sea?" South China Morning Post, September 18, 2018. https://www.scmp.com/news/china/diplomacy-defence/article/1988596/whats-chinas-nine-dash-line-and-why-has-it-created-so.

7 Catley, Robert, and Makmur Keliat. Spratlys: the dispute in the South China Sea. Aldershot: Ashgate, 1997. 33.

8 Heinzig, Dieter . Disputed Islands in the South China Sea. Hamburg: Institute of Asian Affairs, 1976. 21- 27.

9 *Ibid.*

Fig. 26 *Map of China's historical nine dash line claim in the South China Sea (1947)*


南海诸岛
比例尺
千五百万分之一
0 150 300公里
广州市
海口市
海南岛
东沙群岛
西沙群岛
中沙群岛
南沙群岛
吕宋岛
民都洛岛
巴拉望岛
苏禄海
南海
北部湾
纳土纳群岛
马来西亚
印度尼西亚
文莱
亚庇
古晋
曾母暗沙
万安滩
南通礁
南安礁
金盾暗沙
南威岛
立威岛
太平岛
双子礁
礼乐滩
海马滩
马欢岛
中建岛
黄岩岛
海鸟暗沙
广州—上海 910（1690）
香港—高雄 340（630）
新加坡—香港 1440（2670）
新加坡—马尼拉 1330（2460）
西哈努克城—广州 1390（2570）
110
115
120
20
15
10
5

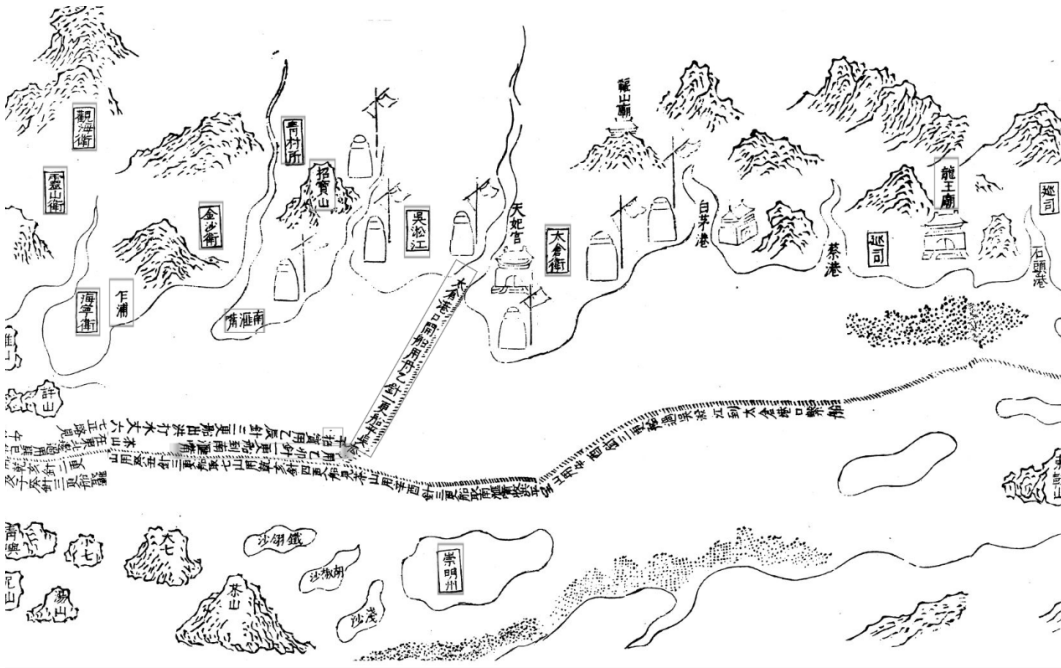


Fig. 27 *Mao Kun Map, depicting the Forbidden City , Beijing, China*

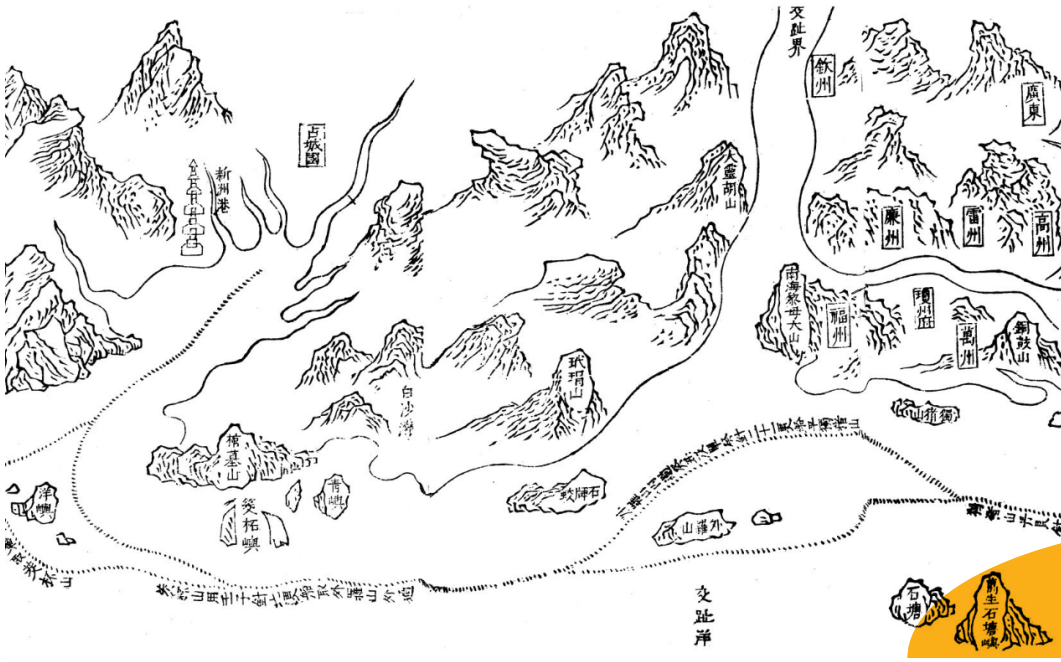
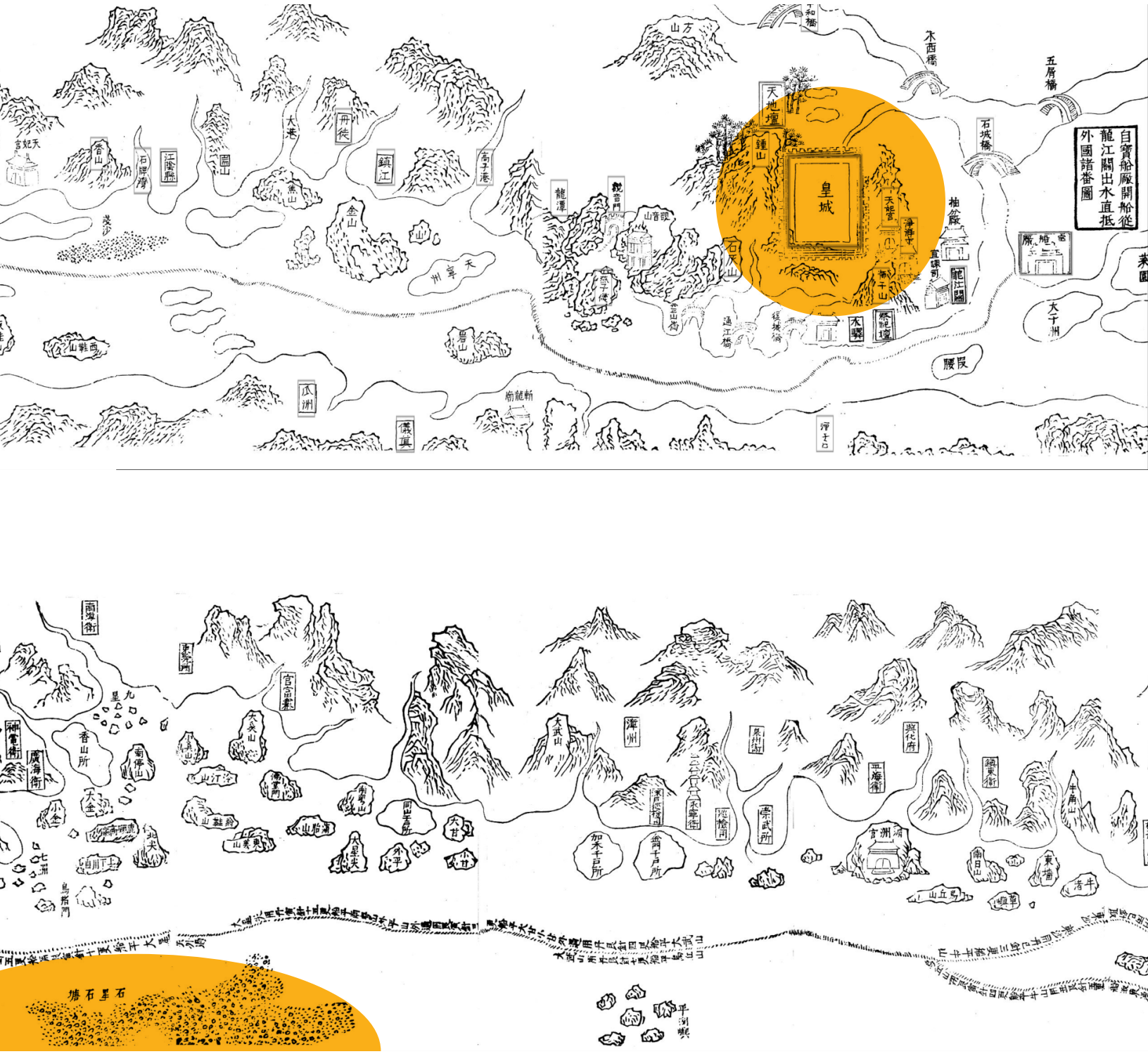


Fig. 28 *Mao Kun Map, depicting the Spratly islands*


自寶船廠開船從龍江關出水直抵外國諸番圖
皇城
天地壇
鍾山
石灰山
天妃宮
天寧州
龍潭
觀音門
石城橋
五屑橋
木西橋
大千洲
臨江關
瓜洲
儀真
斬龍廟

ENVIRONMENTAL THREATS: OVERFISHING, ILLEGAL POACHING, CONSTRUCTION OF ARTIFICIAL ISLANDS

Today we are stuck in this political stagnation on how to delineate territory in the South China Sea. With China's questioning of our current liberal institutions, states have taken upon themselves to assert their claims through a variety of methods. The prolonging of conflict resolution not only hinders state economies and fuels political instability, but also places a tremendous strain on the natural environment. This has inevitably led to the neglect of the region's ecosystem and maritime security. The following highlights three environmentally harmful practices conducted by states in the region: overfishing, illegal poaching, and construction of artificial islands. This thesis aims to address these specific activities and use it as a launching point to mobilize the proposed marine park program.

Officially employing over 3.7 million people, the fishing industry in the South China Sea remains crucial to the regional and global economy. However, since the 1950s, 70-95 % of its total fish stocks have been overfished.[10] In the report "Illuminating the South China Seas Dark Fishing Fleet", Washington think-tank, CSIS has uncovered the discrepancies regarding the catch rates enforced by states and the actual activity in the disputed sea. By cross-referencing data from satellite technologies, the think-tank was able to catch the inconsistencies between visible light emitted in the South China Sea at night and the absence of Automatic Identification Systems (AIS) signals, leading to believe that fishing vessels deliberately turned off their required transceivers to veil their activity. This raises questions regarding the accuracy of the reports regarding catch rates provided by states in the region as it skews and undermines the growing disappearance of fish stocks.

Fig. 29 *Visible infrared imaging radiometer suite (VIIRS) noting china's fishing ban in 2018*

10 Poling, Gregory. "Illuminating the South China Sea's Dark Fishing Fleets." Stephenson Ocean Security Project. January 9, 2019. https://ocean.csis.org/spotlights/illuminating-the-south-china-seas-dark-fishing-fleets/.

JAN 2018

FEB 2018

MAR 2018

APR 2018

MAY 2018 (* PRC fishing ban season)

JUNE 2018 (* PRC fishing ban season)

JULY 2018 (* PRC fishing ban season)

AUG 2018 (* PRC fishing ban season)

SEPT 2018

OCT 2018

NOV 2018

DEC 2018

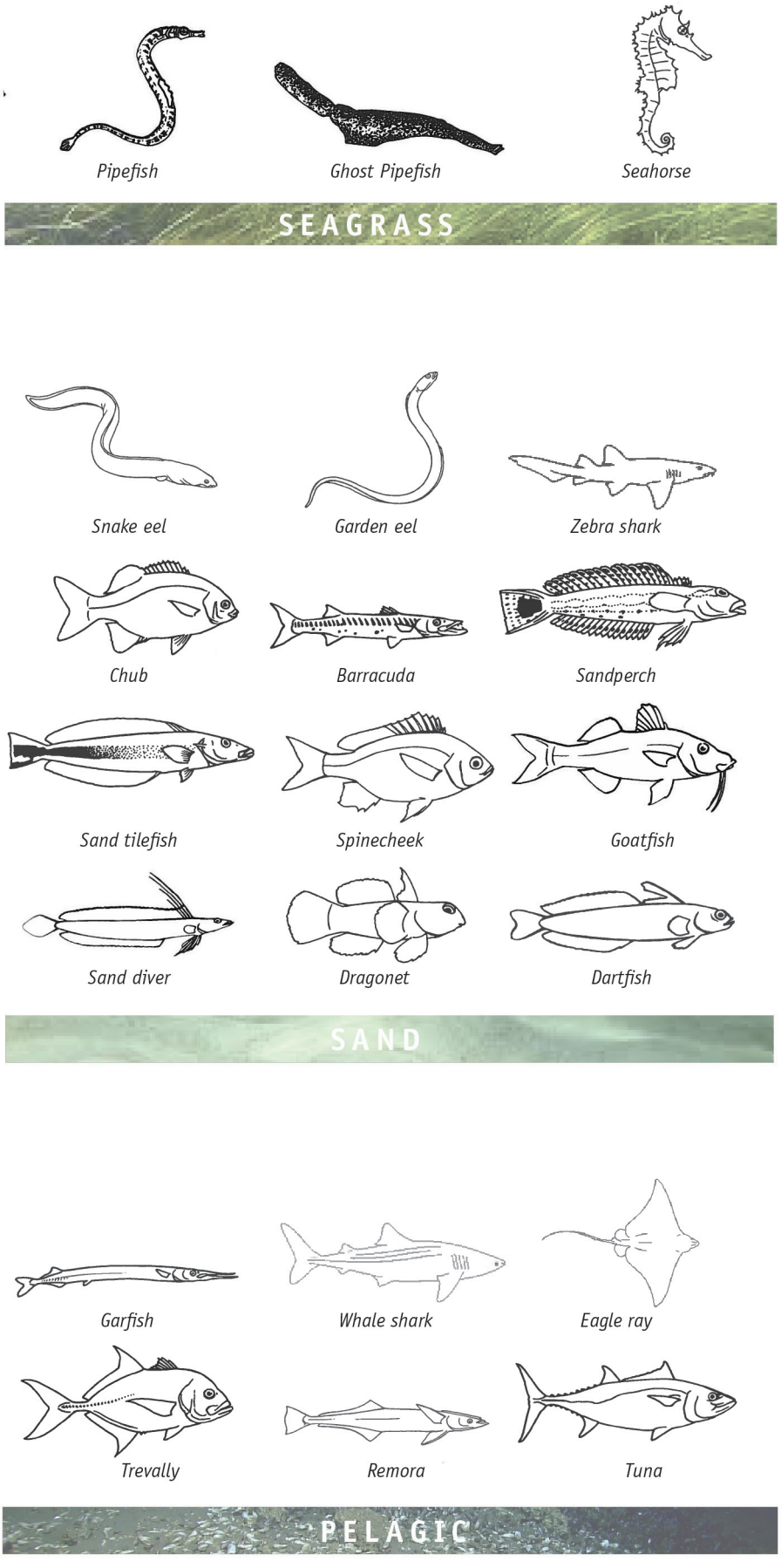
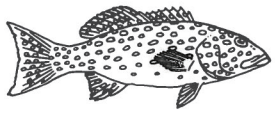
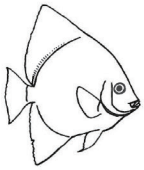


Fig. 30 *Catalog of the biodiversity and its respective marine habitats in the South China Sea*

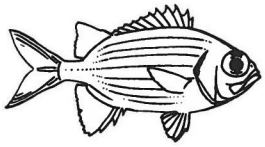


Grouper

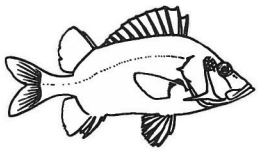
Dottyback



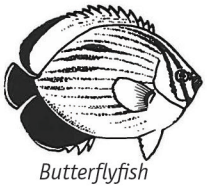
Batfish



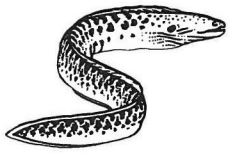
Soldierfish



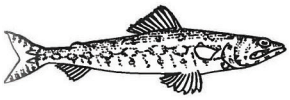
Squirrelfish



Butterflyfish



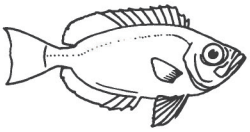
Moray



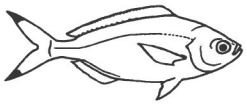
Lizardfish

Catfish

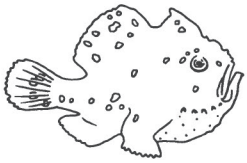
Emperor



Bigeye

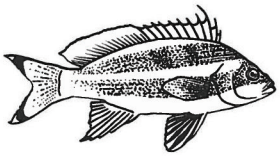


Fusilier

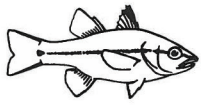


Frogfish

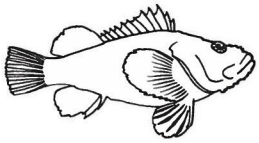
Razorfish



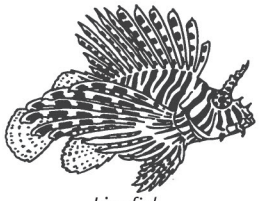
Anthias



Cardinalfish



Scorpionfish

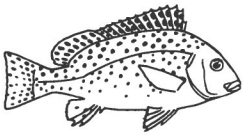


Lionfish

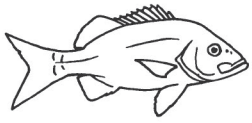
Trumpetfish

Flutemouth

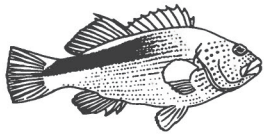
Clingfish



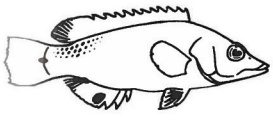
Sweetlips



Snapper

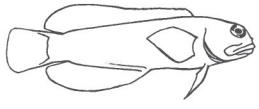


Hawkfish



Hogfish

Wrasse



Jawfish

In addition to the growing concern over the depletion of fish stocks, the activity of illegal poachers has also compromised the health of the region's coral reefs. These habitats serve as the spawning ground for marine species in the South China Sea. Giant clams and sea turtles are the most sought-after commodities, despite being extremely crucial to the ecosystem. The process of extracting these giant clams involves swinging a boat's propeller side to side as it loosens the giant clam from the reef.[11] Once the giant clam is dislodged from the reef, it is hoisted onto the boat and sold on the black market for as much as $150,000 USD. This operation ultimately leaves the coral reefs being sterile as it's covered with scarring from the dislodging.

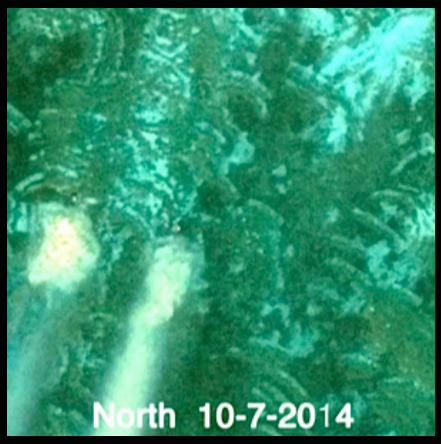
Fig. 31 *Healthy coral reef environment on Pag-asa Reef*

Fig. 32 *Bleached coral reef environment due to illegal poaching practices*

Fig. 33 *Catalog of the damaged coral reefs and the scarring from the giant clam extraction process*

11 Lee, Victor Robert. "Satellite Imagery Shows Ecocide in the South China Sea." – The Diplomat. for The Diplomat, January 22, 2016. https://thediplomat.com/2016/01/satellite-images-show-ecocide-in-the-south-china-sea/.

Cuarteron 3-8-2014


North 10-7-2014

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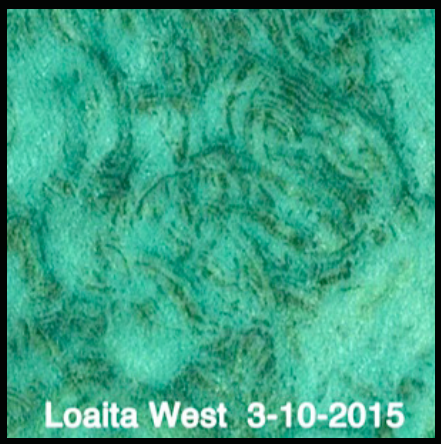
Livock 1-19-2014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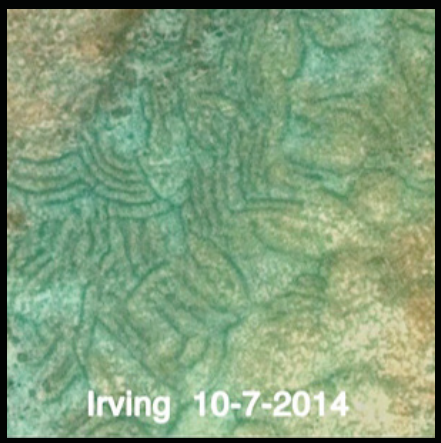
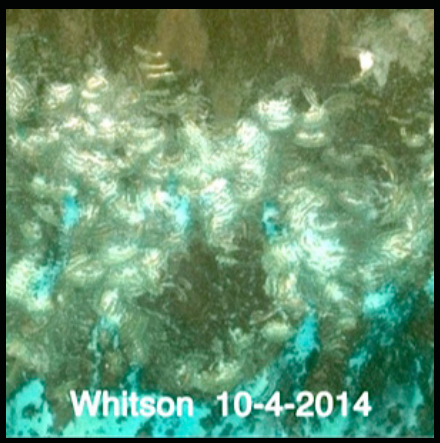

Irving 10-7-2014

Holiday 10-4-2014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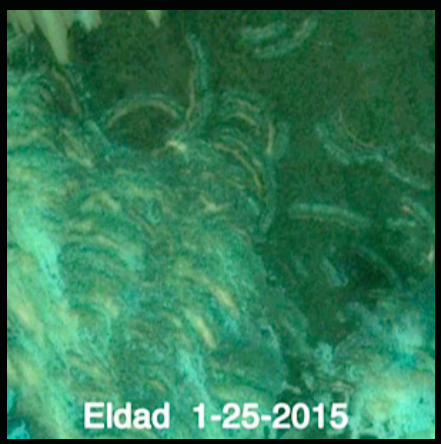
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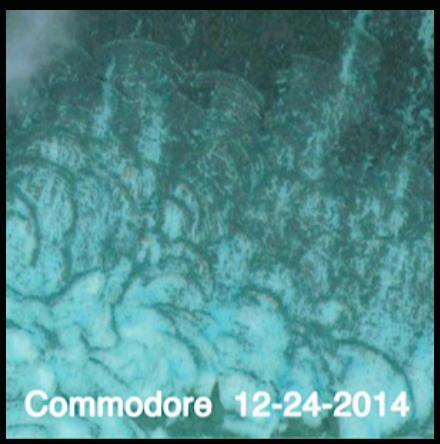
Ross 10-4-2014


Commodore 12-24-2014

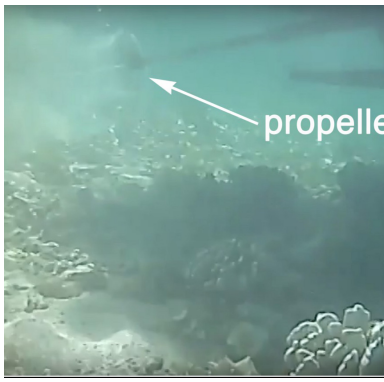
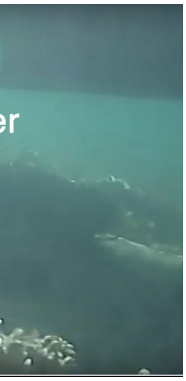


Fig. 34 *Sequence of the illegal poaching of giant clams*

Fig. 35 *Processing and crafting of giant clams as a luxury export*

auxiliary propeller
with long shaft

motor may tilt to extend prop


er

stack of shells on boat

transferring shell to boat

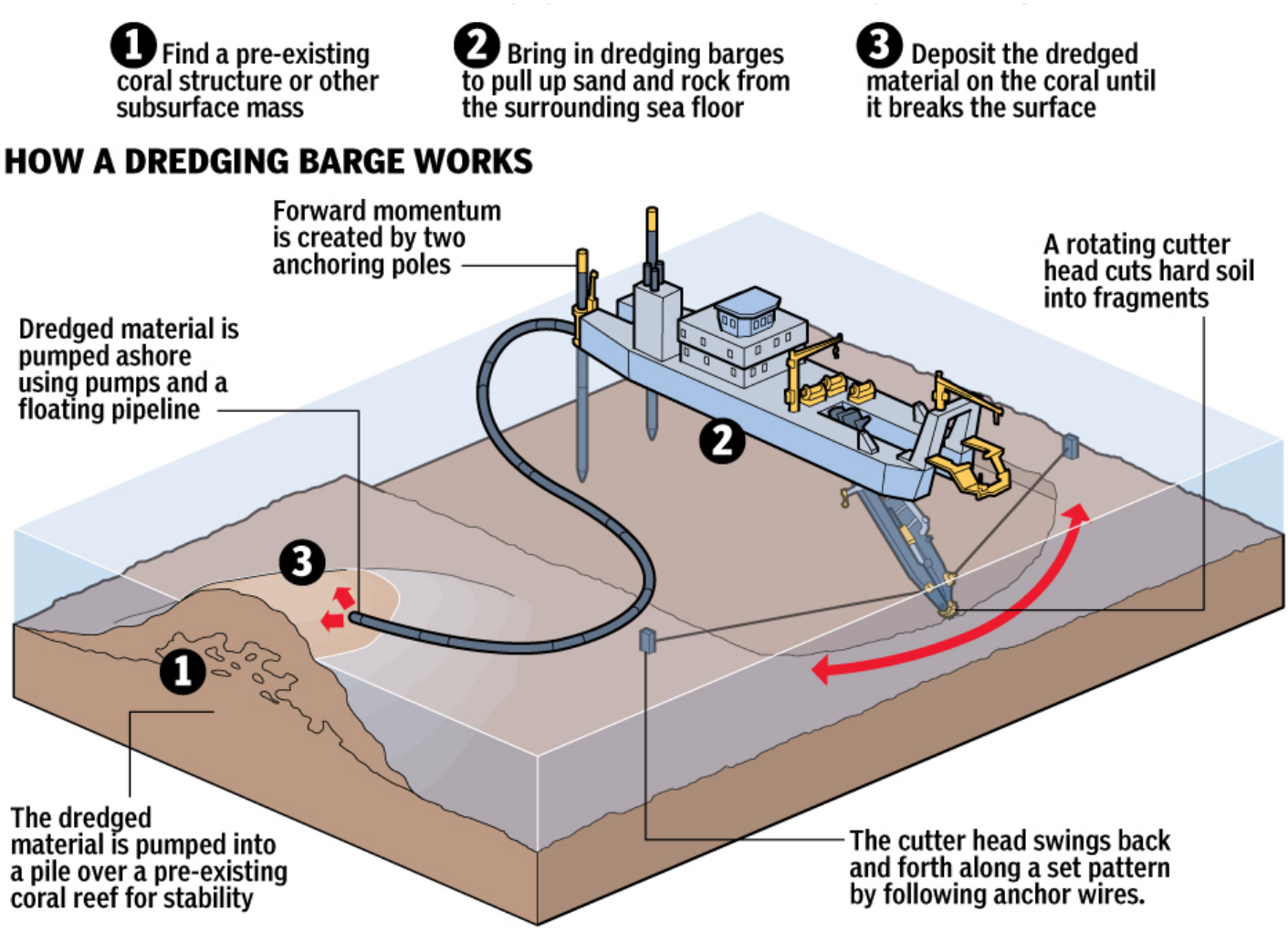


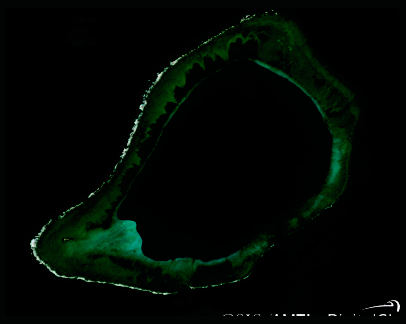
Fig. 36 *Breakdown of the dredging process involved in the construction of artificial islands*

Fig. 37 *Timelapse of China's artificial island building practice: Subi Reef, Fiery Cross Reef, Mischief Reef (left to right)*

Lastly, this thesis aims to highlight the environment implications of the artificial islands in the South China Sea. Construction starts with using a cutter-suction dredger to drill into the seabed to producing loose sediment. This sediment is then suctioned and displaced through a floating pipe which deposits the material on top of an existing coral reef - serving as a platform for the new island.[12] The sediment plumes from the drilling process increases the turbidity of the water, making the environment unfit for marine species. Backhoes and bulldozers then landscape and level the terrain of the island. China has been criticized for their large-scale dredging operations in comparison to the other states in the South China Sea, as they occupy three of the largest islands in the Spratly archipelago. In fact, an estimated total of 2.7 km² of reclaimed land was needed to create the Chinese artificial island on Fiery Cross Reef.[13] These man-made islands not only give China a foothold in the disputed

12 Chew, Howard. "Giant Clam Poaching Wipes Out Reefs in South China Sea." National Geographic, July 12, 2016. https://www.nationalgeographic.com/news/2016/06/south-china-sea-coral-reef-destruction/.

13 Beech, Hannah. "South China Sea: Basketball Courts on Artificial Islands." Time. Time, May 23, 2016. https://time.com/4341510/south-china-sea-artificial-islands/.



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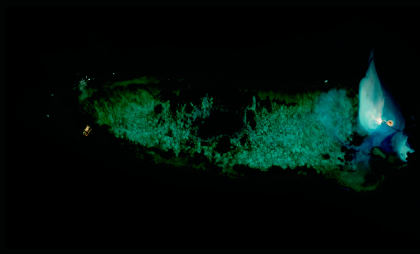

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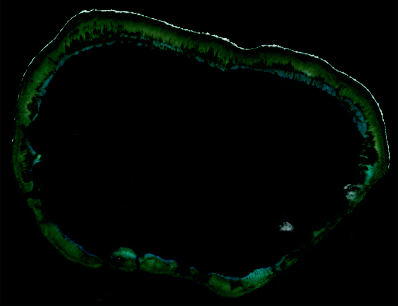

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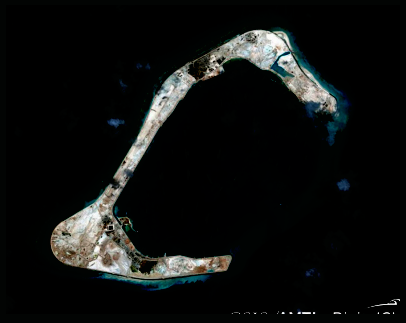

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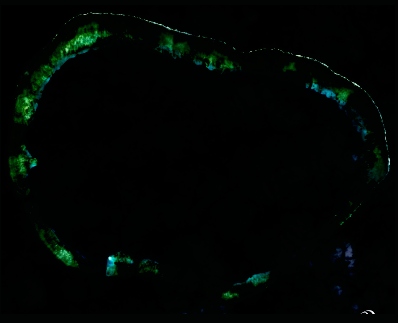

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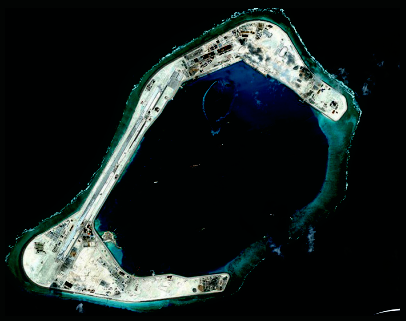

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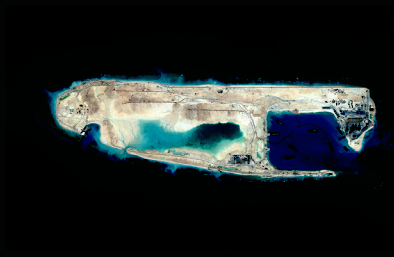

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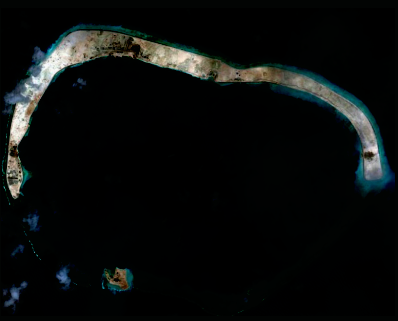

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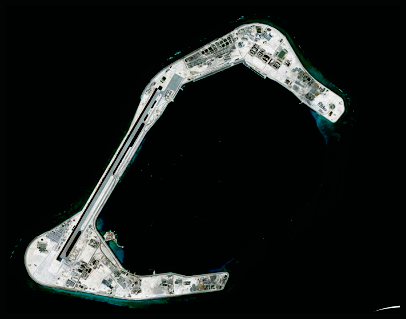


MAY 2016

APRIL 2015

MARCH 2016

DECEMBER 2017

SEPTEMBER 2015

OCTOBER 2017

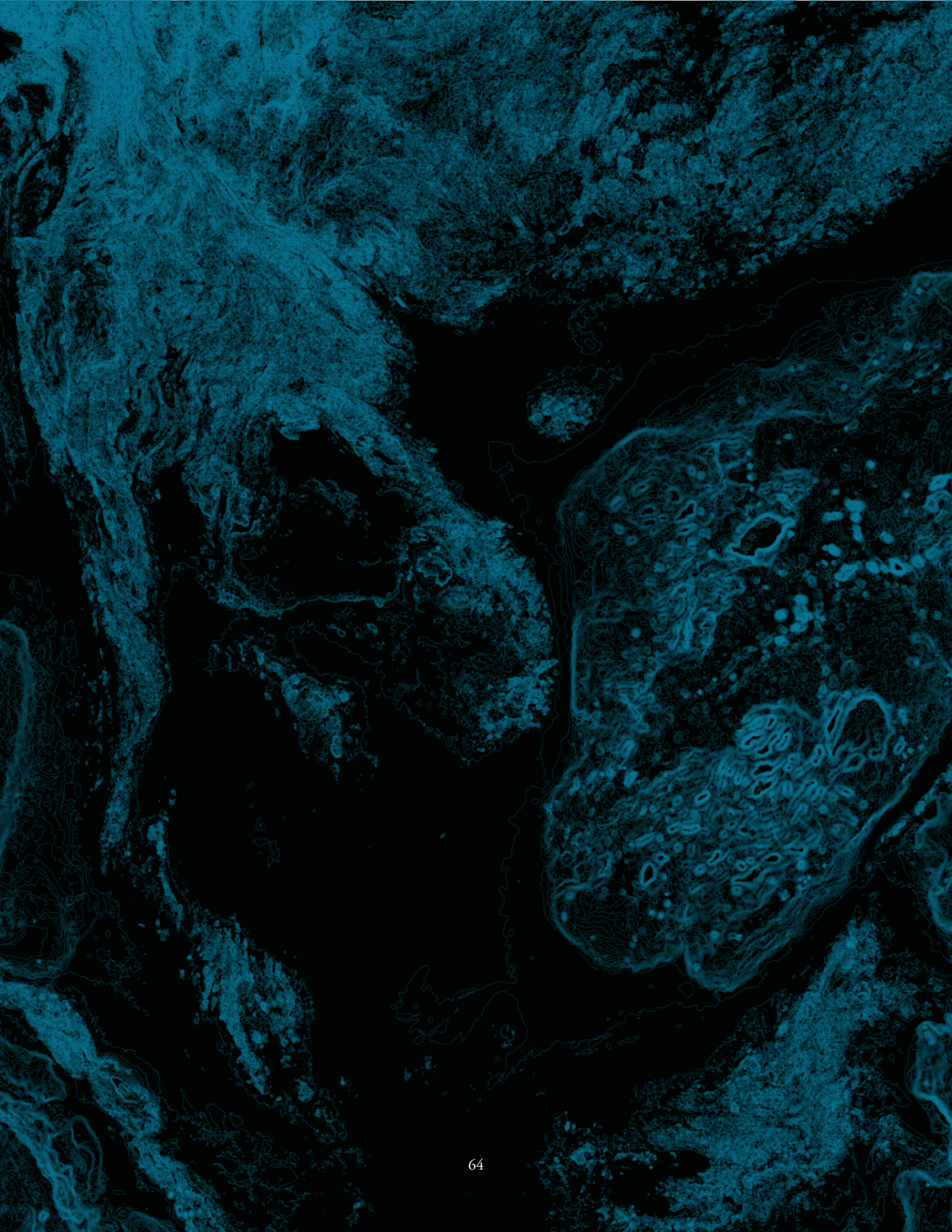
Fig. 38 *Dredging process during the construction of Fiery Cross Reef*

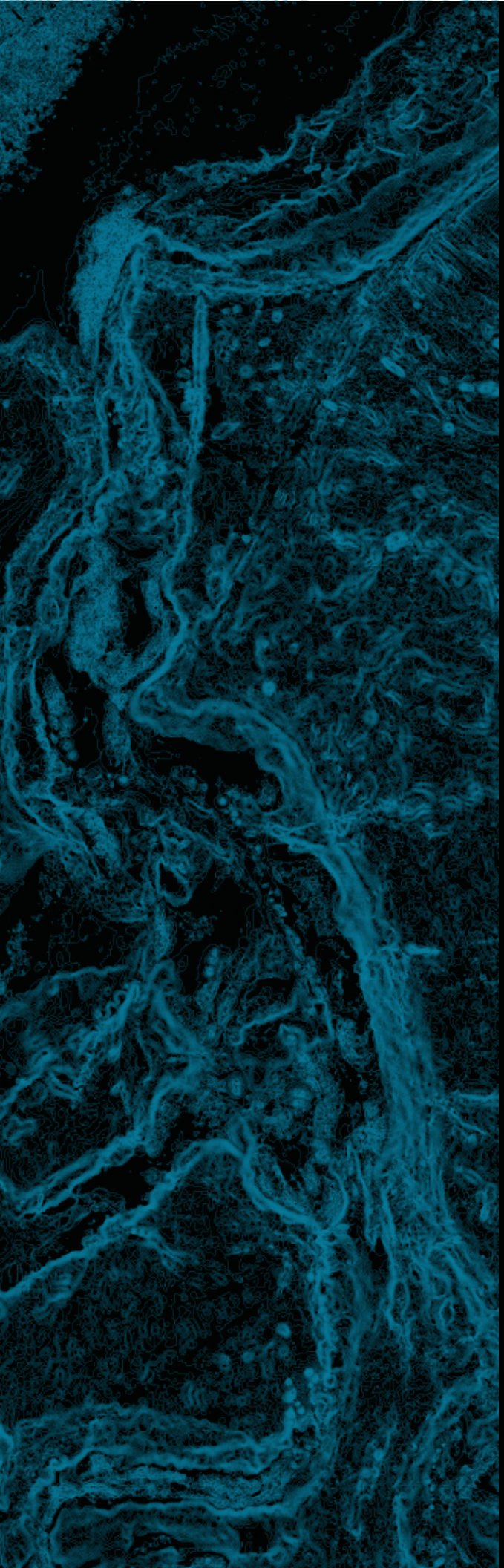
waters but also begins to *actively redraw world map in real time* - defining a *new method of cartography*.[14] As a result of this island building practice, the South China Sea region loses an estimated $100 million USD worth of valuable fish species as these coral reefs no longer function as vital breeding grounds for marine species.

This failure to consider the natural world is a symptom of many underlying insecurities states face as they aim to "catch up" to the Global North. This is exacerbated when they are also caught in the tug-of war between the emerging and

14 Pauer, Lukas. "Demapping Waters by Design." Architecture Now, November 2015. https://architecturenow.co.nz/articles/demapping-waters-by-design-1/.

incumbent hegemon. These issues also point out the pressing need for regional coordination and management in the South China Sea region – calling for states to *act in the interest of the region* instead of their own self interests. This thesis begins to reframe the agency of the built form, one that serves non-state actors such as marine species. Through addressing these specific practices, not only does this thesis offer states a more diffusing alternative, but ultimately aims to reshape how territory is viewed in the region.





PART IV: SOUTH CHINA SEA MARINE PARK FRAMEWORK

MARINE PARK FRAMEWORK AND THE AGENCY OF THE ARCHITECT

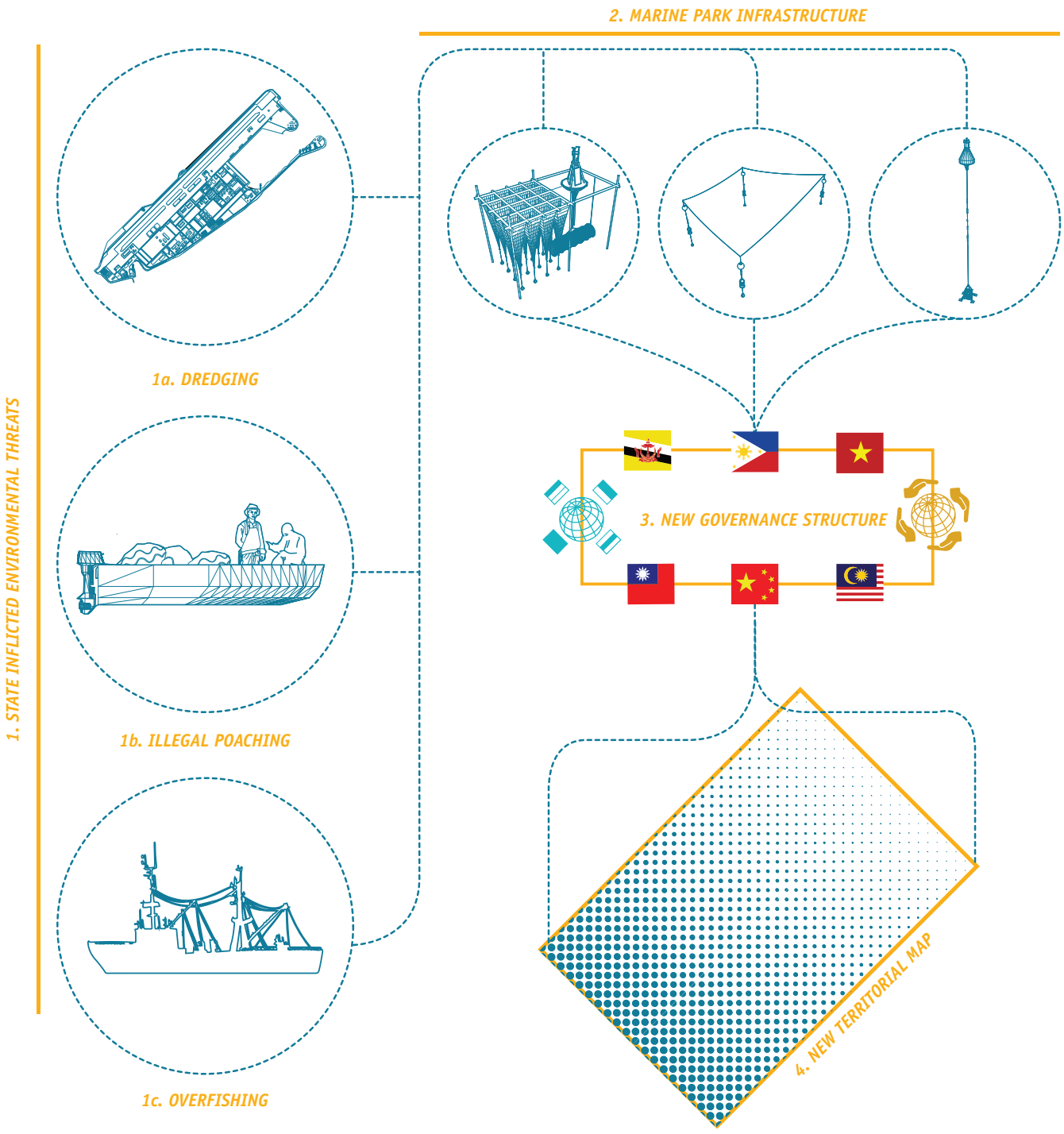
This thesis revisits the proposal brought forth by marine biology professor, John McManus, who advocated to transform the Spratly Islands in the South China Sea into a peace park. According to the International Union for Conservation of Nature (IUCN), peace parks are designed to create transboundary protected areas that aim to promote the security of biodiversity, natural resources, and regional cooperation.[1] Professor McManus highlighted five main management strategies to be implemented in this proposal: international board of directors, research and management institutions, air-sea ranger rescue teams, tourism facilities, and research facilities. However, this proposal only remained at the scale of a framework and doesn't suggest the physical manifestation of these programs. It doesn't assess the current infrastructure at ground and doesn't mention an incentivized program to muster political will among disputing states. In contrast, this thesis uses McManus' proposal as a baseline foundation but also engages with the territorial dispute with conflict resolution mechanisms through economic opportunities.

Supplements for Diplomacy is a multi-phased program that uses the common threat of regional environmental insecurity as a catalyst for cooperation among disputing states. This proposal provides alternative practices to the three main threats to the regional environment: overfishing, illegal poaching, and construction of artificial islands. By acknowledging the economic realities and insecurities of the developing nations in the region, this proposal provides an economic incentive-based framework that hinges on the long-term health of the natural environment. Phase 1 deals the deployment of marine data sensing infrastructure. Phase 2 works on establishing ecological resiliency in the region. Finally, Phase 3 aims to implement programs that promote sustainable economies, essentially the incentives and rewards states can benefit from. With each phase, new tools are implemented as they begin to expand the current governance structure in the region. A new definition of territory is realised as it focuses on collective balancing of the environmental equilibrium. However, this program involves the complex layering of economic, environmental, and political strategies, which can be difficult to converge and disseminate. This is where we can realise the agency of the architect.

This proposal seeks out the architect's contribution for political and environmental stability in the South China Sea. With their experience with spatial

Fig. 39 *Marine park framework diagram outlining environmental drivers, types of interventions, and governance structures*

1 Mcmanus, John W., Kwang-Tsao Shao, and Szu-Yin Lin. "Toward Establishing a Spratly Islands International Marine Peace Park: Ecological Importance and Supportive Collaborative Activities with an Emphasis on the Role of Taiwan." *Ocean Development & International Law* 41, no. 3 (2010): 275. https://doi.org/10.1080/00908320.2010.499303.



problems, the architect can analyze the infrastructure used by states in their struggle for sovereignty, such as state occupation of islands, logistical port facilities, and maritime militias. They can find avenues to reprogram this infrastructure, with the intention of providing a new collaborative paradigm targeted towards an economic and environmentally sustainable initiatives. This thesis looks at the role of the architect, not as a contractor of the state but rather a crucial bridge between human and non-human processes. The intention of the architect hopes to rethink the tools and actors used to delineate territory. By creating a new interface between humans and marine species, the discussion would invite these overlooked actors to the table. In addition, the architect can rely on their ability to speculate and illustrate a comprehensive framework that can be used in conflict resolution scenarios.

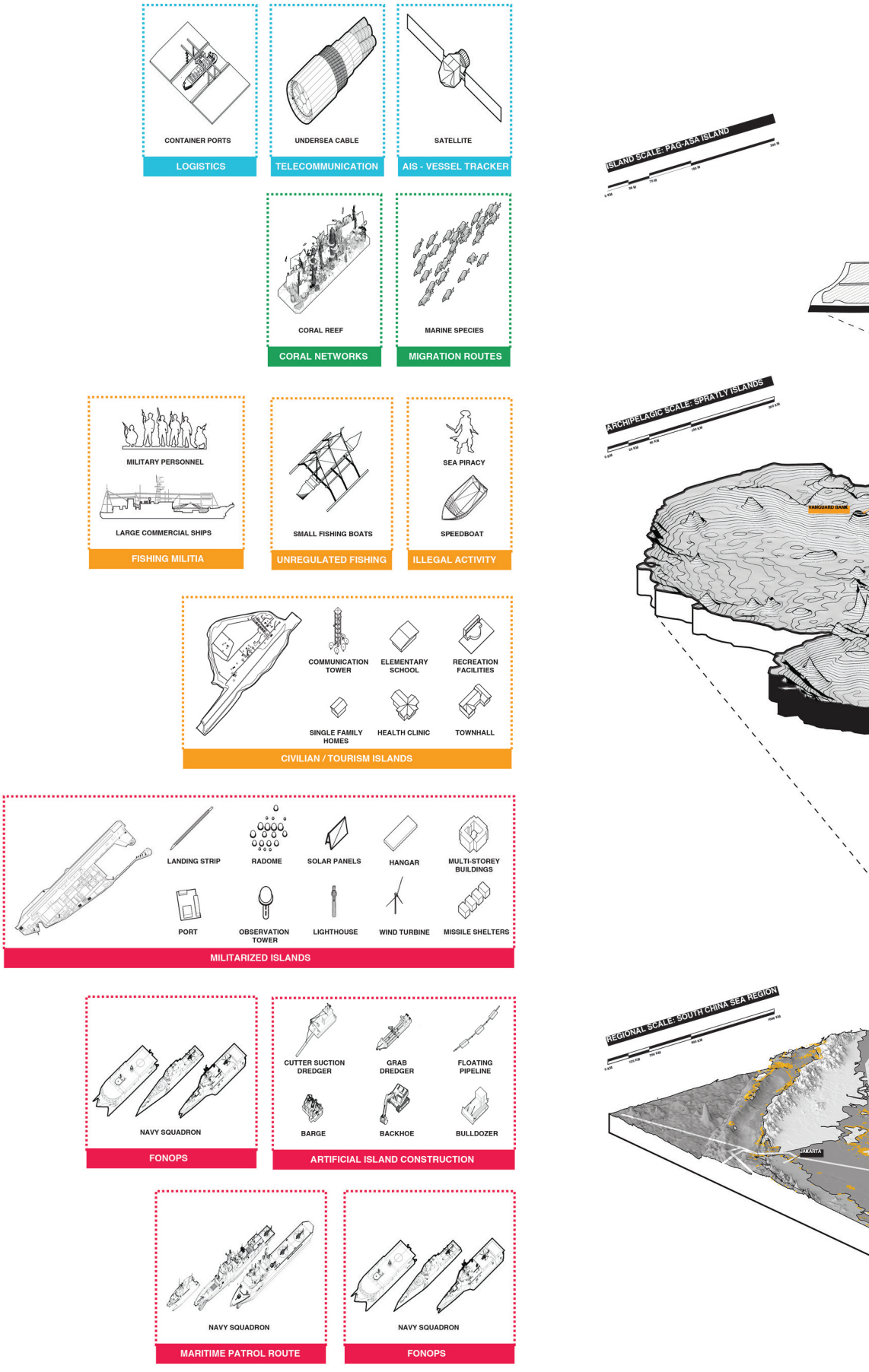
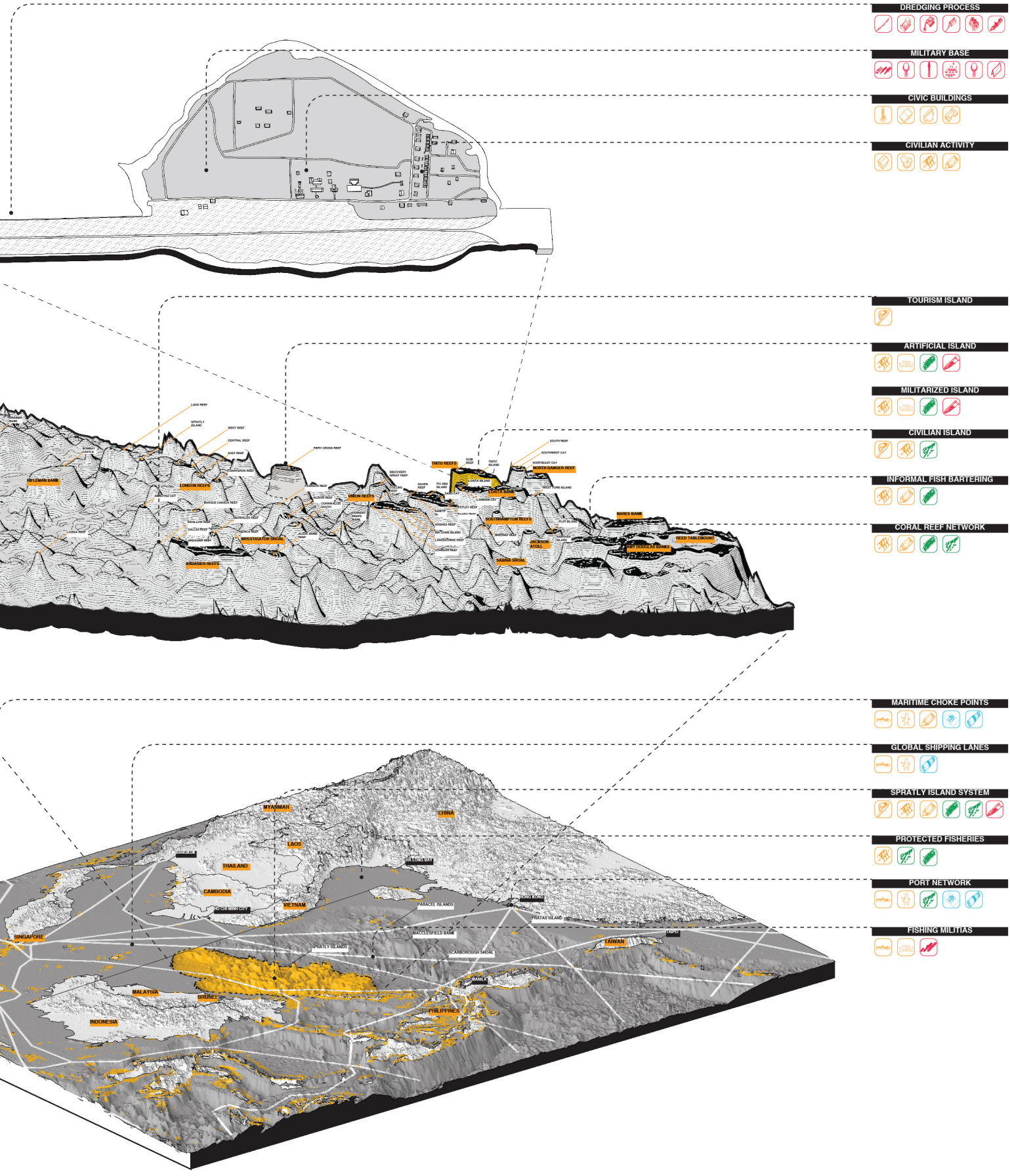


Fig. 40 *Assessing the current infrastructural inputs and outputs of the South China Sea - at regional, archipelagic, and island scales*


DREDGING PROCESS
MILITARY BASE
CIVIC BUILDINGS
CIVILIAN ACTIVITY
TOURISM ISLAND
ARTIFICIAL ISLAND
MILITARIZED ISLAND
CIVILIAN ISLAND
INFORMAL FISH BARTERING
CORAL REEF NETWORK
MARITIME CHOKE POINTS
GLOBAL SHIPPING LANES
SPRATLY ISLAND SYSTEM
PROTECTED FISHERIES
PORT NETWORK
FISHING MILITIAS
HIPLEMAN BANK
LONDON REEFS
UNION REEFS
THITU REEFS
NORTH DANGER REEF
SOUTHAMPTON REEFS
NARES BANK
REED TABLEMOUNT
JACKSON ATOLL
SABINA SHOAL
INVESTIGATOR SHOAL
ARDASER REEFS
MYANMAR
CHINA
LAOS
THAILAND
CAMBODIA
VIETNAM
SINGAPORE
MALAYSIA
BRUNEI
INDONESIA
PHILIPPINES
TAIWAN
PARACEL ISLANDS
MACCLESFIELD BANK
SPRATLY ISLANDS
SCARBOROUGH SHOAL
PRATAS ISLAND
MANILA

SITE SELECTION: THITU REEFS

Given the medium and restrictions of an academic publication, this thesis aims to illustrate the deployment of the marine park on a specific test site. The limited scope will help provide a succinct mock-up of the proposal, with the intention of future regional scaling. The criteria for finding a manageable site begins with understanding the geopolitical conditions of the South China Sea. If one were to implement a marine park program involving the resources and efforts between disputing countries, finding the least sensitive site becomes a key factor. We can start our search in international waters. Finding a site in this swath greatly increases the chances for states to cooperate as these landforms yield a lower level of political contention. Along with its politically subdued characteristics, the site must also engage with the three environmental threats previously mentioned. This will help mobilize and increase the urgency for action. After evaluating potential sites with these considerations, Thitu Reefs was eventually chosen as the test site.

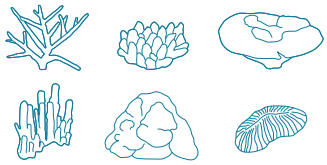
Thitu Reefs is an atoll that resides in international waters, making it a potential low hanging fruit for cooperation. Along the rim of the atoll lies 5 sand cays, 3 of which have been scarred by illegal poachers, and one island, Pag-asa. This island is currently occupied by the Philippines which can become a potential site of contention when deploying the marine park. With nearly a quarter of the country's population living below the poverty line, the promise of subsided living brings the majority of the people on this island. The nearest Philippine port lies 250 miles away, leaving over 100 civilians and 30 military personnel to live in isolation from the mainland.[2] Currently, the island consists of a deteriorating runway, police station, voting building, medical clinic, recreational grounds, salt manufacturing plants, and residences. Accounting for the existing infrastructure on this island, the implementation of the marine park can incorporate transition strategies for the population of Pag-asa Island, introducing environmental stewardship practices as they shift from state to non-state interests.

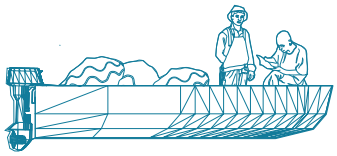
Fig. 41 *Political and environmental factors used to develop the set of criterias for the site selection process*

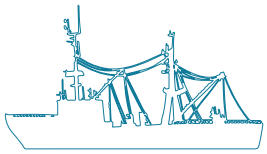
2 Hayes, Rupert Wingfield. "China's Island Factory." BBC News. September 09, 2014. http://www.bbc.co.uk/news/resources/idt-1446c419-fc55-4a07-9527-a6199f5dc0e2

MARINE PARK DRIVERS (ENVIRONMENTAL INITIATIVES)

- CORAL REEF DETERIORATION
- ILLEGAL ACTIVITY
- OVERFISHING

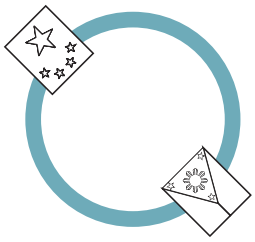


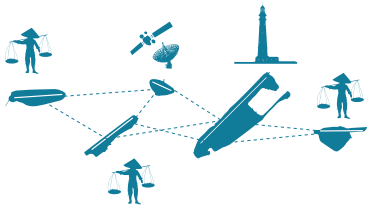


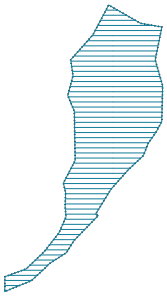


SPECTRUM OF SOVEREIGNTY

- ARCHIPELAGO INVOLVING MULTIPLE COUNTRIES
- ARCHIPELAGO INVOLVING ISLANDS WITH A RANGE OF LAND USES (MILITARY, CIVILIAN, UNOCCUPIED ETC...)
- ARCHIPELAGO IN INTERNATIONAL WATERS

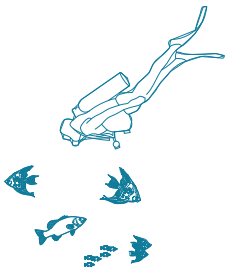






POTENTIAL TOURISM ITINERARY & ATTRACTIONS

- ECO- RECREATIONAL ACTIVITIES
- HISTORICAL LANDMARKS



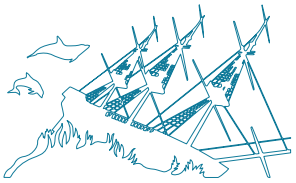


Fig. 42 *Aerial view of Pag-asa island*

It is important to note that Phase 1, Phase 2, and Phase 3a focuses on the western region of the atoll where most of the environmental issues reside. Phase 3b deals with the eastern region where Pag-asa Island is situated, focussing on the economic programs. The spatial strategy of the marine park involves the deployment of three new tools which begin to counter the environmentally harmful practices. As the phasing of the marine park progresses, these tools will gradually evolve as they aim to address the goals outlined by each phase. These adaptively tools are manifest themselves as the architect's interventions, as they inform new methods of territorial delineation.

View looking at chinese naval ships

Local/ military basketball game

Pag-asa lighthouse

Local police station

Local voting building

Locals presenting youth talent show

Occasional shipments of supplies

Imported cinderblocks

Locals filling pails with filtered water

Fig. 43 *Life on Pag-asa island*

Pag-asa naval station

Fish drying out

Soliders during flag raising ceremony

Soliders during flag raising ceremony

Local tending to livestock

Local health centre

Salt manufacturing plants

Domestic life for local residents

Pag-asa airfield

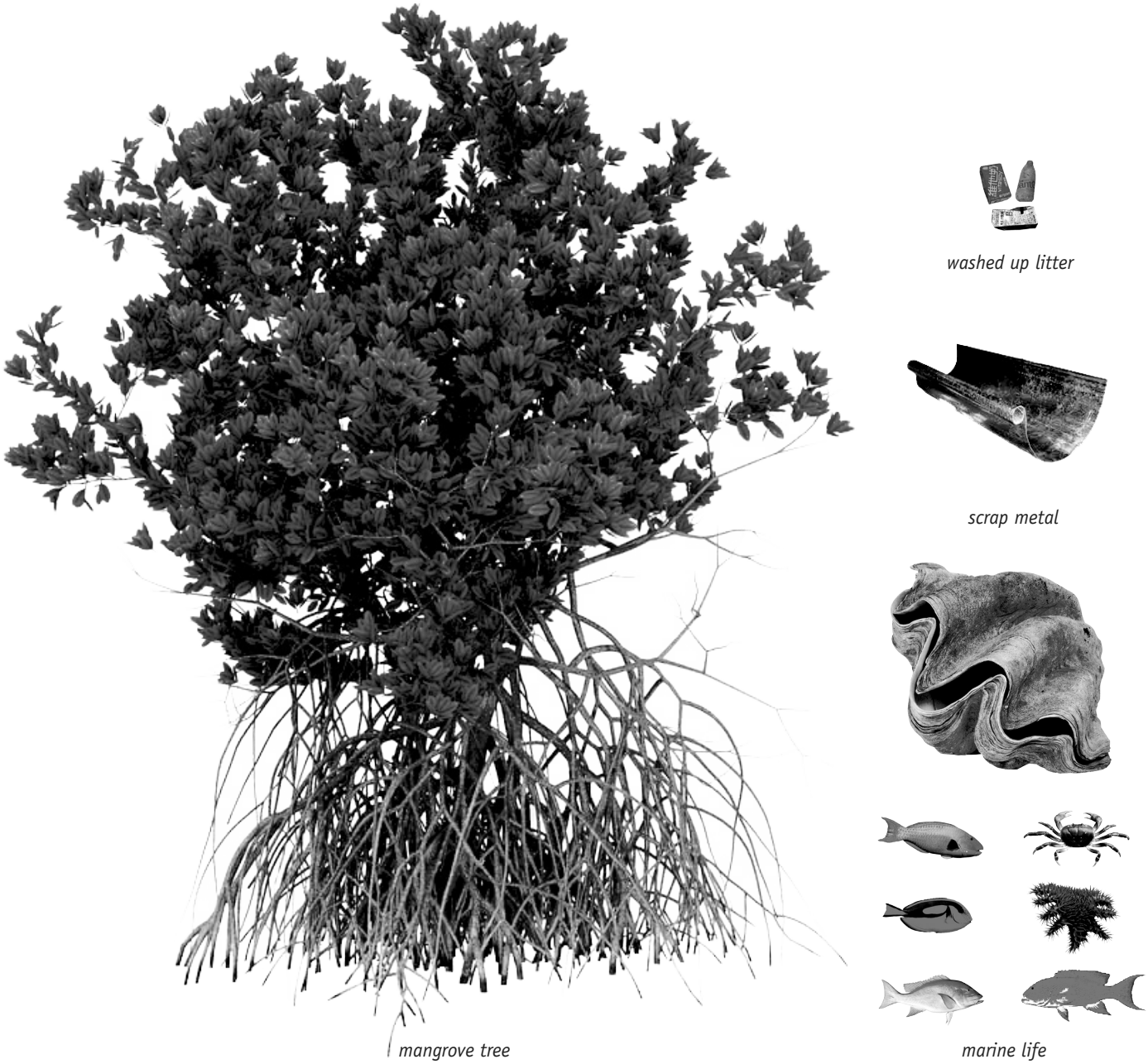
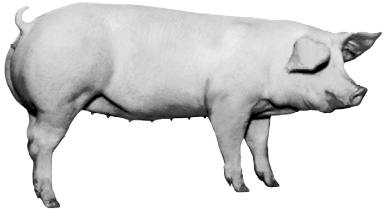
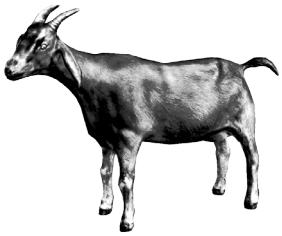


Fig. 44 *Local inventory (left) and imported inventory (right) on Pag-asa Island*



pigs



goats

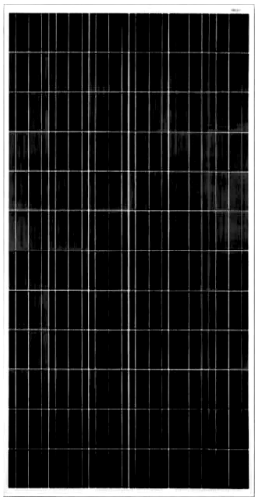
poultry

rice

canned goods

cooking oil

water filter tanks



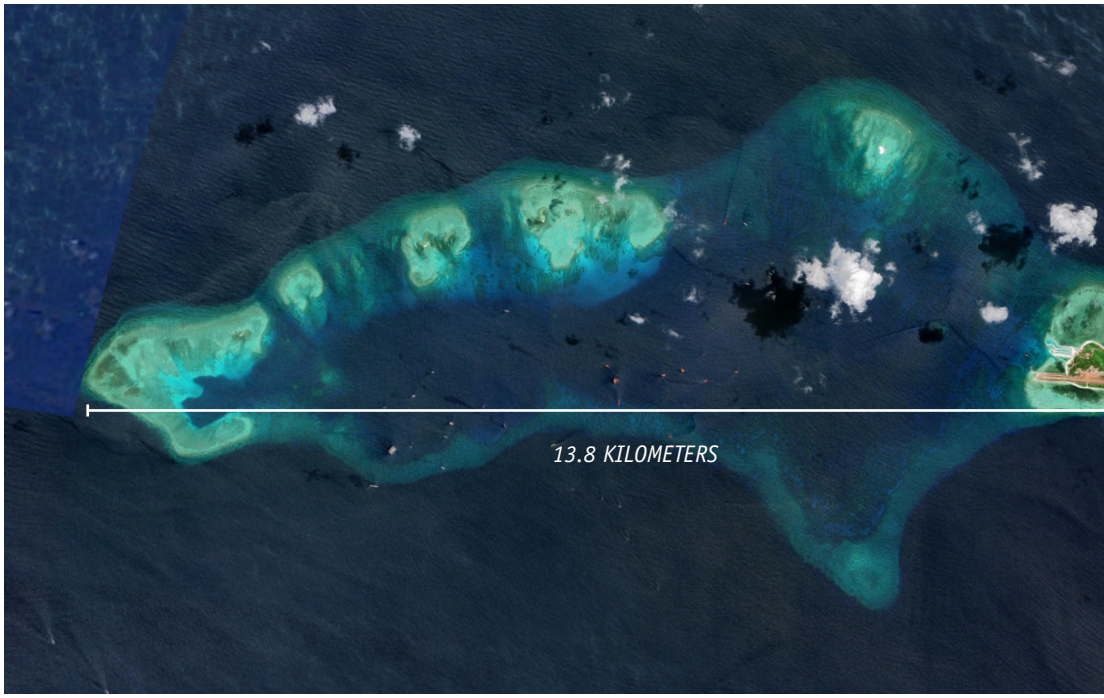
photovoltaic panels

cinderblocks

reused oil drums

solar ovens (salt)

diesel power generator



Existing Condition of Thitu Reefs

Lagoon

Fore-reef zone

Scarred reefs

Dry Patches (low-tide)

Sand Cays (low-tide)

Above-water features

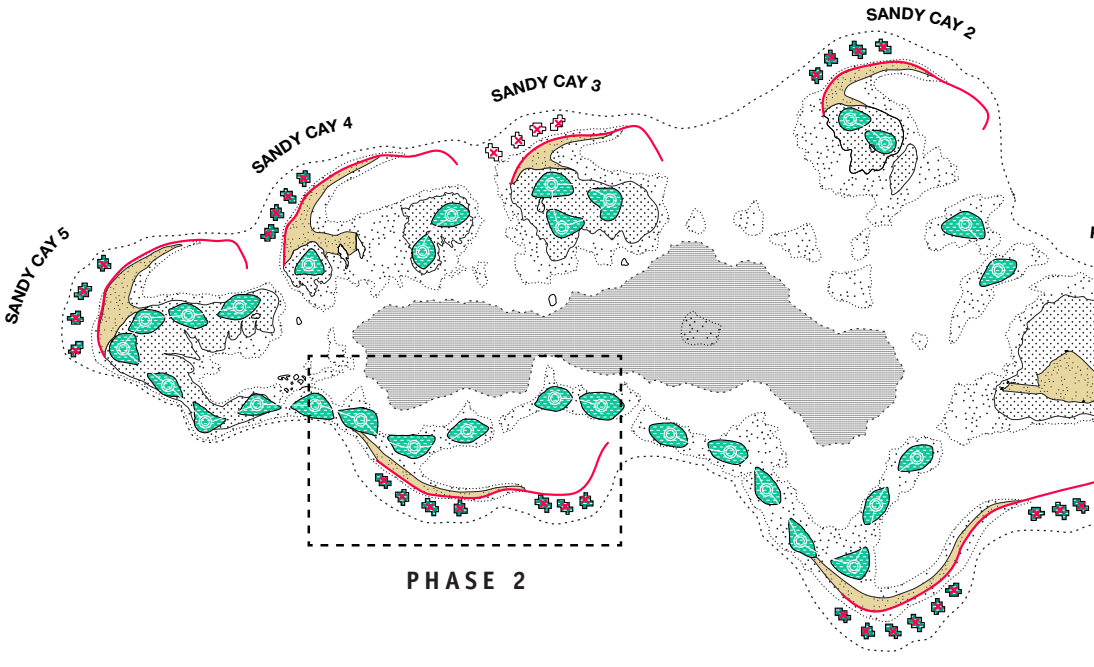
Mangrove fish farms

Mangrove canopy

Coral reef Sensors

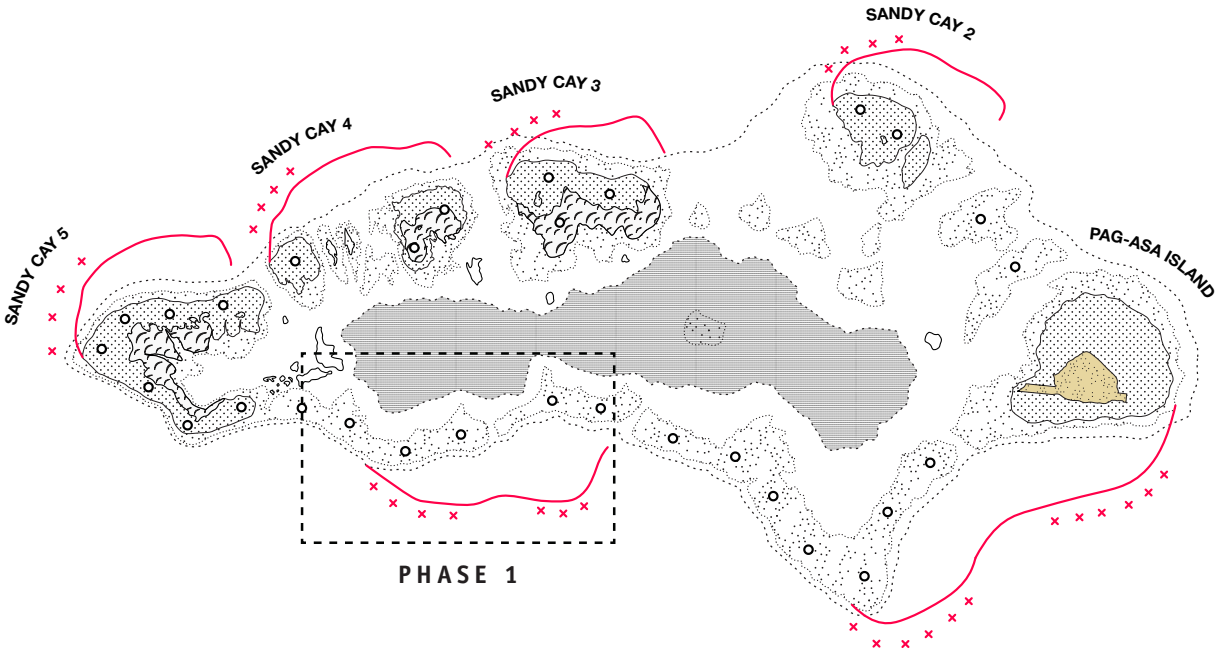
Geotextile paths

Artificial coral reefs

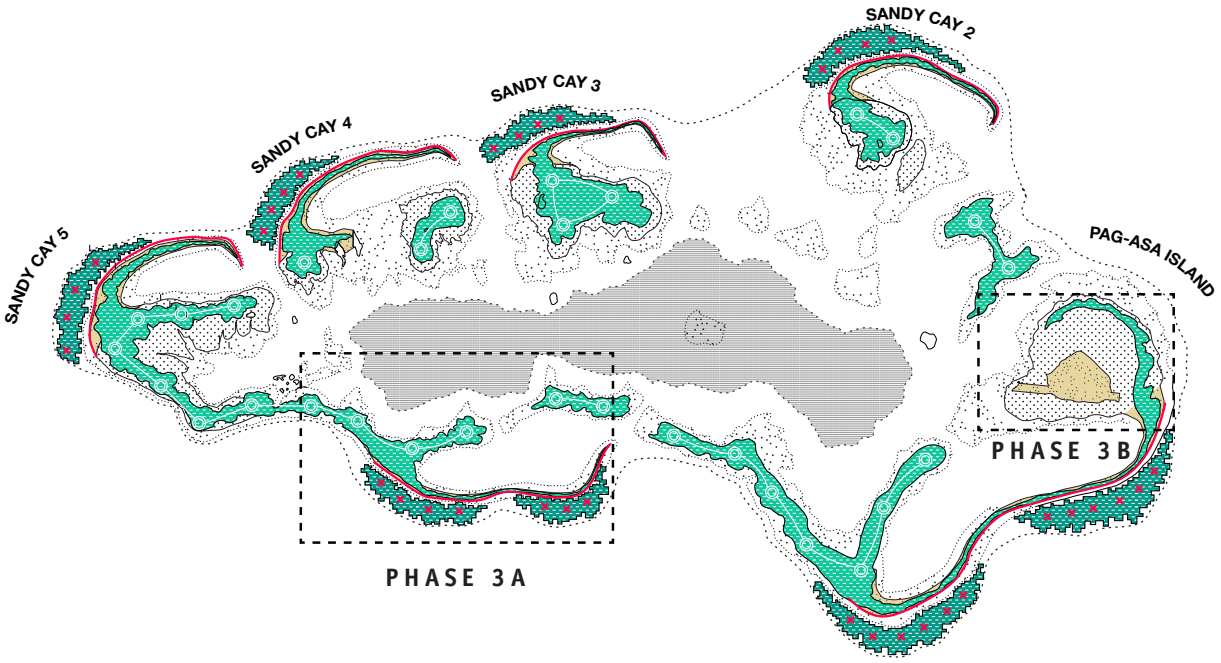


Phase 2: Ecological Resiliency Program

Fig. 45 *Growth of the marine park phases on Thitu Reefs*



Phase 1: Data Collection Program



Phase 3a: Sustainable Economic Atoll Program / Phase 3b: Soft Markets

PHASE 1: DATA COLLECTION PROGRAM

The goal of the first phase is to establish an initial data-sensing infrastructure that aims to collect relevant information of the natural environment. This lays the foundation for future phases, where this data can inform later decisions and predict environmental patterns. This data is collected from these three tools: coral reef monitoring devices, sediment quality monitoring devices, and the fish monitoring devices. Through this process, an interface between state and non-state actors is created as it visualizes and quantifies the agency of these non-state actors. They give us a better understanding of the activity of fish stocks, coral reefs, weather patterns, and nutrient flows.

The first tool is a coral reef monitoring device, designed to monitor the health of coral reefs and their ecosystem. It is equipped with an array of sensors that help diagnosis the conditions of the species. It also can be used to assess the damage inflicted by illegal poachers in the region.

The second tool involves a sediment quality monitoring device, designed to measure the turbidity and quality of water. The intention of this device is to understand the movement of sediment in regarding to the atoll's hydrodynamics. The data collected can help understand where sediment is likely to accumulate naturally, which can provide as an alternative to the dredging-based land reclamation techniques.

Finally, the third tool is a fish monitoring device, designed to measure the quality of the fish habitats and the species itself. With the proper identification and monitoring of specific fish stocks, this can increase the efficacy of the enforcement of protected conservation areas and the long-term planning of the region's resources.

In terms of the allocation of labor and efforts, this data collection process can involve both state and non-state research organizations. The information collected from the atoll can be shared among other data collection nodes in the region, such as ports and coastguards. This begins to inform a greater data network between countries, as Thitu Reefs acts as an intermediate point in the sea. As the atoll plugs into this existing network of data collection, the quality of monitoring larger movement fish migration, nutrient flows, and tidal patterns become much more precise.

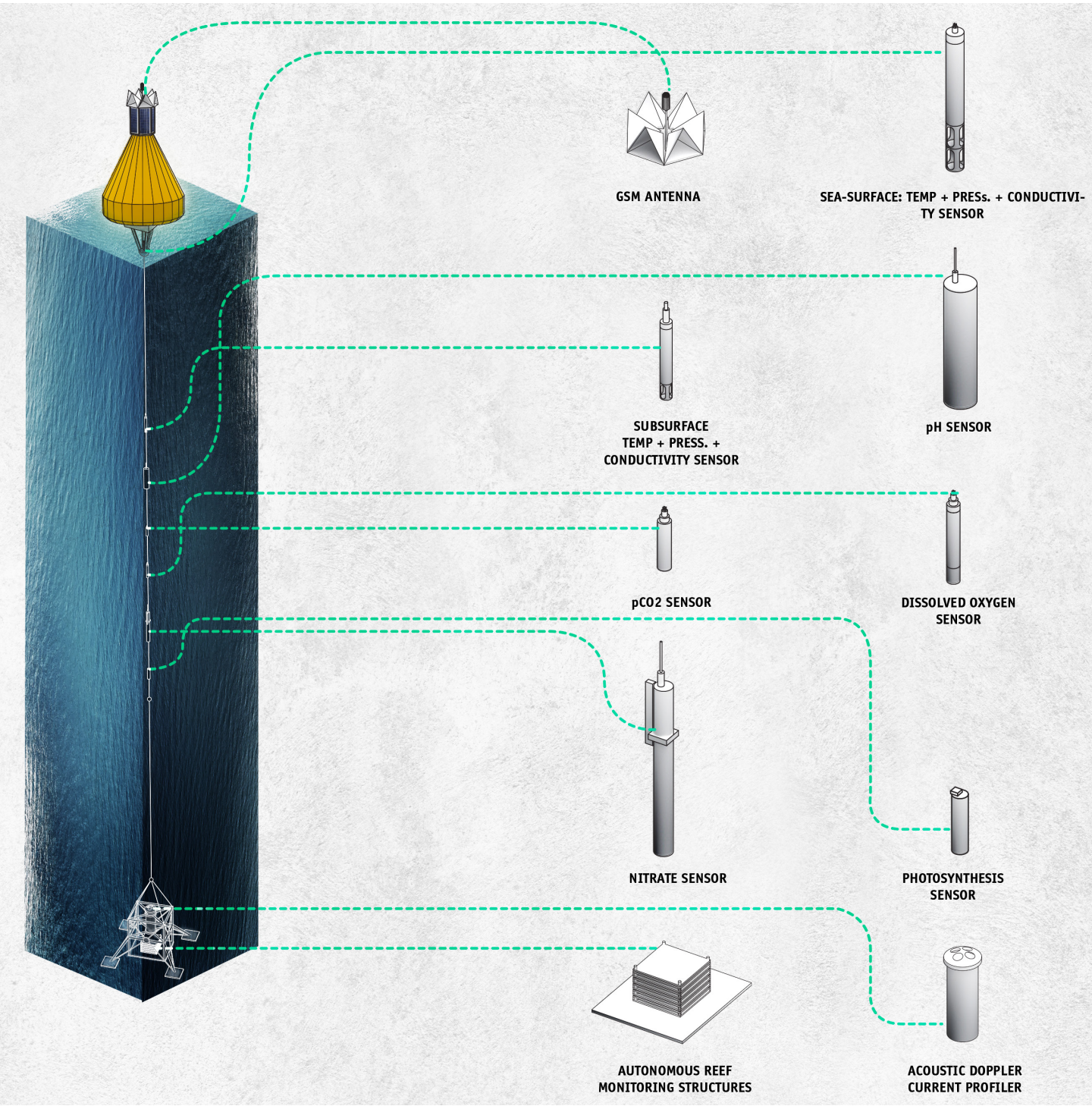


Fig. 46 *Coral reef monitoring device*

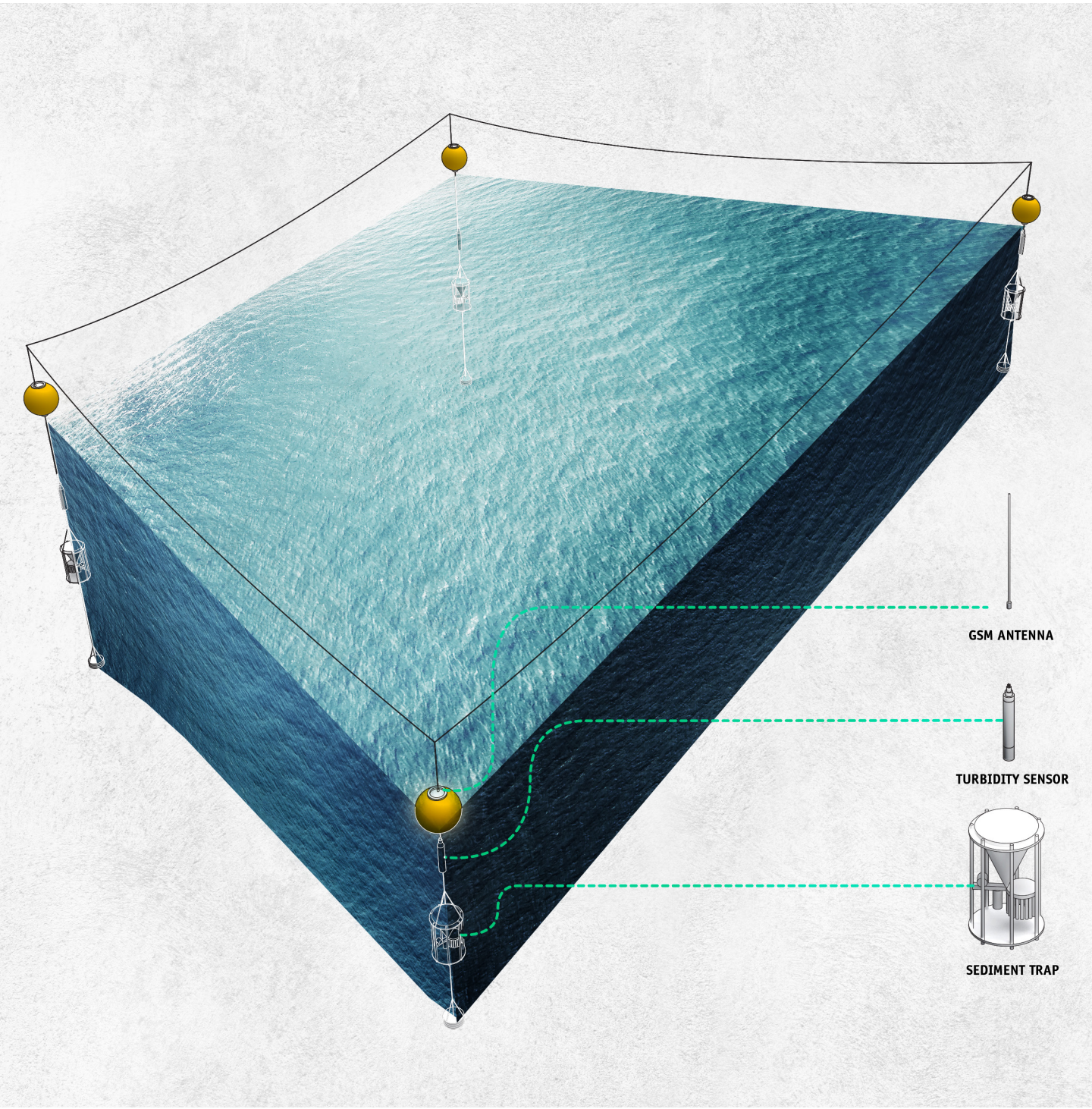


Fig. 47 *Sediment quality monitoring device*

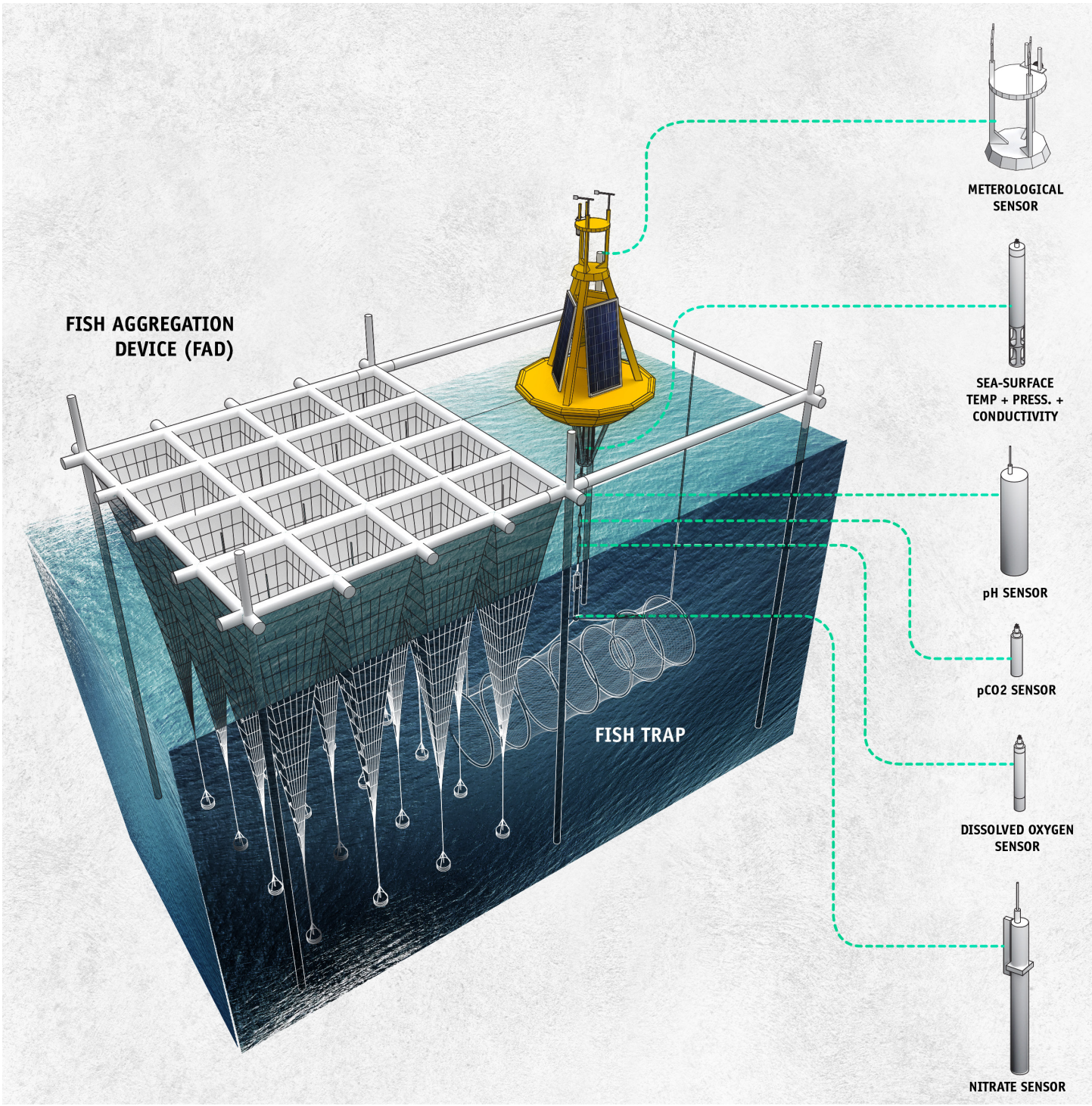


Fig. 48 *Fish monitoring device*

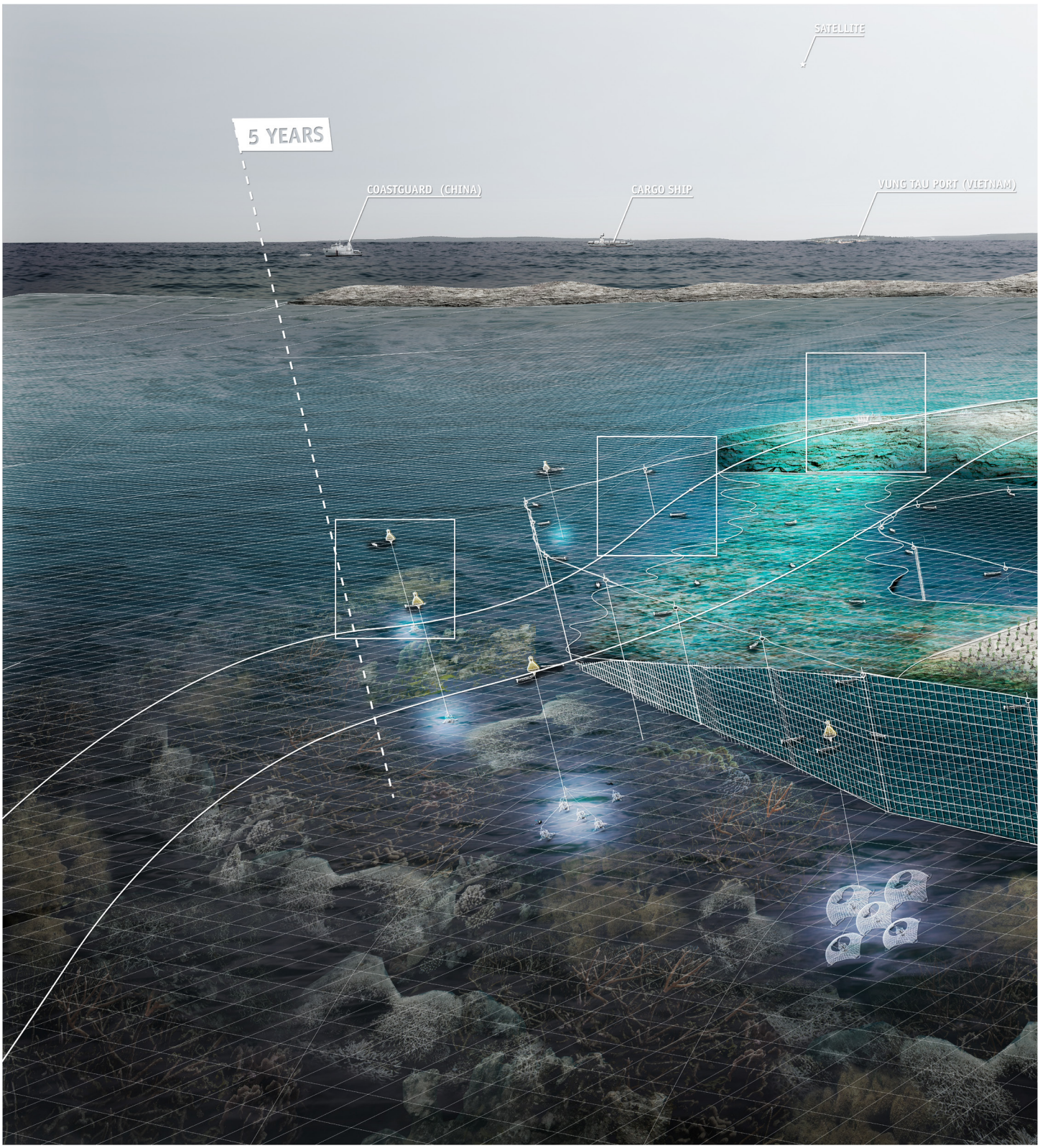


Fig. 49 *Deployment of tools on the atoll*

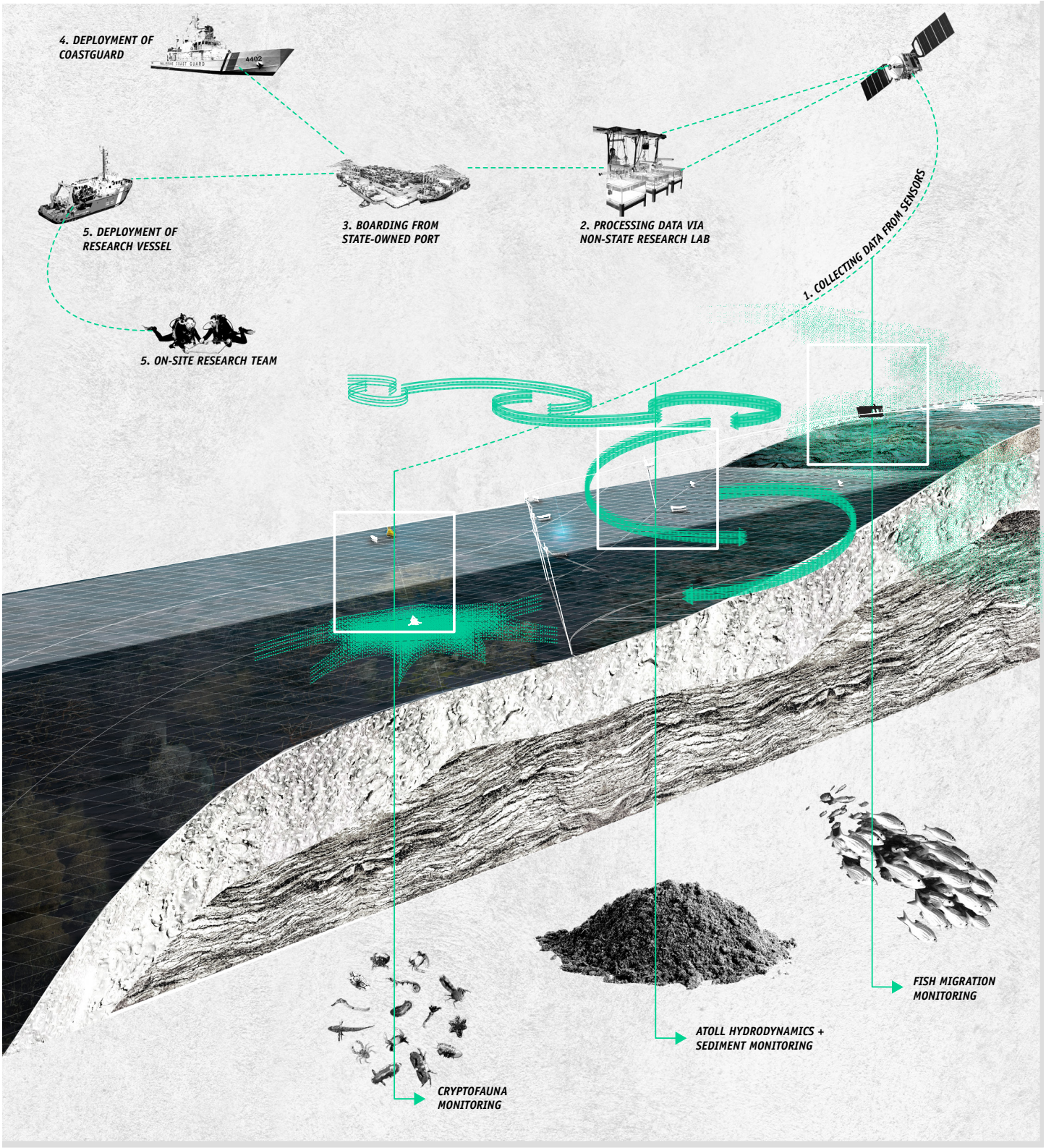


Fig. 50 *Plugging into existing regional data collection infrastructure*

PHASE 2: ECOLOGICAL RESILIENCY PROGRAM

The next phase aims to establish an ecological resiliency plan for the atoll. This will provide the foundations for a passive feedback loop that increases the immunity of the atoll ecosystem and its ability to recover from both natural and human influences. By leveraging the region's existing ecosystem, this phase aims to harness the natural affinities between mangroves, seagrass, and coral reefs.[3] This is realised through the nutrient cycling between these three organisms. In order to establish this natural cycle, the tools from the previous phase must be modified.

The coral reef monitoring device is transformed into an artificial coral reef, where it can provide the conditions to nurture at-risk coral polyps and eventually serve as vital breakwaters for the atoll.

The sediment quality monitoring device is transformed into an environmentally sensitive sediment accumulation device. Learning from data collected in Phase 1, this can inform the geotextile perimeter as it is setup along the predicted path of travelling sediment. The accumulated sediment can create natural sandbars and spits - the perfect foil to dredging.

The fish monitoring device is transformed into a multitrophic fish farm that leverages the nutrient fixing quality of mangroves into a beneficial recycling of nitrate.[4] At-risk fish stocks can be fostered in these integrated farms as the conditions of these species are heavily regulated and controlled.

All three of these tools play a specific role in the nutrient cycling of the atoll. With these interventions, they begin to expand the governance structure of the marine park, allowing for the residents of Pag-asa Island to be involved in the maintenance of these new programs. Not to mention, NGO's conducting tree-planting programs can also be integrated in these operations. Once the atoll is on a secure, projected path towards resiliency, the sustainable harvesting of the natural resources can begin.

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3 Guannel, Greg, Katie Arkema, Peter Ruggiero, and Gregory Verutes. "The Power of Three: Coral Reefs, Seagrasses and Mangroves Protect Coastal Regions and Increase Their Resilience." *Plos One* 11, no. 7 (2016). https://doi.org/10.1371/journal.pone.0158094.

4 Soto, Doris. *Integrated Mariculture: a Global Review*. Rome: Food and Agriculture Organization of the United Nations, 2009. 73-89.

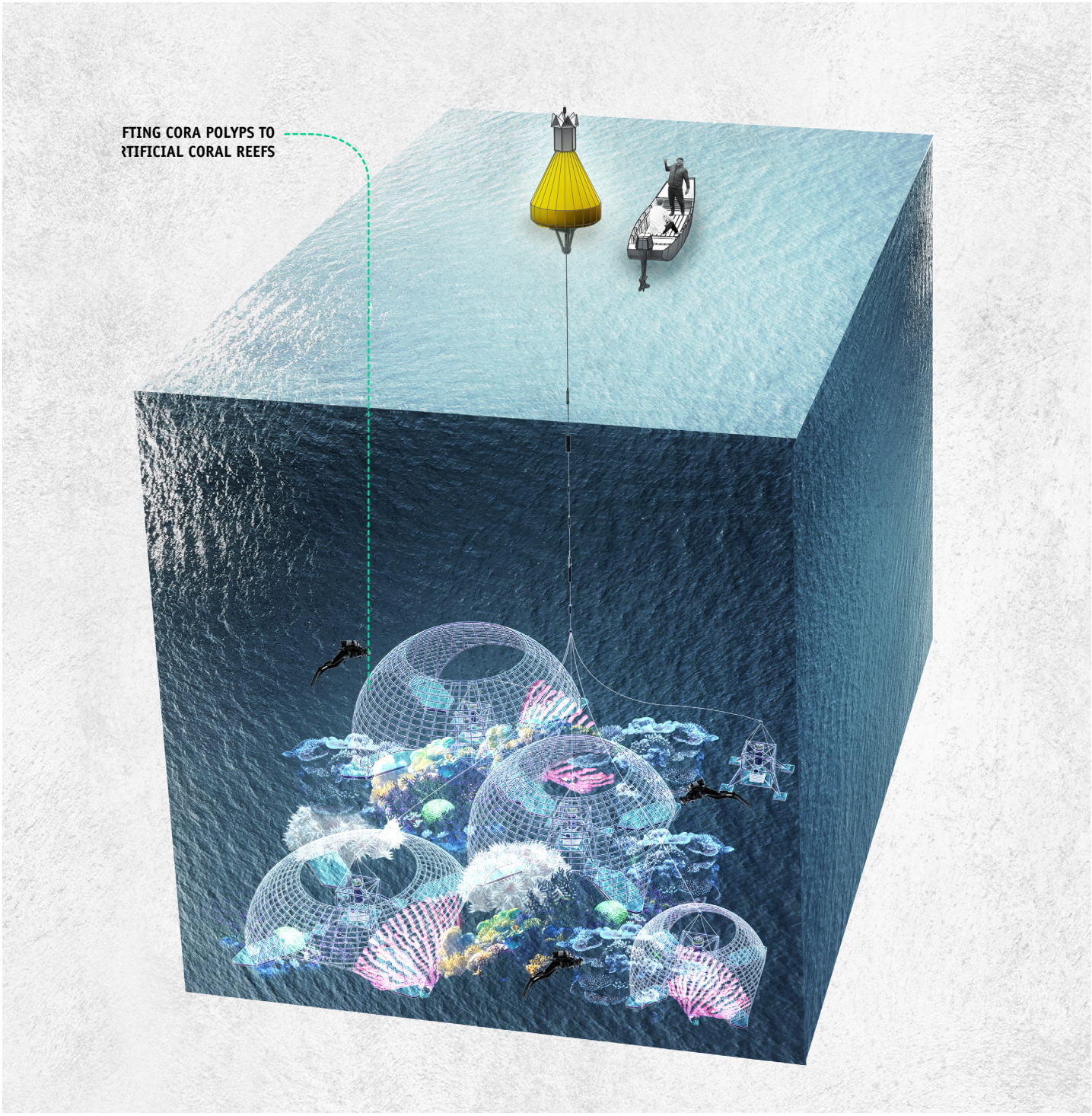


Fig. 51 *Artificial coral reef*

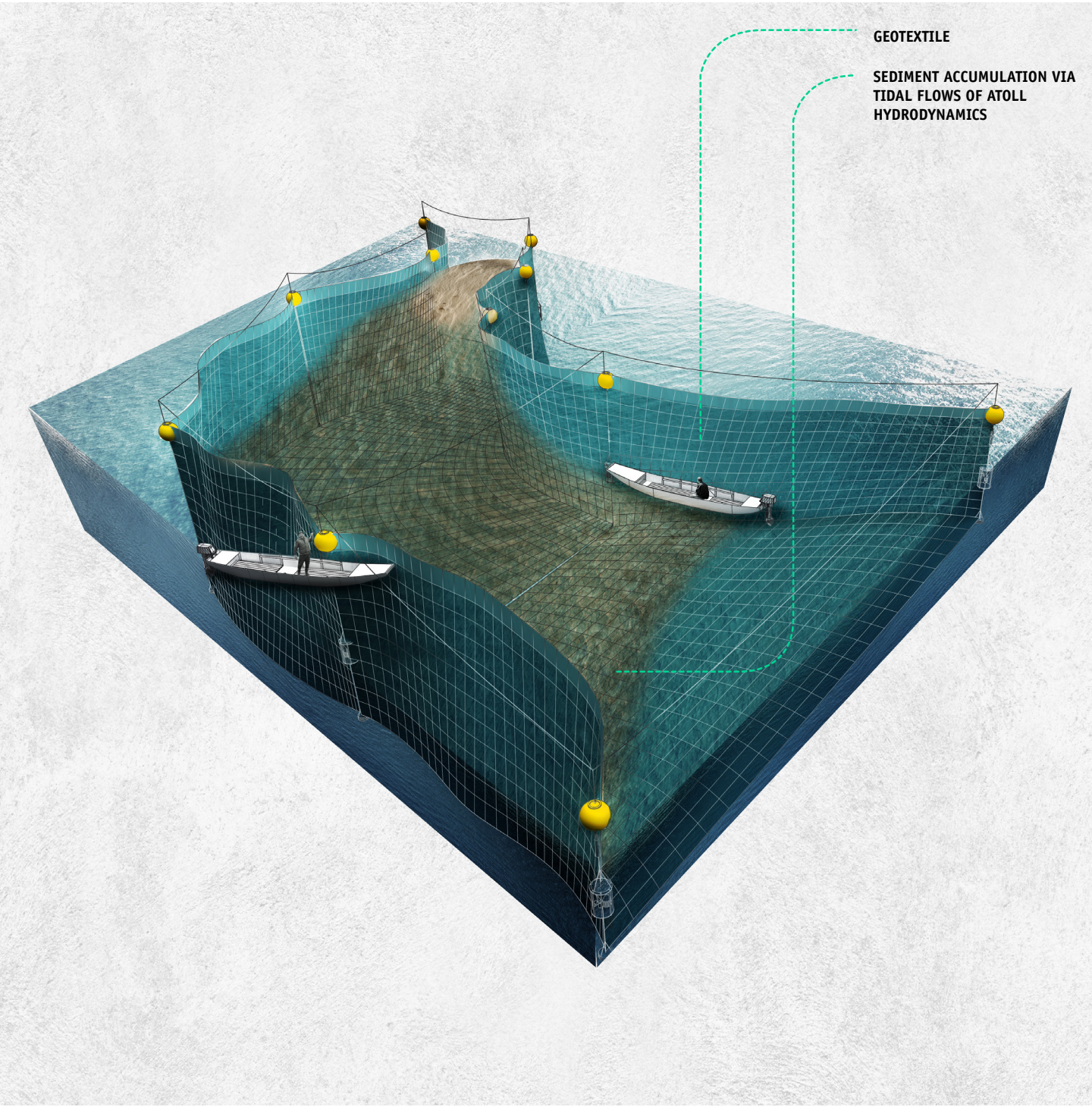


Fig. 52 *Sediment accumulation device*

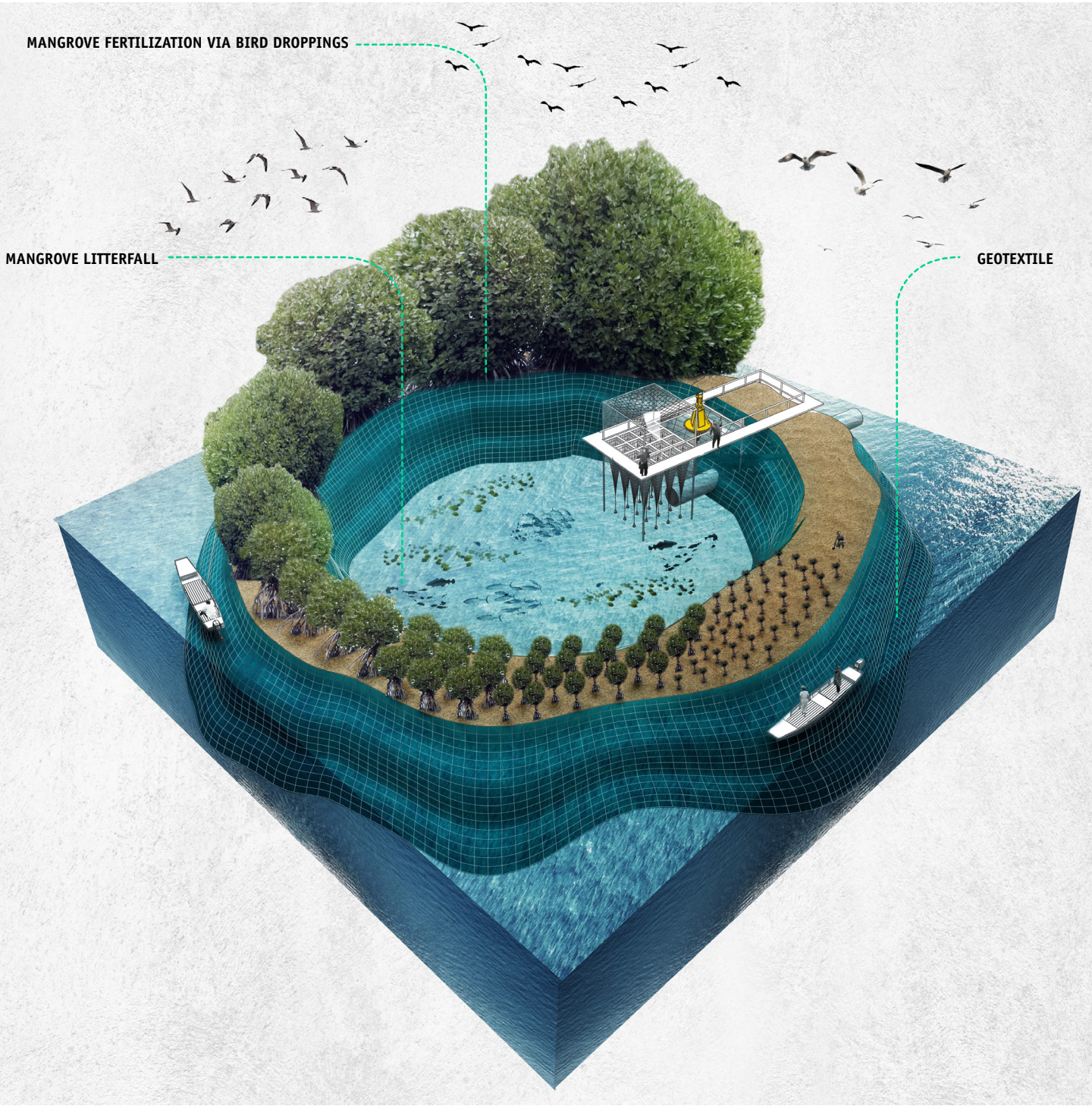


Fig. 53 *Multitrophic fish farm*

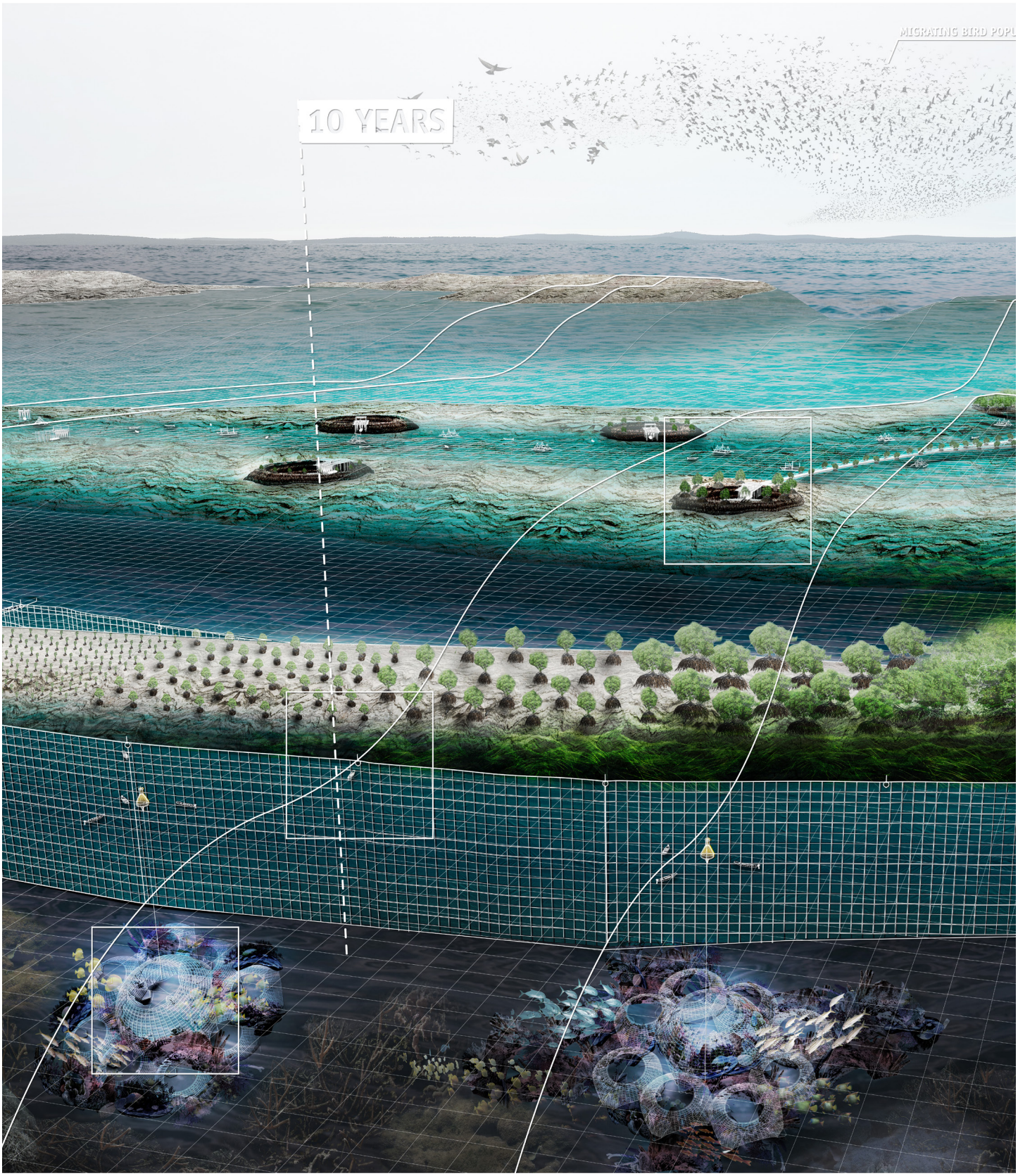


Fig. 54 *Evolving of tools on the atoll*

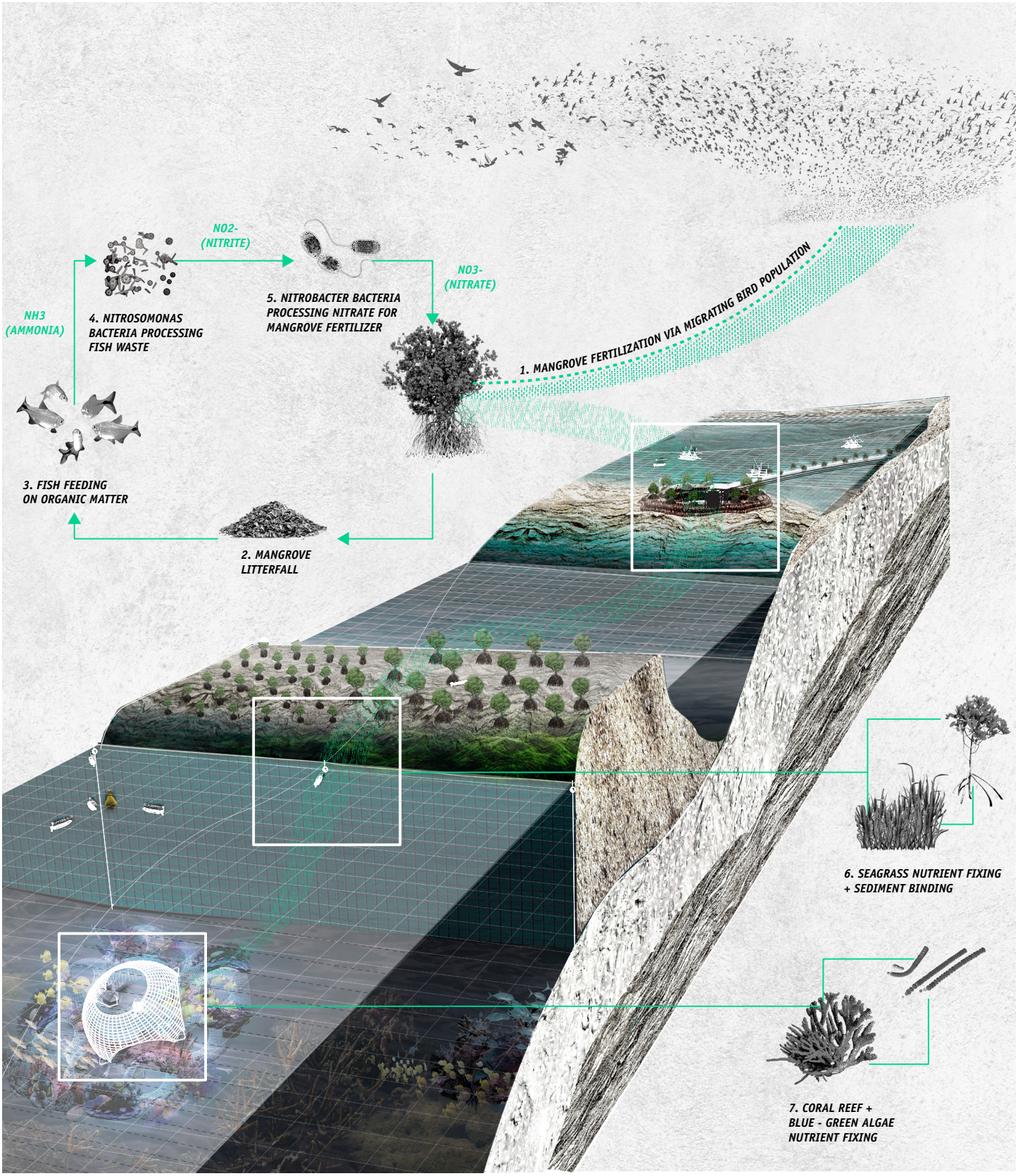
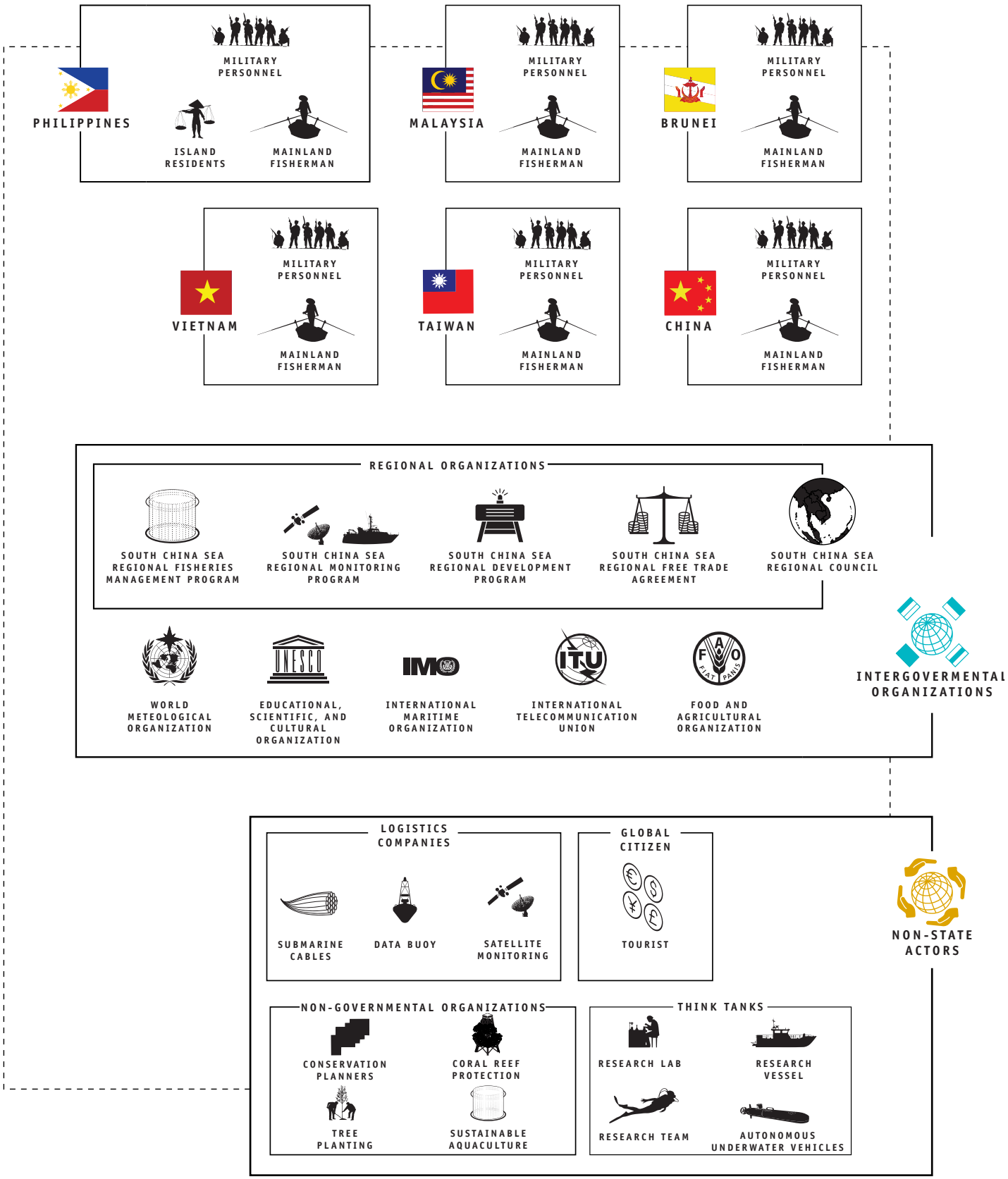


Fig. 55 *Mangrove - Seagrass - Coral Reef Nutrient Cycling*

PHASE 3A: SUSTAINABLE ECONOMIC ATOLL PROGRAM

This phase deals with the processing of the atoll's resources, as the marine park is now open to both regional and global markets. The devices from Phase 2 can now provide economic benefits for states in Phase 3, where they see their return on investment. The artificial coral reefs can become a point of attraction for tourism and research. The newly reclaimed land produced by the geotextiles in Phase 2 can create space for tourism and mangrove processing facilities. Lastly, the multitrophic fish farms can produce fish products that can be sold both to regional and global markets. The environmental impacts from these new economic opportunities can be regulated and studied by the initial data collection infrastructure laid out in Phase 1. Therefore, these new activities can be modified and adjusted in order to prioritize the overall health of the atoll's ecosystem. As previously mentioned, Phase 3a deals with the western portion of the atoll. As for the eastern half, Phase 3b realises the economic potential of Pag-asa Island – transforming the civilian island into a hub for the atoll's exports.

Fig. 56 *Proposed regional governance structure, informed by the operations of the marine park program*


PHILIPPINES
MILITARY PERSONNEL
ISLAND RESIDENTS
MAINLAND FISHERMAN
MALAYSIA
MILITARY PERSONNEL
MAINLAND FISHERMAN
BRUNEI
MILITARY PERSONNEL
MAINLAND FISHERMAN
VIETNAM
MILITARY PERSONNEL
MAINLAND FISHERMAN
TAIWAN
MILITARY PERSONNEL
MAINLAND FISHERMAN
CHINA
MILITARY PERSONNEL
MAINLAND FISHERMAN
REGIONAL ORGANIZATIONS
SOUTH CHINA SEA REGIONAL FISHERIES MANAGEMENT PROGRAM
SOUTH CHINA SEA REGIONAL MONITORING PROGRAM
SOUTH CHINA SEA REGIONAL DEVELOPMENT PROGRAM
SOUTH CHINA SEA REGIONAL FREE TRADE AGREEMENT
SOUTH CHINA SEA REGIONAL COUNCIL
WORLD METEOLOGICAL ORGANIZATION
EDUCATIONAL, SCIENTIFIC, AND CULTURAL ORGANIZATION
INTERNATIONAL MARITIME ORGANIZATION
INTERNATIONAL TELECOMMUNICATION UNION
FOOD AND AGRICULTURAL ORGANIZATION
INTERGOVERMENTAL ORGANIZATIONS
LOGISTICS COMPANIES
SUBMARINE CABLES
DATA BUOY
SATELLITE MONITORING
GLOBAL CITIZEN
TOURIST
NON-GOVERNMENTAL ORGANIZATIONS
CONSERVATION PLANNERS
CORAL REEF PROTECTION
TREE PLANTING
SUSTAINABLE AQUACULTURE
THINK TANKS
RESEARCH LAB
RESEARCH VESSEL
RESEARCH TEAM
AUTONOMOUS UNDERWATER VEHICLES
NON-STATE ACTORS

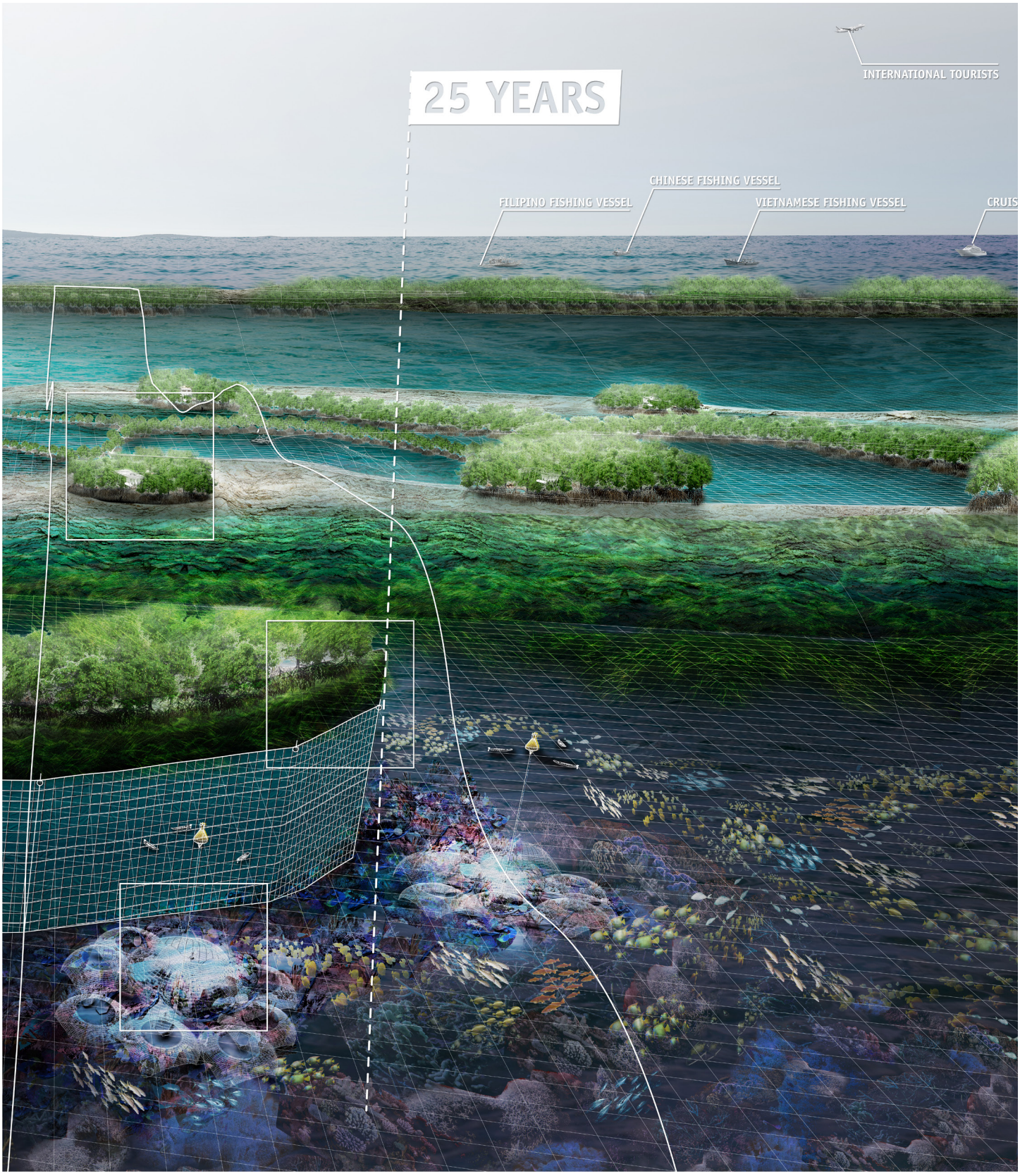


Fig. 57 *Maturity of tools on the atoll*

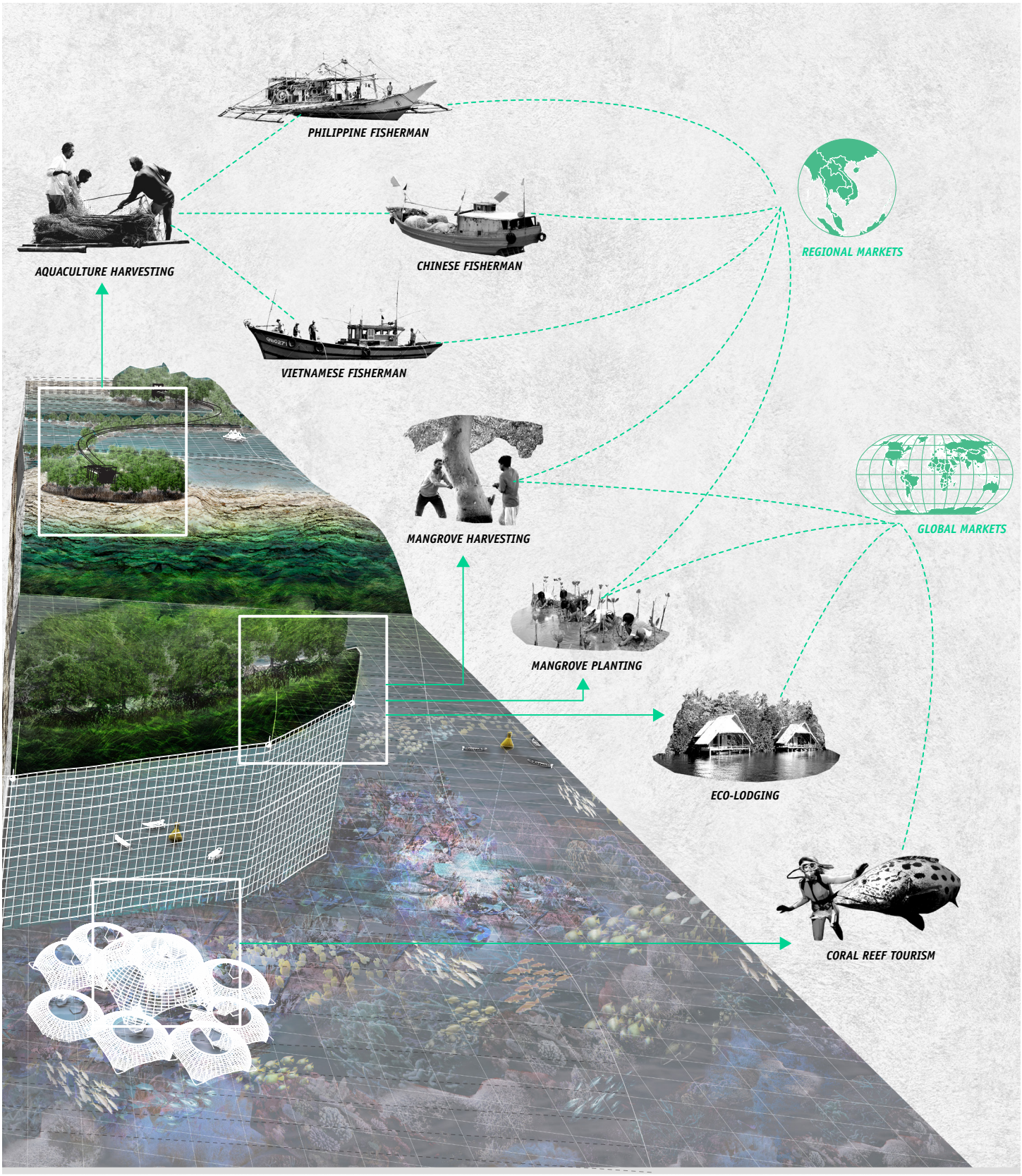


Fig. 58 *Sustainable harvesting*

PHASE 3B: SOFT MARKETS

This final phase works in conjunction with Phase 3a where it provides a marketplace for the harvested exports. Phase 3b transforms the shallow waters of Pag-asa Island into an informal market where one can not only find the atoll's products but also a space where fisherman can congregate and sell their own catch. The market acknowledges the existing informal trading and bartering practices in the South China Sea and aims to legitimize these activities by providing the spatial resources.[5] The informal market encourages transparency and provides an alternative to the illegal black markets. Apart from its revenue, the market also becomes another platform where the economies between disputing countries are intertwined. The exchange of multiple currencies creates an organic economic reliance between countries. This is partly due to the user diversity of the market, ranging from military personnel to tourists.

As for the market's spatial qualities, the volume is determined by the production capabilities of the atoll. The quantity of vendor stalls can either grow or contract depending on the yield from the products grown on the atoll. This fluctuation of program occurs along the structural spine of the informal market, allowing for the flexibility of "pop-up" spaces. Therefore, the spatial form of the market is strictly dependant of these natural flows, specifically the amount of nitrate in the atoll environment as it dictates the growth of fish, mangroves, and coral reef. Apart from its spatial arrangement, the typology of the informal market can adapt to accommodate a variety of programs including hawker centres, drying racks for salted fish, market stalls, and covered storage rooms. Also, with the use of mobile trading barges, the mobility of the fisherman increases as they are not required to anchor. The form of these barges takes cues from fish markets in the region, from its wayfinding systems to its fish processing equipment.

In terms of the governance structure, the introduction of markets begins to involve more international bodies which can help regulate the region's resources. This can lead to a series of regional organizations in the South China Sea that can represent the needs of the region on the global stage. However, this can only be achieved if this marine park framework extends across to the other disputed landforms in the South China sea.

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5 Interpreter, The. "China's 'Dark Fishing Fleets' Cast a Black Shadow Over the South China Sea." The News Lens International Edition. The News Lens International Edition, January 28, 2019. https://international.thenewslens.com/article/112819.

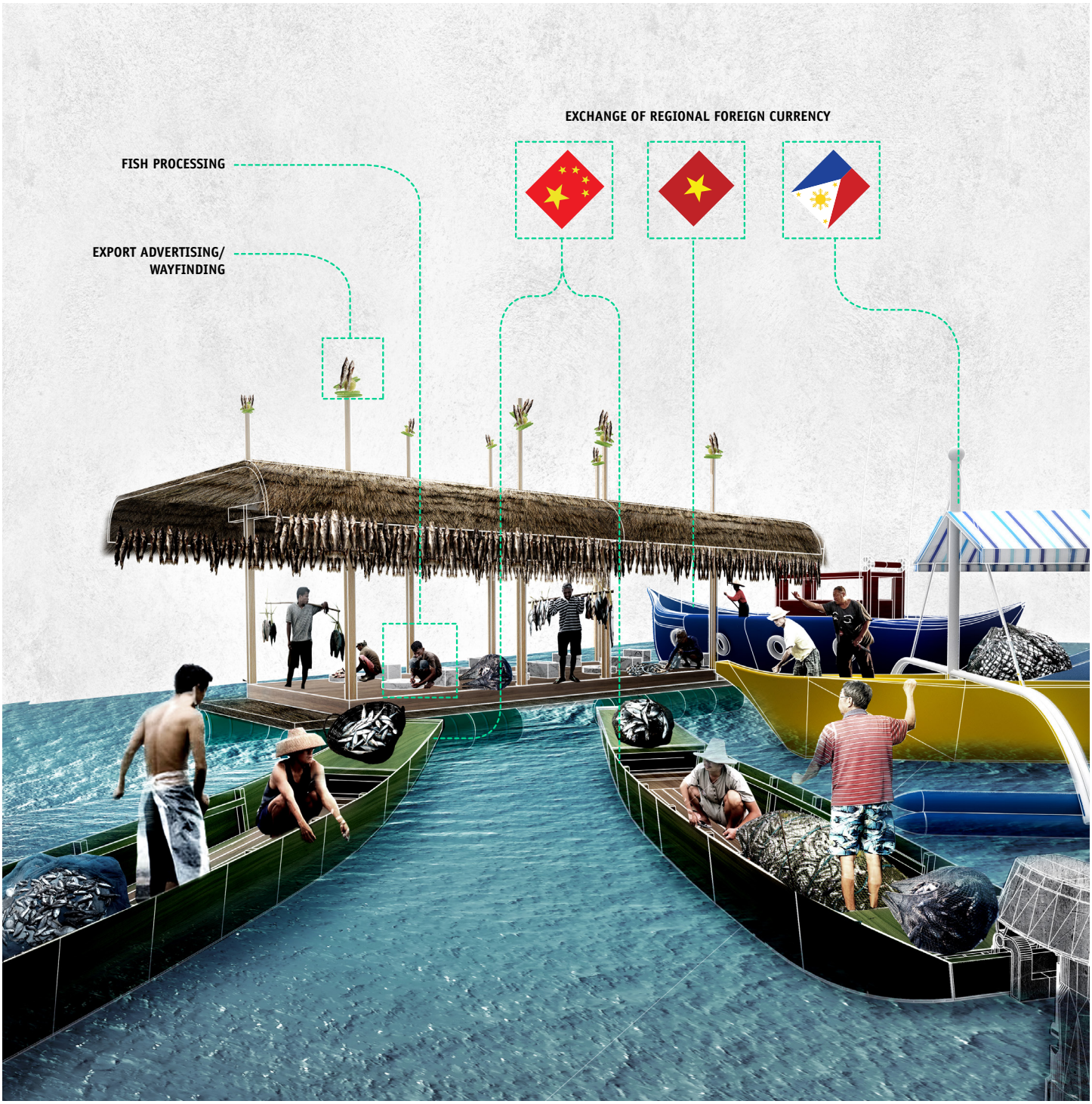


Fig. 59 *Mobile trading barges*

Fig. 60 *Central floating market*

HAWKER STALLS AND
SEATING AREAS
MARKET STALL

Fig. 61 *Aerial view of informal markets on Pag-asa Island*

30 YEARS
TRANSPORT/EMERGENCY AIRCRAFT

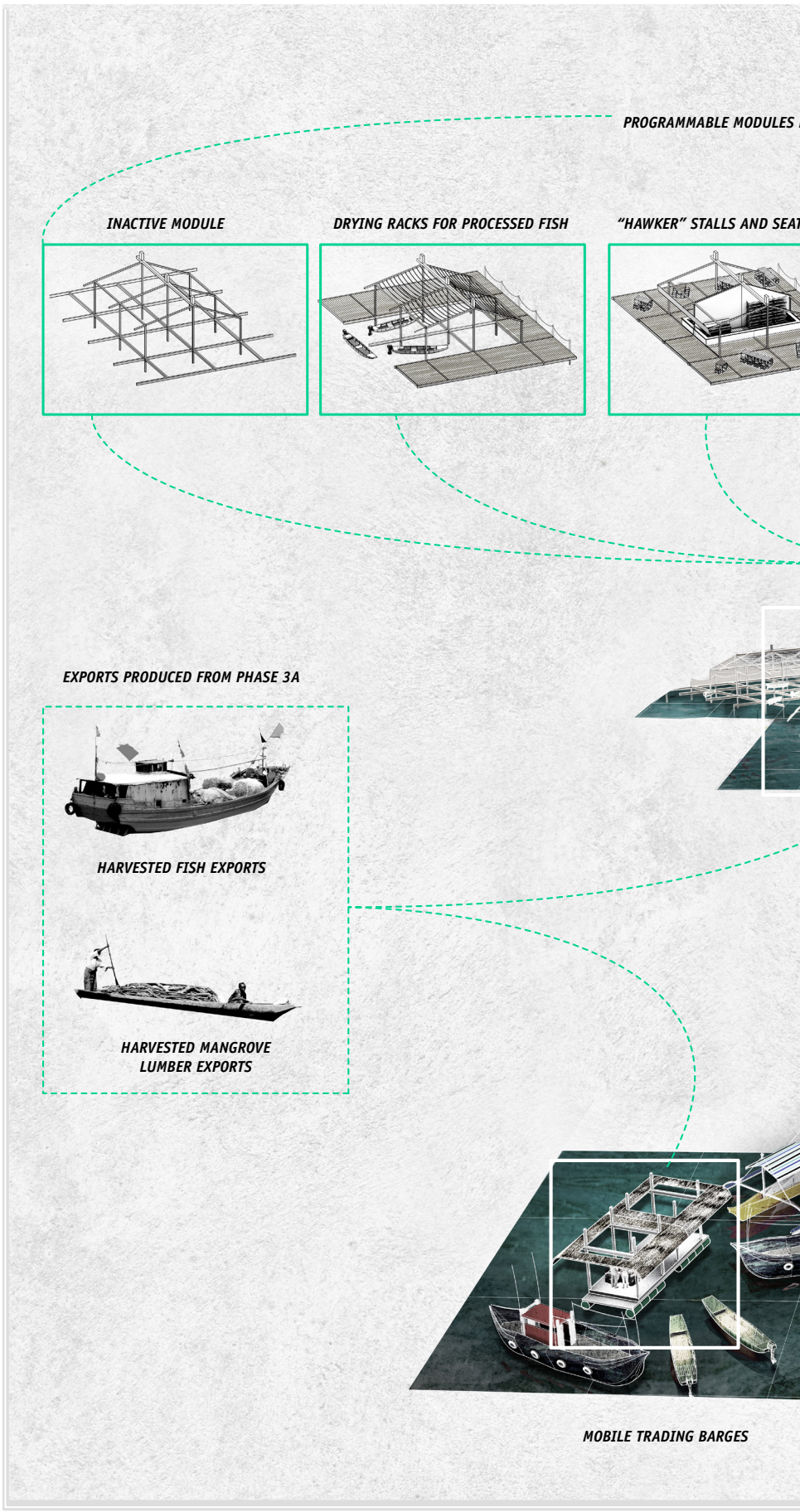
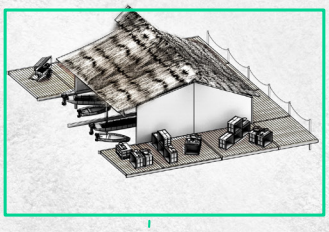


Fig. 62 *Typology and flexibility of the central market*

FOR CENTRAL MARKET

TING AREA

MARKET STALL



EXPORT/ BOAT STORAGE

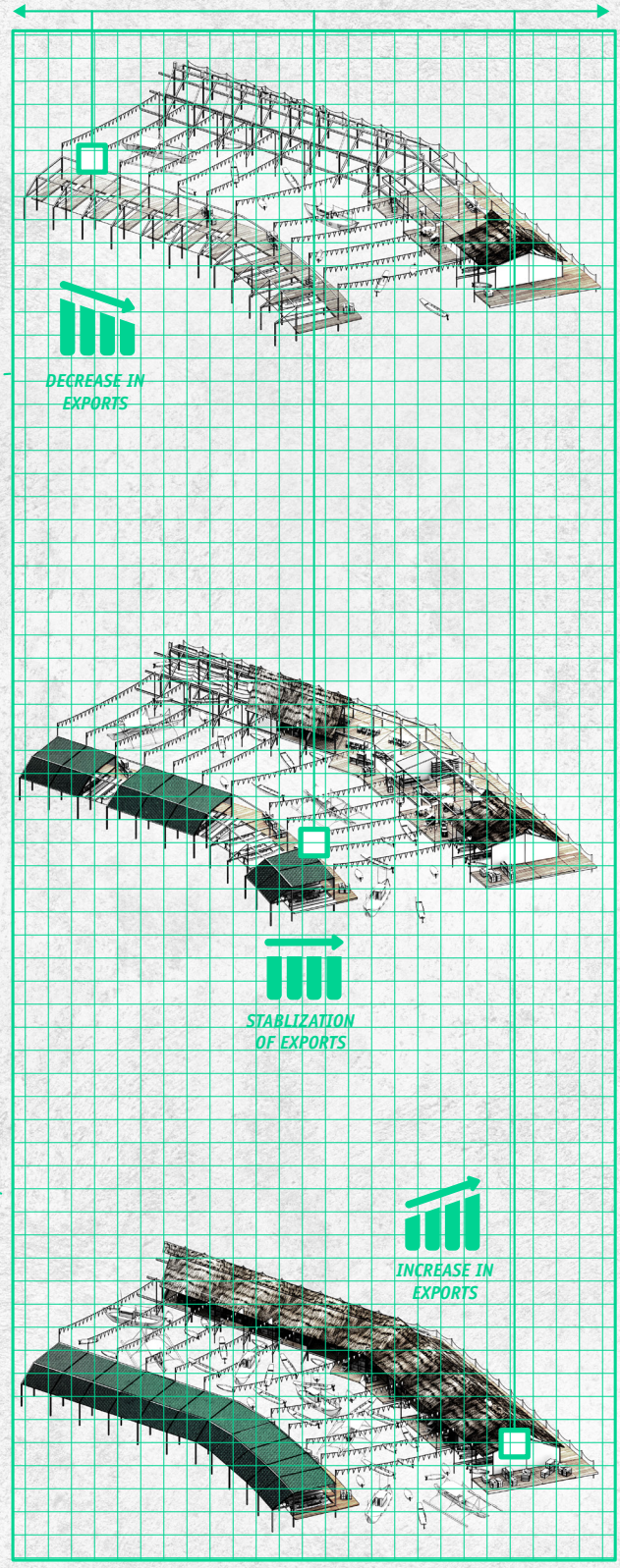
CENTRAL FLOATING MARKET

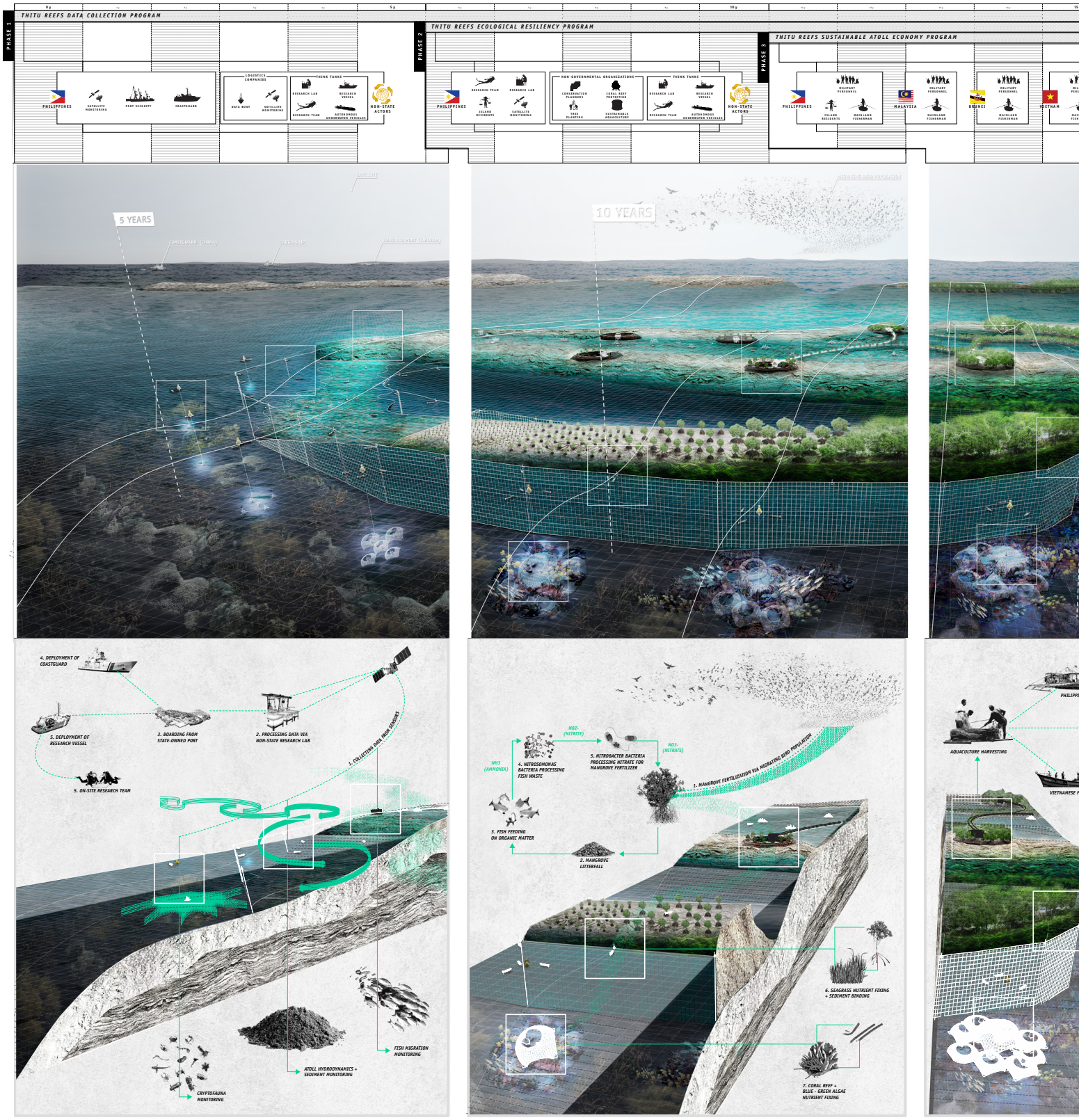
MARKET RESPONDING TO FLUTUATIONS IN NITROGEN YIELDS OF ENVIRONMENT

(-) NITROGEN DEFICIENCY

(=) NITROGEN EQUILIBRIUM

(+) NITROGEN SURPLUS



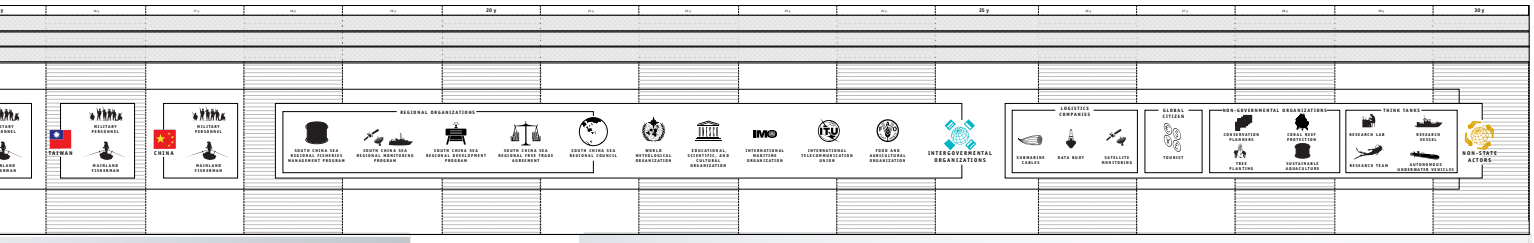


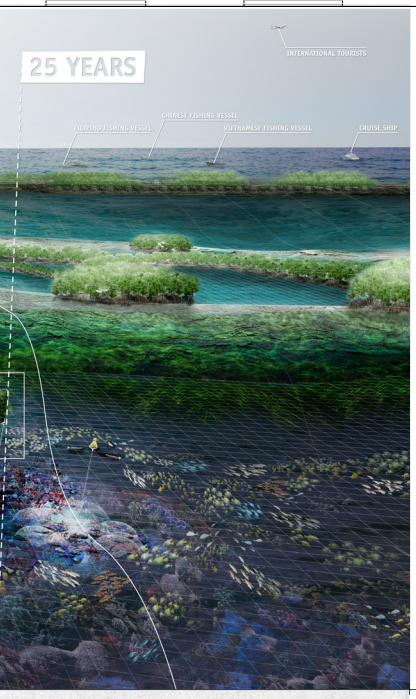
PHASE 1: DEPLOYING MARINE DATA SENSING INFRASTRUCTURE

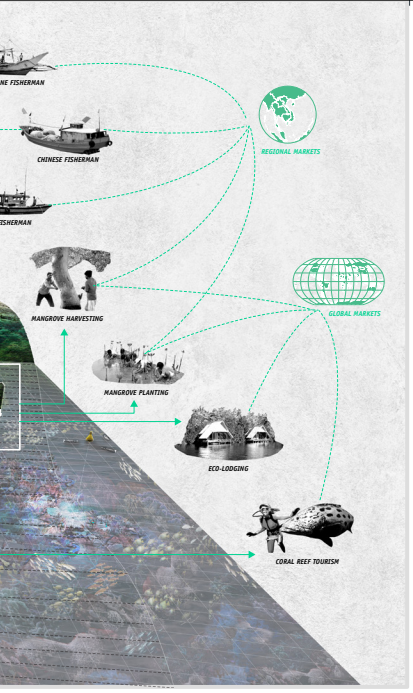
PHASE 2: ESTABLISHING MANGROVE-SEAGRASS-CORAL REEF NUTRIENT CYCLING

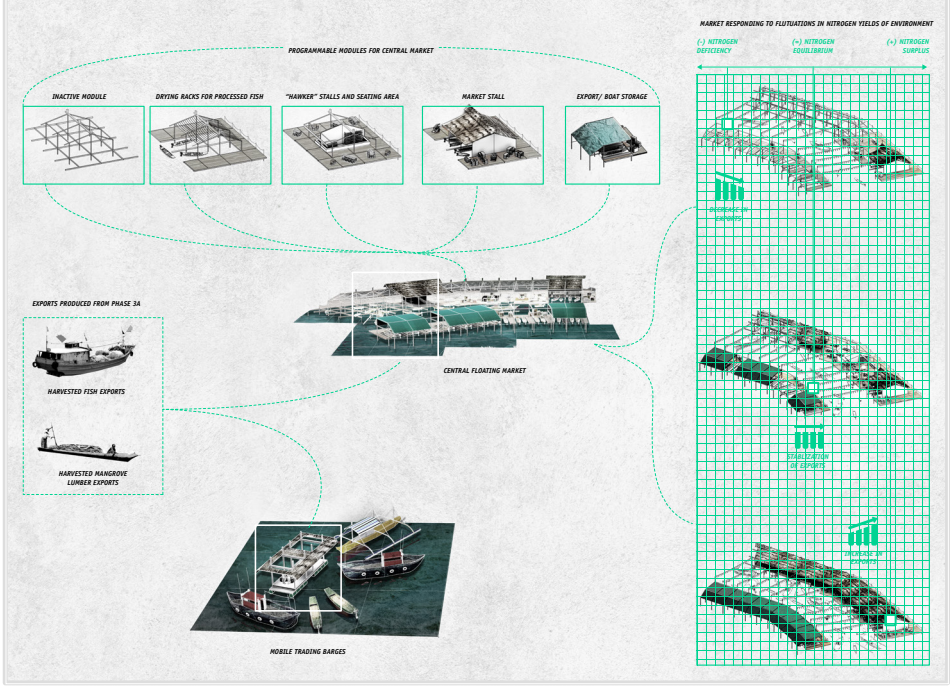
PHASE 3A:

Fig. 63 *Complete timeline of the illustrated marine park framework*









SUSTAINABLE CULTIVATION OF ATOLL

PHASE 3B: SOFT MARKETS

CONCLUSION

Given the complex and multi-faceted nature of the dispute in the South China Sea, it is important to understand the scope in which an architect can intervene. Many assumptions of the governance structures were made, and the rigor of the environmental sciences mentioned can be questioned and scrutinized. Despite these shortcomings, this thesis aims to highlight the architect's ability to understand the spatial implications of mediums used to delineate territory. This can be done through the simple questioning of how we draw maps and who is involved during this process, which inevitably informs our perception and relationship with territory. A reinvention of the typical map can expand the conversation regarding territorial disputes. The architect also possesses the skill to visualize the spatial implications of policy makers which can help inform the efforts of ecologists. Through these speculative narratives, the architect can leverage their spatial and visual skills in these multidisciplinary settings – opening doors for designers in conflict resolution discussions. The work of Eyal Weizman and his London based research group, *Forensic Architecture*, has set a precedent for architects to realise their political agency by using visualization as an investigative tool. In his book *Forensis*, Weizman further elaborates the agency of architecture in the legal forum with its ability to *aesthetize* territory – highlighting the material sensibility of the *field* in question.[1]

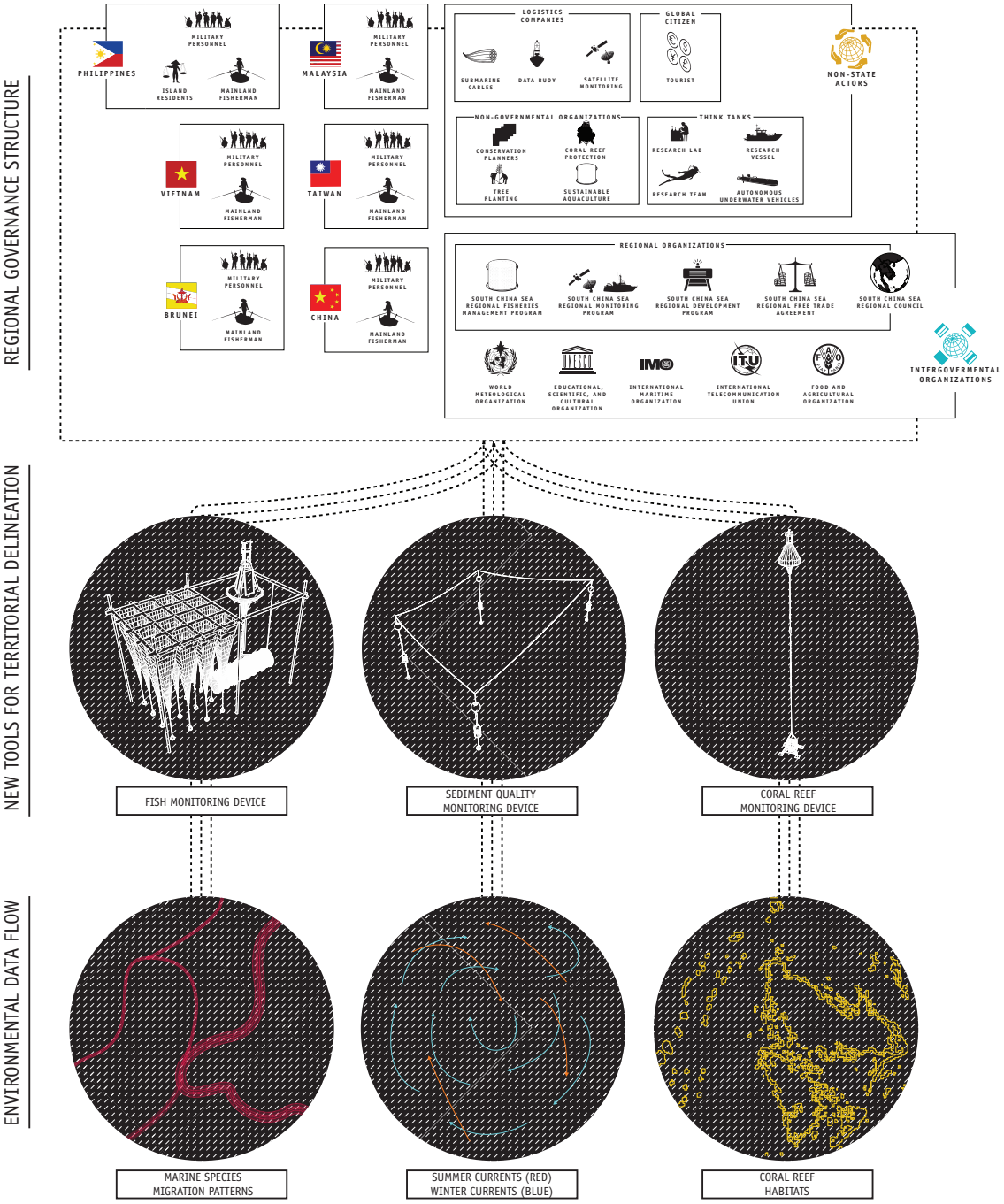
> *"From the perspective of forensics, architecture is an analytic and probative mode for inquiring into the present through its spatial materialization. Forensics turns space into evidence, but also into the medium in which different types of evidence come together and into relation with each other. Forensic architecture thus intensifies the investigative capacity of architecture and turns it into a mode of public address, a way of articulating political claims, and forces architectural researchers to face cross-examination in the most antagonistic of forums".*

The ambition of this thesis stops at Pag-asa Island, but one can easily imagine if it were scaled across the other disputed landforms in the South China Sea. The three tools used to facilitate the marine park had created the roadmap for an informal market to be realised. However, one can wonder how the narrative might change if a different combination of tools were used. This can result in interesting end products for other islands in the disputed sea. The large artificial islands constructed by China can be reformatted as wind farms, taking advantage of the openness of the swath. Continuing this speculative exercise, the marine park program can expand to consist a large collection of islands. This network of constellations can inform new regional

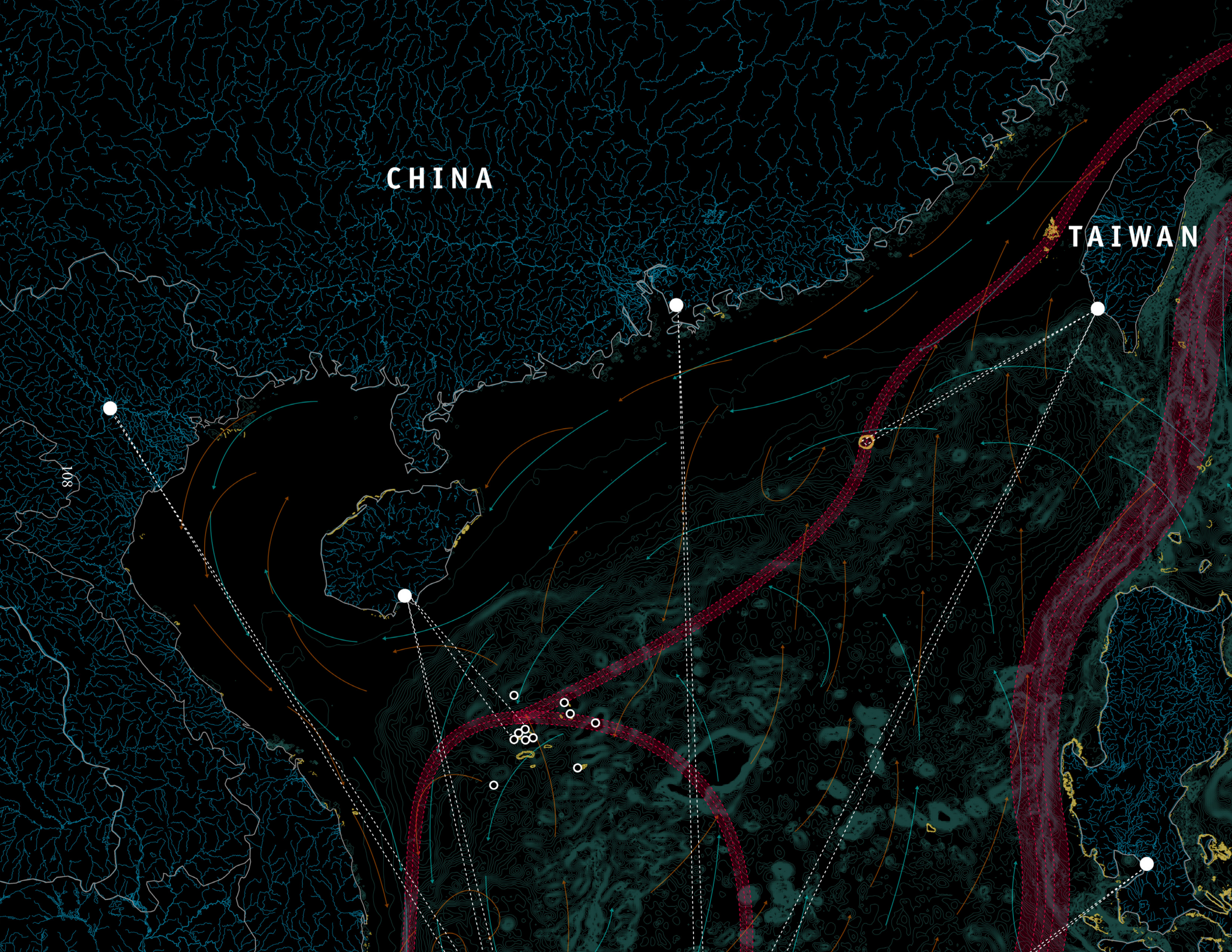
Fig. 64 *Proposed regional framework that considers the synergies between state and non-state agents*

Fig. 65 *'Territory as Equilibrium' - proposed regional map for the South China Sea (see next page)*

1 Weizman, Eyal. *Forensis: the Architecture of Public Truth*. Berlin: Sternberg Press, 2014. 19.



opportunities, ones that seem more attractive than the political stagnation we are currently facing. With this newly reprogrammed archipelago, the agency of the architect produces new tools and governance structures that expand how we delineate territory, or rather how we view territory. Territory cannot be represented through static maps that represent information solely pertaining to state interests. It must include processes that operate beyond the human scale, such as the natural flows informed by the agency of marine species, weather patterns, and nutrient cycles. This helps us view territory as a multi-dimensional relationship between the human and natural environment. Unable to capture its state in one specific still, we must think of territory as an ever-changing condition as it is constantly balancing between its inputs and outputs. As a final thought, this thesis aims to add to the evolving definition of territory. *Supplements for Diplomacy* sees territory as a "return to equilibrium".


CHINA
TAIWAN
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CAMBODIA
VIETNAM
PHILIPPINES
SPRATLY ARCHIPELAGO
MARINE PARK
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BRUNEI
MALAYSIA
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