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Urban Theory Lab Research Practicum:
Operational Landscapes of Planetary Urbanization
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IS PACIFIC LIMITLESS[ED]?

When we can drain the Ocean into mill-ponds, and bottle up the Force of Gravity, to be sold by retail, in gas jars; then may we hope to comprehend the infinitudes of man's soul under formulas of Profit and Loss; and rule over this too, as over a patent engine, by checks, and valves, and balances.

- Thomas Carlyle (1795-1881), Scottish essayist, historian

EXECUTIVE SUMMARY

Covering 46 percent of the earth's surface from pole to pole and spanning five continents¹, 70 sovereign and free association nations touch the Pacific Ocean, an entity so large as to be divided into distinct cardinal sectors: the North, South, East, and West Pacific. An aquatic territory of extreme extents, scales, and forces that prohibit traditional land-accustomed human habitation, the Pacific is not easily conceived by anthro-metrics at 165 million square kilometers (64 million square miles) of ocean surface and 710 million cubic kilometers (171 million cubic miles) of liquid volume. At its widest point this water body reaches nearly half the circumference of the Earth, 20 thousand kilometers (12 thousand miles), from the tip of Indonesia to the Colombian Coast with equally colossal subsurface terrain including the world's deepest point at the floor of the Mariana Trench, 11 thousand meters (36 thousand feet) below sea-level – deeper than Everest is high. Characterized by unique climates, geologies, terrains, and ecosystems, the never-ending horizons of world oceans have been romanticized within our planetary origin myth² as an endless resource, “a vast expanse that is fundamentally [...] a space ‘outside’ society...to be developed” (Baldacchino, 2010). It is within this extreme territory of super- and extra-human extents that our investigation explores the capital-ecological production and exploitation of an aquatic biomass, that of

¹ North American, South America, Asia, Australia, and Antarctica

² Evolutionary theory (abiogenesis) posits that life may have emerged from the sea: deep hydrothermal vents generating enough thermodynamic drive to form organic compounds (Baross, 1985).

fish, and an ocean operationalized in kind to sustain urban growth within a neoliberal context that has transformed food source into resource.

Part 1 Relational Geographies

One of the only remaining ‘last frontiers’, the Pacific Ocean is a rare site in the 21st century still capable of supporting the exploration and appropriation of new territories and resources, what Jason Moore terms *cheap nature*: labor-power, food, energy, and raw materials (Moore, 2014). Despite historic notions of this extreme territory as a vast expanse of endless resource, the Pacific is in fact far from limitless. Analyzing the reorganization of the ocean as a landscape strategically operationalized to support urban growth (Brenner, 2014), we identify processes of neoliberal development and specifically, the exploitation of wild food-source by the commercial fishing industry driven by capitalist accumulation, commodification, and privatization. The investigation reveals the systemic intensification and connectivity of the fishing industry to mechanisms of the urban agglomeration in relation to territorial rights and competitive access to open-seas, patterns of regional and international trade, and the role of states versus operations of transnational corporations. Within this context our research focuses on examining capital-ecological production through the complex and multi-scalar linkages between access to and exploitation of wild fisheries, the structure and development of the fishing industry through scales of labor and technology to include emerging reliance on domesticated fish stock, and the fallible imperatives required to sustain neoliberal capitalist production in an exploited ecosystem.

Part 2 Critique & Alter-Urbanization

The intensification of these operational practices demonstrates how commercial fishing has been rendered disassociated both with supply and demand of food systems, but also from the resource base, the marine biomass itself. Instead, fishing industries and the regulatory and governance frameworks within which they operate are dependent on achieving economies of scale to secure projected assurances to fish – first wild catch, but if not, then domesticated stock – both fish-bases increasingly conflated with present and future profit. Furthermore, exploitative manipulations of political and economic mechanisms are in fact jeopardizing access to and the health of wild catch with severe collateral implications for the stability of the Pacific Ocean as an enduring source of sustenance, livelihood, commerce, and culture. Delineating the bounds of an increasingly limitless^[ed] ocean, contemporary commercial fishing practices are increasingly focused on securing competitive gains with disregard for ecosystem tolerances. The result of this diminutive dynamic will result in overcapitalization that sinks profits to satisfy endless capital investment in order to assure future gains by and for the commercial fishing industry as all other marine social and ecological resources are inversely depleted. Investing more and more for less and less, shoring up profit margins on speculation and intensification, until the system collapses, long after all the wild fish are gone – the ultimate exhaustion of *cheap nature*.

We propose to disrupt this market-resource genocide by envisioning instead alternative processes of commercial fishing to redistribute territorialist capital development through the intersection of national, commercial, and local regulatory privileges for biomass extraction across scale and function indicators predicated on the urban. Integrating the relational network of territorial and resource demands defined by existing legal, political, and market infrastructures (at present yielding rights to exploitive production), we propose a new notional urban-oriented oceanography that incorporates spatial conditions deployed through gradient projections of ocean surface, depth, and access parameters while accommodating the transient nature of a swimming biomass and the interdependent ecological systems that impact their lifecycle. Conceptualized as a shift from territorialization to urbanization, we recognize the role of accumulation strategies in rejuvenating human and non-human environments for a shared future.

Proposing the re-imagination of an alternative urbanization schema within the enduring neoliberal-capitalist regime, termed *alter-urbanization* (Brenner, 2016), we aim to visualize a spectral marine zoning methodology that reveals the potential for calibrating territorial and resource allocation to balance capital interests with ecological sustainability. Through our investigation discovery, we posit that these seemingly irreconcilable interests are in fact fundamentally bound – resource use dependent on (re)source – despite the temporal scales that separate the emergent cause and effect of their disconnect. Accordingly, prioritizing regeneration of our urban-oceanographic (Blumberg, 2016) ecologies through more equitable and accountable processes of biomass extraction would ripple across all life that has come from, thrives on, and will eventually return to the oceans.

INTRODUCTION

Theoretical Framework

Within the premise of traditional urbanization, the very essence of what constitutes *the urban* remains an unexamined assumption, yet in operation and implication, constitutes complex and expanding systems demanding skepticism, theorization, and analysis. A considerable portion of the discourse typifying global urbanization is contextualized within a narrow definition of the city limited to its most explicit expression and manifestation, that which is spatially confined by convenient and seemingly rational – although often arbitrary – boundaries. Most urban research continues to focus on *units* of agglomeration and fails to criticize the prevailing assumptions of cities as a structurally singular geographic entity. In contrast, we acknowledge and aim to develop a re-evaluation of the relationship between the city and its hinterland, those remote yet interconnected landscapes by which the urban center survives and thrives, by deploying the framework of Brenner and Schmid’s planetary urbanization to investigate the extra-urban processes within the Pacific Ocean as one such extreme territory (Brenner and Schmid, 2014). Such a re-positioning may radically shift our understanding of global urbanization from that defined by the traditional demarcation be-

tween the urban and the non-urban to an alternative perception where the urban agglomerations and its operational landscapes are, in truth, directional ecosystems within a worldwide capitalist system – thus erasing the urban/non-urban divide in our contemporary era. Within this context, we aim to analyze and understand the Pacific Ocean through the lens of commercial fishing operations as sustains the global network of metropolitan regions but also, fundamentally as extra-urban processes implicated in the cycle of the global capitalist-market system. How can the dialectic process through which the commercial fishing industry is both an agent of capitalist power and a subject of capitalist appropriation be mapped in order to inform a new analysis that radically challenges the hierarchical value-relation between urban and non-urban, city and non-city?

The notion of planetary urbanization relates at large with processes of creative destruction to enact the reorganization and operationalization of the world ecology through capitalist development. This dialectic interchange between human and non-human nature deploys capital investment, labor and technology, as well as innate externalities of a natural order to drive a constant and quintessential expansion in support of urbanization and capital accumulation (Foster, 2000). Jason Moore defines these externalities through his work with the term *cheap nature*, an ecological production and the transformation of nature into value as an integral component of capitalist development. Defining four such value-relations as labor-power, food, energy, and raw materials, Moore advocates that when ‘untapped’ areas of nature are operationalized, the result is high ecological surplus due to minimum investment requirements in labor and technology relative to nature’s freely produced bounty (Moore, 2014). Thus, with the appropriation of new territories, the output of exploitation is maximized with small inputs of capital and capitalist power. Accordingly, when *cheap nature* from operational landscapes is exhausted and the ecological surplus begins declining, investment on innovation, labor, and technology within the established zones is then required in order to reproduce what was once provided by nature for free. Capitalism then, by definition, is a frontier driven system.

Historically, capitalism has been able to resolve its recurrent crisis because territorialist and other capitalist agencies have been able to extend the zone of appropriation faster than the zone of exploitation (Moore, 2014). Since the 19th century, this system has proven adaptively notorious for overcoming constraints in its indomitable dominion over the systems of global capital accumulation – an ever-expanding frontier appropriating new space to the sole end of resource acquisition as the basis of wealth, power accumulation, and endless capitalist production for production’s sake. However at the nexus of ‘final frontiers’ in the 21st century, the cumulative overexploitation and potential exhaustion of *cheap nature* triggers not only the need to expand and redefine territories, but also demands that we commoditize and develop, through investment and technology, new elements of “man-made” nature that previously existed outside the political, socioeconomic, and cultural sphere. These transformations, fundamentally urban in their processes, intention, and output, are radically reshaping the planet across sites and scales of intensity and densification with political, social, and economic implications to reveal unconsidered urban development that underlies

and extends far beyond our inherited, typically high-density, urban centers.

February 2016 in conversation with the Urban Theory Lab, Jason Moore presented *Five Propositions of the Law of Cheap Nature* at the Harvard Graduate School of Design:

- 1) The accumulation of capital is the transformation of the earth (and its creatures).
- 2) Substance of value is abstract social labor but the relations of value encompass and unify commodity production and socio-ecological production.
- 3) Socially necessary labor-time forms through relations of exploitation and appropriation, not only in the zone of commodification.
- 4) Value is a systemic relation with a pivotal 'economic'/productivist moment (not the other way around, as Marxists have long argued). Its systemic thrust is revealed not only in technical change but in the "European rationality of world domination" (Weber).
- 5) Consequently, the territorial state (including empires) emerges as the pivotal mediating force – a necessary "political membrane" (parenti) – to the cyclical reinventions of world nature, world power, and world capital.

As we proceed into a 21st century characterized by planetary urban conditions with extensive implications for human/non-human populations and environments, sites and operations characterized by an influx of capital investment should elicit close attention through a methodological analysis of extended urbanization in order to reveal the extents and limitations of our urbanity. To better understand the present but also more accurately model the future, such a theoretical framework revealing the intensity, connectivity, and metabolism of urban/peri-urban processes is critical in explicating patterns of human activity as impacts built and natural world-systems as well as the critical interface between.

RELATIONAL GEOGRAPHIES

This research aims to critically interrogate the role of commercial fishing within operational landscapes under a neoliberal accumulation regime and highlights efforts to maximize ecological surplus, i.e. wild fish catch, through endless processes of expansion and destruction. Focusing on these extents, our investigation will explore the intensification and connectivity of the commercial fishing industry within the Pacific Ocean, the source of 70 percent of the world's wild catch³, in order to reveal the geopolitical mechanisms of urbanization expressed through commercial, legal, technological and environmental frameworks, all interwoven between the capitalist appropriation of cheap nature and

³ In 2011, capture fisheries and aquaculture supplied the world with 178 million tons of fish, crustaceans and mollusks. The Asian Pacific Region supplied 72 percent, dominating both world capture fisheries and aquaculture with shares of respectively 55 percent and 91 percent (FAO, 2014).

capitalist power. Over the past five decades fish production has increased at an average annual rate of 3.2 percent, outpacing world population growth at 1.6 percent, while average world per capita fish consumption has nearly doubled from 9.9kg in the 1960s to an annual average of 19.2kg in 2012 (FAO, 2014). As global demand for fish rises, both in actuality and through market manipulation⁴, the consequences of industrial oceanic food production extends far beyond local sourcing from and distribution to geographically-consolidated coastal ecosystems to reach deep-inland population agglomerations and drive global capital exchange across the global metropolitan network as an extended whole.

Our analysis considers how the urban agglomeration both depends on and exerts control over the oceans in relation to territorial rights and competitive access to open-seas, patterns of regional and international trade, and the role of states versus operations of transnational corporations to include consideration of labor and technology. To demonstrate these relational geographies, our research focuses on examining ecological production through the complex and multi-scalar linkages between access to and exploitation of wild fisheries, the structure and development of the fishing industry through scales of labor and technology to include emerging reliance on domesticated fish stock, and the fallible imperatives required to sustain neoliberal capitalist production in an exploited ecosystem. The ambition of this research is not an extensive review of the commercial fishing industry but to demonstrate key relationships between this industry, urban centers, and neoliberal systems and their collective collateral impacts on aquatic biomass – expanding far beyond the geographic extents of the Pacific Ocean.

Territorial Rights and Access to Open Seas

The long 16th century⁵ produced the shipbuilding and cartographic revolution, a new technological dominion that enabled a legible, rational transcription of planetary space for the purposes of territorial exploration and expansion (Moore, 2014) – and the genesis of our ability to lay claim to the oceans. From the 17th century onward, inscribed by the range of a ship's cannon, *Freedom of the Seas* was understood as waters beyond a 3-nautical mile national boundary open to all but claimed by none. Described in a *History of Maritime Zones under International Law*⁶, it wasn't until the 1940s and 1950s that nations – starting with the United States under President Truman – began expanding this historically restrained territorial boundary in order to reserve natural resources considered proprietary, typically identified by the extents of the continental shelf (as an extension of land). Coinciding with the post-war period of realigned geopolitical authority and national reconstitution, these claims reflect the prioritization of secured access to resources as the basis of restorative wealth and power accumulation within the new world order. Codifying this emergent proprietary international framework, the third United Nations Convention on the Law of

⁴ It is well documented that China over-reports marine fisheries catches (Pauly, 2002).

⁵ 1450-1640 CE (Arrighi, 1994)

⁶ Published by the Office of Coast Survey, a division of US National Oceanic and Atmospheric Administration (NOAA), http://www.nauticalcharts.noaa.gov/staff/law_of_sea.html.

the Sea (UNCLOS), ratified in 1982 and enacted in 1994, established a country's legal right to claim sovereignty over surrounding waters extending outwards from their coastal baseline, demarcated as territorial seas up to 12 nautical miles, and sovereign right over subsurface marine resources – to include fishing rights – extending up to Exclusive Economic Zones (EEZs) up to 200 nautical miles from shore (Nordquist, 2011). Today, EEZs define geographically-contiguous national right of ways to resources within 36 percent of the world's oceans and in the Pacific alone constitute 53 percent, 88 million square kilometers (34 million square miles), of the total Pacific surface. In this way, controlled access to these extensive ocean areas, as well as the biomass that they contain, become valuable – and exploitable – thus capable of being operationalized in geopolitics as a free-market opportunity where countries are able to buy and sell extraction rights between their national zones. These neoliberal market based policies, often conflated with socio-environmental justifications, demonstrate how property rights have been deployed to enclose for a few what was once shared by all.

Constituting a much smaller area at just over 2% of world oceans, Marine Protected Areas (MPAs) perform in a similar way to also demonstrate the power of access on behalf of strategies of accumulation within Pacific waters. Vehicles for environmental stewardship at their best, these and other regulatory zoning oceanic frameworks in fact rarely prohibit resource extraction; rather, they are management frameworks predominantly accountable for designating the convening authority. According to the Marine Conservation Institute⁷, the reality is that less than 1% of the world's oceans constitute enforced no-take marine reserves. In this way, these management frameworks in their various iterations from EEZs to MPAs are deployed as instruments to empower federal governments to claim land and water in order to exploit the resources of the ocean. Hedged by conservation claims, the process of land and water expansion and re-designation may be viewed as a progression of imperial territorialization. An example of such strategy is the 2014 expansion of the Pacific Remote Islands Marine National Monument⁸ by the United States to effectively shut out China from Pacific tuna fishing. Private U.S. tuna corporations can then negotiate contracts with Pacific allied nations to develop Pacific fisheries or to obtain exclusive fishing rights within the marine reserves. With a massive fleet of 2,000 distant-water fishing vessels that are state-subsidized, China catches nearly five tons of fish a year worth more than \$10 billion – in contrast, nearly 90 percent of seafood consumed in the U.S. is imported (Perez, 2014). Where new acquisition is limited and increasingly contested, instead we understand territorial re-designation – or in the case of the South China Sea, territorial creation – to demonstrate how access drives resource accumulation. In the case of fisheries, these political and economic exclusion models contribute to over-fishing as each fishing agent is incentivized to invest capital in operations and technology (much of which may be nationally subsidized) to extract the most fish first. This process of overcapitalization absorbs profit and leads to overexploitations of the ocean's biological food sources.

⁷ MPAAtlas, <http://www.mpatlas.org/explore>.

⁸ Expanded in 2014 by over 4 times, from 83 thousand square miles to 491 thousand square miles.

Tracked by mandated Vessel Monitoring Systems (VMS) – GPS devices – over the course of a year, the density of commercial fishing vessels in the Pacific illustrates the intense competition for fish in relationship to this regulatory framework. The pattern of the restricted EEZs is apparent in the vessel movement, as vessels are denied access from fish capture in these waters, and thus operate in open seas at the perimeter of these areas. Equipped with sonar fishfinder technologies, vessel trajectories also reveal how the fish biomass concentrates in relation to these restricted low-activity zones as well relative to Pacific oceanography – the vessels go where the fish are. Notably, fishing piracy includes when vessels tweak their GPS transmitters, should they pursue fish bodies into restricted zones, to misrepresent their actual location. Although many of the targeted commercial species follow trans-Pacific lifecycle migrations, biomass concentrations are evident in gradients from warmer nutrient-rich equatorial waters as well as surrounding EEZs that limit fishing. Transit from major port nodes, to include permissible thru transit across EEZs, is also discernable. At the site of commercial catch, we understand the wild fish as *cheap nature*, as food source turned resource, the base unit of a system-wide metabolic process of production that has been transformed by the capitalist regime.

Patterns of Regional and International Trade

Next we consider the process of fish transformed to commodity, precluding Marxian identification of metabolic rifts resulting in (detached) ecological crisis (Foster, 2000). Understanding the vessel as the mechanism by which this resource is being commoditized, as a transfer agent of metabolic rift, we trace the transformation of fish from the ocean to the global market. Beginning at the site of capture, and proscribed by the technological and labor demographic of the vessel itself, the wild catch is conveyed to ports, no longer the consumptive destination, but instead a point of embarkation and disembarkation. Fish destined for the global economy are captured at market scale, massive hauls to reap maximum profit in minimum time. Between 1950 and 1990, total wild marine fish catch steadily increased to between approximately 100 million metric tons annually, supported by a doubling of world fleet size and dramatic developments in fishing technology⁹, leveling through the 1990s (not for lack of continued investment). Foreshadowing the depletion cycle, by 1995, three-quarters of major marine fish stocks were overexploited, depleted, or being actively fished beyond their biological limit¹⁰

Imports and exports thus re-valuate the fish as less than worthy life-form, more than nutrient, but instead as capital. As commodity, fish are bought and sold to drive other markets and production processes: for canneries, oil, and fishmeal factories, for livestock feed, and increasingly for aquaculture feed. In this way, the connection between food source and sustenance has been industrialized and extended across a global domain. The ports themselves, annotating major urban centers, operate as the urban interface of the oceanic-

⁹ Fishing technology innovations included: larger fleets, open ocean factory ships, transparent lines and nets, huge drift nets, bottom trawlers and electronic fish finders.

¹⁰ U.S. Department of Commerce, 1995. *Fisheries of the United States, 1994*, NOAA Current Fisheries Statistics No. 9400.

market connection. Commanding the exchange activity and operations, ports represent the major nodes of fish consumption in relation to the population agglomeration. Here, it is fact the dis-connection of production from consumption of fish that further illustrates the capitalist manipulation (transformation) of resource to commodity. China is the largest producer of fish, overwhelming so when including aquaculture production. Yet with its comparatively limited EEZ area¹¹ and grievously marred regulatory compliance and reporting record, we understand this production capacity as catching wild fish at remarkable scales from predominantly open seas – demonstrating a degree of exploitation driven by the development of capitalist production and technology rather than demand for food. Where the relation between fish supply and demand is conflated with uneven food access and threatened natural resources, the depletion of wild fish stock through over fishing is also obscured. Driven by the pursuit of profit for private and national economic interests, capitalist gain trumps both the distribution of food to those in need as well as collateral environmental degradation (Magdoff, 2004). For example, despite the 1994 Marine Mammal Protection Act, an estimated 28 million tons of bycatch (40% of total catch), constituting any incidental non-target capture, may be discarded globally each year (Keledjian, 2014).

Role of States vs. Operations of Transnational Corporations

Established with the 1948 designation of the Asia-Pacific Fishery Commission by the Food and Agriculture Organization, Regional Fishery Bodies (RFBs) are instruments through which states and organizations cooperate to manage and develop fisheries in a three-tiered structure: as management organizations, advisory bodies, and scientific bodies. Today, there are 44 RFBs worldwide, 20 of which are Regional Fisheries Management Organizations, the primary tier responsible for the management of fishery resources in a particular region or of international waters of highly migratory species to include tuna, marlin, sailfish, sharks, and swordfish (FAO, 2016). The model posits that international cooperation between governance bodies is critical in managing species that move between national boundaries. Thus, geopolitics has a significant impact on fisheries and the trade of seafood. In 2010, three of the world's five top fishing nations were Asian-Pacific countries¹², although China alone produced more than all the rest put together with a colossal 66 million tons, more than half the entire regional catch (FAO, 2014). Trade agreements also rely on the authority of nation-states. The Trans-Pacific Partnership (TPP), a Free Trade Asia-Pacific agreement comprised of 12 countries¹³, demonstrates how a major trade deal has affected the global geography of fishing. The combined gross domestic product (GDP) of the current TPP members is approximately \$27.5 trillion, constituting 40 percent of global GDP and one-third of global trade (Meltzer, 2014). Accordingly, a mega-regional trade agreement has dually opened and expanded the market for fish in a demographic competing for, but also surviving by, fish.

¹¹ China controls 8.8 thousand square kilometers of EEZ compared to the United State's 9.5 million square kilometers.

¹² China, Indonesia and Japan; rounded out by Norway and India.

¹³ Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States and Vietnam

The global fish market must also be understood through the lens of transnational corporations, the primary agents of large-scale industrialized fishing activity. The average annual revenue of the 160 largest seafood companies in 2012 exhibits a distinct keystone pattern where the top 10 percent of 2,250 registered fishing companies worldwide account for 38 percent of the total revenue. Thirteen of the sixteen largest fishing and aquaculture companies operate directly in marine ecosystems worldwide (i.e. direct catch versus market appropriation) where seven of these are headquartered in the Pacific Region¹⁴. The combined annual revenues of these thirteen companies (representing 0.5 percent) correspond to 18 percent of the global value of seafood production in 2012, totaling \$252 billion (Osterblom, 2015). Technology is contributing to this imbalance between labor, market, and ecology. Positioning for advantage in an increasingly constrained system, capital fishing has mechanized and scaled through technology: larger vessels with larger holds and onboard processing capacity extending time-away from port, but also up-scaled catch methods with nets¹⁵. Alternatively, aquaculture has exploded since the 1990s and continues to outpace population growth. Developments in breeding and feed technology enabled a rapid expansion of industrialized aquaculture across species and today is the fastest-growing animal-based food production sector. Dominated by China who produces more than 60 percent of global farmed fish, Asian aquaculture expanded 7 percent annual from 2000 to 2011 – where wild capture production grew at 1.7 percent (but declined per capita) in the same period (FAO, 2014).

The affiliation between public and private is unique in an industry where extraction from extra-national regions is critically integrated into international market status, i.e. accumulation power. Notably, seven major fishing corporations work directly with governments in a number of countries and with small-island states to secure access to resources, such as those of the Western Central Pacific where almost 60% of the global tuna catch is taken. These companies play a central role in managing global fisheries catch volumes, either sustainably or exploitively, and dominate many of the world's largest wild capture fisheries.

Overall, our research explores oceanic processes of urbanization – intensification, connectivity, and metabolism – that drive the commercial fishing industry towards capitalist accumulation, competition, and commodification of wild catch to sustain global urban and market growth. Analyzing issues of territorial access and competition of the open sea, patterns of regional and international trade, and the role of states versus transnational corporations in capital-ecological production, we identify operations within the Pacific Ocean that link the development of planetary urban centers and neoliberal systems to their collective collateral impacts on aquatic biomass and the exploitation of *cheap nature*.

¹⁴ Headquartered in Japan (3 corporations), Thailand (2), Hong Kong, South Korea and the USA (1 each).

¹⁵ Methods include purse seine; pelagic, beam, or demersal trawl, drift nets, grill nets.

CRITIQUE

The world's oceans have been romanticized within our planetary origin myth¹⁶ as an endless resource, "a vast expanse that is fundamentally [...] a space 'outside' society... to be developed" (Baldacchino, 2010). A rare site in the 21st century, the Pacific Ocean remains one of the 'last frontiers' for appropriation of new territories and natural resources yet to be fully explored and exploited. But for how much longer? The neoliberal paradigm shifts occurring from the late 20th into the early 21st-century demonstrate a radical departure from historic human accumulation and their concentrated impacts. Due to increasing competition for and conflict over resources as a measure of national security and authority (McIlgorm, 2010), the lasting legacy of *Freedom of the Seas* that preserved open access to all has been superseded. Instead, our ocean territories are being rapidly operationalized by existing and potentially ever-perpetuating scales of technological and capital investment in order to secure projected assurances of access to and bounty of *cheap nature*. Realized in the process and exchange cycles, this capitalist production in the commercial fishing industry has exacerbated the metabolic rift, "the rupture in nutrient cycling between country and city..." (Moore, 2011). Capture and production processes across every scale have been decoupled from local needs and consumption, rather propagating a global commodity exchange system. Focusing on how urban transformations through capitalist appropriation of *cheap nature*, in our case fishing, have impacted the Pacific, we will develop a critique on processes of urbanization in two ways: first, by evaluating those contemporary conditions and processes of fishing and second by projecting the outcome if present conditions were to continue.

Current Processes

The proliferation of neoliberal practices along with state-driven regulatory regimes of the Pacific Ocean have created particular conditions for capitalist accumulation through the exploitation of cheap nature. Our main critique focuses on the dominant model of exploiting *cheap nature*, i.e. fish from the oceans, largely driven by the quest for profit. The intensification of these operational practices demonstrates how commercial fishing has been rendered disassociated both with supply and demands of food systems, but also from the resource base, sustaining marine life itself. Instead, fishing industries and the regulatory and governance frameworks within which they operate are dependent on achieving economies of scale to secure projected assurances to fish – first wild catch, but if not, then domesticated stock – both now synonymous with present and future profit. Achieving these economies of scale means a constant intensification of fishing rhythms, translated into an expansion of their resource base. As the ocean is progressively exploited until depletion of a certain species restricts profitability, fishing operations press in a search for further exploitation of *cheap nature* either through the catch of other species (usually pursued down the food chain to lesser fish) or increasingly, through investment in aquaculture.

¹⁶ Evolutionary theory (abiogenesis) posits that life may have emerged from the sea: deep hydrothermal vents generating enough thermodynamic drive to form organic compounds (Baross, 1985).

Axiomatically, over-exploitation is threatening our capacity to exploit cheap nature. Neoliberal policies relegating fishery management and extraction are not just the proclivity of market-dependent governance models but more broadly, are orientated within historic regimes of property rights (Mansfield, 2003). According to Becky Mansfield's *Neoliberalism in the Oceans*, free access to the open seas without a strict sense of ownership contributes to overfishing and to the economic and environmental crisis we face. She argues that this model promotes each fisher's application of maximum capital, operationalized in labor and technology, in order to extract the most fish from the open seas first, before the competition may do the same. Such ferocious resource competition, the desire to extract (or raise) as much as possible at every opportunity, is fundamentally driven by uncertainties regarding when access and availability of this 'open' resource will be extinguished.

Future Projections

Delineating the bounds of an increasingly limitless^[ed] ocean, the contemporary coexistence of state-ocean governance models and neoliberal practices are leading to overcapitalization and overexploitation of the biomass. Such commercial fishing practices are increasingly focused on securing competitive gains with disregard for ecosystem tolerances. Furthermore, exploitative manipulation of these political and economic mechanisms are in fact jeopardizing access to and the health of wild catch with severe collateral implications for the stability of the Pacific Ocean as an enduring source of sustenance, livelihood, commerce, and culture. Eventually, the result of this diminutive dynamic will result in overcapitalization, either real or speculative, that absorbs profits in order to only further overexploit. As the natural marine ecological surplus begins to decline, as it must eventually, more investment will be injected to sustain the extraction cycle in a futile effort to bolster the collapsing resource. A familiar capitalist paradigm, increasing investment is a temporary fix to secure future capital gains in the near term, until an apathetic cost-benefit analysis will indicate that the venture is to be abandoned and new profit sectors developed. Investing more and more for less and less, shoring up profit margins on speculation and intensification, until marine resources are depleted and the ecosystem is finally driven to collapse, long after all the wild fish are gone.

Precedence of fishery collapse is increasingly available. In Southern California, sardines and abalone were overfished: the former because population seemed to be unlimited, the later for their high value. The lack of sustainable regulations and management led, in just thirty-five years (1936-1970), to the collapse of the largest sardine fishery in North America (Wolf, 1992). Although emergency bills were incrementally passed with hope that the sardine population would gradually recover, post-facto regulation to stabilize the already decimated stock was insufficient. The intense fishing rhythms and unabatedly high catch rates led to an irreversible collapse of not only oceanic biomass entrusted to the State of California, but also to major economic losses as fishing industries collapsed in tandem with the *cheap nature* they had overexploited. Pacific Bluefin Tuna has endured a similar onslaught, experiencing a crushing 96 percent overall decline according to the 2014 stock

assessment conducted by the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean¹⁷. An apex predatory species, bluefin tuna must mature before reproducing; however, without catch limits in the Western Pacific the species' spawning ground doubles as a site of unregulated extraction. Between 2000 and 2010, the population was nearly driven to extinction as demand exploded to supply a global sushi market. As more juveniles are caught before they are able to reproduce, fewer fish are spawned, and the future of a species unable to regenerate is certain.

The rapid decline of wild fish stock and incessant production intensification in order to sustain profitability has led to the development of new "man-made" elements of nature to replace those once provided by nature for free. Thus, capital is driving aquaculture to overcome natural barriers and continue intensification of fish production. Though presented as a solution to over-fishing, emerging evidence reveals that aquaculture is not alleviating but in fact contributing to the ongoing depletion of ocean resources (as we would expect within the capitalist production cycle) while simultaneously creating new risks to human health and the environment. Unfortunately, the narrative is a common one: the accidental introduction of invasive species that destabilize native ecosystems; the wildfire spread of disease through a densely stocked population and the reactionary threat of toxic accumulation of human-consumed antibiotics, pesticides, and other chemicals to prevent such; the unmitigated overfishing of wild catch now to feed carnivorous farmed fish; and lastly, extensive inputs and outputs of a new industrial-agricultural process with significant environmental affect (Kimbrell, 2005).

If we continue to cast sustainability as an obstacle to overcome in order to deliver economic gains as a singular goal, the oceanic ecosystem will continue to collapse – along with a global economy tied to and predicated on such an avarice production regime. Overall the case of commercial fishing in the Pacific Ocean reveals how the capitalist mode of production is reorganizing not only social and economic but also ecological systems, which will have disastrous economic impact if indeed pursued to the dystopian end – the ultimate exhaustion of *cheap nature*.

ALTER-URBANIZATION

From Territorialization to Urbanization

We seek to disrupt this market-resource genocide by envisioning instead alternative processes of commercial fishing to redistribute territorialist capital development through the intersection of national, commercial, and local regulatory privileges for biomass extraction across scale and function indicators predicated on the urban. Flowing in an unbounded and interdependent life cycle, realities of the world's oceans such as depth, distance, and

¹⁷ <http://www.pewtrusts.org/en/imported-old/other-resources/2013/01/09/new-scientific-report-shows-pacific-bluefin-tuna-population-down-964>

biomass accumulation should be addressed in order to productively operate within this sphere. De-emphasizing our ability to *occupy* the ocean – to impose imperial boundaries with degrees of latitude and longitude – we should instead consider the ocean as a spectrum of processes driven by relative agencies and interests. Thus, integrating as well the relational network of territorial and resource demands defined by existing legal, political, and market infrastructures – at present yielding rights to exploitive production – could alter the process of commercial fishing mitigating the externalized economic distortions driven by competition in disinherited zones. Proposing the re-imagination of an alternative urbanization schema within the enduring neoliberal-capitalist regime, termed *alter-urbanization* (Brenner, 2016), we aim to visualize a spectral marine zoning methodology that reveals the potential for calibrating territorial and resource allocation to balance capital interests with ecological sustainability.

Peru is an example of one such progressive regulatory structure. Within Peru's EEZ, a tiered fishing geography is structured to reduce competition and protect local fishing industries from large-scale corporations. Adjacent to the coast to a range of 10 nautical miles, fishing rights are reserved for small, low technology local vessels with limited haul capacities. With over 200 traditional fishing settlements along the Peruvian coast, artisanal fisheries serve a dual social role as a key source of employment and as a direct provider of protein for these poorer population groups. Labor demand is higher among the small-scale operator where processes are manual versus mechanized. Alternatively larger vessels, with significantly advanced technology and capacity, are allocated zones beyond a perimeter distance. The small-scale coastal fishing supports more local employment, more direct subsistence needs, and also is better harmonized with keystone coastal habitats (FAO, 2003).

We propose a new notional urban-oriented oceanography that incorporates spatial conditions deployed through gradient strategies of ocean surface, depth, and access parameters while accommodating the transient nature of a swimming biomass and the interdependent ecological systems that impact their lifecycle. Operationalized through technologies that differentiate local from commercial fishing practices, capacities, and relative impacts, speculative projections include:

1. Relation to size of the agglomeration, recognizing that larger populations require increased access to food resource.
2. Relation to depth, indicating distance from coast and access for the population according to production capacity.
3. Relation to biomass accumulation and reproduction zones, acknowledging ocean lifecycle systems that depend on water temperature, salinity, current morphology, etc.
4. Relation to existing regulatory systems such as EEZs and MPAs, acknowledging overlap of national territorial priorities redeployed to deliver on conversation.

Such a gradient planning strategy with indicator metrics to qualify exceptional conditions would enable a parametric marine regulatory framework highly responsive to the vast

multitude of stakeholders and their independent and diverse attributes. We acknowledge the challenges of enforcing any regulatory framework within a frontier system predicated on notions of Darwinian order. However, we believe that our proposal succeeds in eliminating the political and economic machinations that result from a system where non-compliance is rationalized by perceived disadvantage. Machiavellian in nature, injustices are perpetrated in reaction to other injustice, from disenfranchisement to imperialism. Instead, by generating a more transparent system of responsive and evenly distributed rights, individuals, countries, and corporations will be able to freely access and openly navigate an ocean of resources predicated on prioritizing each one's relational value system and needs. This includes the environmental health of the ocean ecosystem as well as the economic health of the world capitalist system.

Through our investigation discovery, we posit that the seemingly irreconcilable interests between capitalism and ecological sustainability are in fact fundamentally bound – resource use dependent on (re)source – despite the temporal scales that separate the emergent cause and effect of their disconnect. Accordingly, prioritizing regeneration of our urban-oceanographic (Blumberg, 2016) ecologies through more equitable and accountable processes of biomass extraction would ripple across all life that has come from, thrives on, and will eventually return to the oceans. Conceptualized as a shift from territorialization to urbanization, we recognize the role of accumulation strategies in rejuvenating human and non-human environments for a shared future.

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