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Shifting sands: a spatial examination of class and environmental change on Lima’s Costa Verde

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Shifting sands:
A spatial examination of class and environmental change on Lima’s Costa Verde

by

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The student author and the program of study committee are solely responsible for the content of this thesis. The Graduate College will ensure this thesis is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2017

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DEDICATION

For my wife Basil, and my parents, Jim and Cindy Scheuring. Thank you for your encouragement and support over the past years.
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ABSTRACT

Lima’s Costa Verde is a ten-mile coastal “green zone” of new beaches, parks, and commercial development adjacent to six economically and socially diverse municipalities that has been expanded as part of regional tourism development since the 1960s. This project argues that the contemporary Costa Verde’s is a geographical manifestation of the inequalities among its six municipalities, produced by a deregulated and decentralized governing structure that has allowed local actors to remake the coastline through the uneven allocation and development of space for recreational activities. My study of the Costa Verde’s coastal shelf geography demonstrates how political economy and natural forces are entwined in the production of the space in a manner that reflects dominant inequalities and contributes to their reproduction in the physical geography of the area. This is apparent in the levels of pollution that poor bathers are subject to, the differing ways and degrees to which different municipalities have developed their stretches of the Costa Verde, and the sort of recreational activities that currently take place on the beaches. Neoliberalized decentralization has granted autonomy to municipal governments and wealthy residents, who imprint their individual goals on their coastal shelves, free from any broader imperative to take into account the interests of the poor or their rights and access to this public space.
This project examines ongoing development on the coastal shelf in Lima’s Costa Verde region. The Costa Verde (CV) is a coastal “green zone” of trees, parks, and commercial development that runs for more than ten miles from San Miguel, a blue collar district in the Bay of Lima, south through the affluent districts of Magdalena Del Mar, San Isidro, Miraflores, and Barranco, ending in the working-class neighborhoods of Chorrillos. Isolated by the sea to the west and a wall of cliffs to the east are the CV’s ring of beaches along Lima’s south-central coast. Expansions on these beaches began in the 1960’s; they were created originally for recreational purposes, though this developmental focus has shifted over time. Through an ethnographic study of the Costa Verde planners, bureaucrats, and users of the space combined with a cartographic study of how the Costa Verde’s physical geography has changed over the past century, this thesis argues that Lima’s socio-economic inequalities are reflected in the development of its coastal shelf’s geography. This geography is a unique space; wherein one can observe unregulated capital investment competing with less powerful, and more traditional, recreational users for territory to develop, resulting in the space being continuously expanded.

This project is concerned with the spatial order of contemporary phenomena (Harvey, 2001: 220). By mapping contemporary manifestations on the coastal shelf, I will draw conclusions about the space and the actors in its change. This project will demonstrate how class shapes coastal geography, which in turn reinforces class distinctions in a changing city. In this thesis I argue that the CV coastal shelf is the emerging, primary place for investment, development, and tourism within the Lima
metropolitan area due to its geographic plasticity and lack of regulatory authority. By creating use maps of the coastal shelf and an ethnographic examination of environmental disturbances, examining recreation and surfing’s status as an exceptional case, I assert that current development trends are reflective of municipality-specific socio-economic inequalities of access and allocation of space, and contradict its originally intended use as a common recreational space for all.

Much like the tide on its shores, the CV is a space of constant transformation, driven by class, tectonic forces, and traditional and contemporary uses. The CV’s development is officially governed by the Autoridad del Proyecto Costa Verde (The Costa Verde Project Authority, from hereon, the APCV), which is a decentralized government entity that proposes development projects for the CV. In actuality, particular municipal governments act relatively autonomously when developing their portions of the CV according to their respective interests. The result is a space shaped by the social inequalities represented by the CV municipalities, which vary considerably in socio-economic composition. There has been extensive research applied to understanding the relationship between gentrification of cities and the appearance of “slums” (Smith, 1996); (Harvey, 2012); (Grodach & Ehrenfeucht, 2016); (Caldeira, 1992); (Caldeira, 1996). My research builds on this work to examine the uneven gentrification and development of recreational space. This is important because it brings to this conversation a case study of geographical allocation different from the usual city core/periphery binary, by presenting a new phenomenon for understanding inequality written into the landscape: municipality specific recreation. My thesis argument is that the Costa Verde coastal shelf’s deregulated and decentralized governing structure allows its space to be a geographical
manifestation of inequalities present in its six municipalities through spatial allocation and recreational activities.

**Establishment of Coastal-Shelf**

How space is created, developed, and redeveloped has a direct impact on who is able to live in a specific area and what activities take place there. Lima is the fifth largest city in Latin America, and the largest that lies on the Pacific Rim of South America. The Lima Metropolitan Area is home to one-third (9.897 million) of Peru’s nearly 30 million inhabitants (CIA World Factbook, Accessed 10/2016). Migration to coastal cities is a widespread phenomenon, one that has been taking place in Peru (migration to Lima) for many decades and is resulting in an urbanized population centered on metropolitan Lima. This annual rate of urbanization has been slow but steady, measuring 1.69% annually in the five years between 2010-2015 (CIA World Factbook, Accessed: 10/2016). This growing population density puts considerable pressure on coastal resources, but also puts a large population at a higher risk of natural disaster and results of global climate change phenomena. Lima’s setting in one of the world’s driest regions exasperates already limited resources like land and potable water, and expands the proportion of population at risk of natural disasters on Peru’s tectonically active coastline.

Lima, like other large Latin American cities has movements of socio-economic groups that explain why spaces exist and how they are used. There is a similarity between Lima and Sao Paulo regarding the movements of socio-economic classes through their respective cityscapes. In Sao Paulo, until the 1980’s, the poor were concentrated around the periphery of the city, whereas the wealthier middle-class citizens lived in the city
proper. Since the 1970’s, this spatial inhabitation has switched bringing the poor to the city core, while the wealthy bought cheap tracts of land around the periphery to construct compounds in which to live with others of equal status (Caldeira, 1996). Similar activity can be seen in Lima, where poor from the surrounding regions migrate to, or urban poor resort to periphery, informal, shantytowns. (Caldeira, 1992: 259) Both Lima and Sao Paulo experienced urban growth during this period for different reasons; Lima because of rural terrorism and sabotage; Sao Paulo a construction boom due to financial reforms\(^1\) introducing neoliberal economic policies. These policies increased available capital to develop certain areas desired by the wealthy. While these policies encouraged investment and development of the both Sao Paulo and Lima’s periphery, regions around Lima’s metropolitan periphery, namely the CV and its shelf, say added investment due to its location on the coast, and status as a recreational space as well as a space of transportation.

As the urban sprawl of the Lima Metropolitan Area consumed the entirety of the six municipalities along the Bay of Lima, lower class families, many of them emigrating from other parts of Peru, comprised the new areas in proximity to the bay. Prior to this, upper class resident used the coast because of its exclusivity and isolation from the urban; with the building of the CVCB and the boom in population of the coastal municipalities, the coast’s exclusiveness ceased. Wealthier classes have replaced their use of the Costa Verde with second ‘weekend’ homes outside of the city limits. These locations are

\(^1\) Financial and economic reforms and reorganization came in during the time between 1968 and 1984. Central Banking and development banking functions were moved from Rio de Janeiro to Brasilia, allowing Sao Paulo to move into a more influential role as a financial center. This provoked many foreign and domestic banks to move their headquarters from Rio de Janeiro to Sao Paulo; due to they new proximity, these institutions in turn provide capital to Sao Paulo citizens and businesses. [http://archive.unu.edu/unupress/unupbooks/uu23me/uu23me0r.htm](http://archive.unu.edu/unupress/unupbooks/uu23me/uu23me0r.htm)
desirable because they are situated on the coast, and are removed from the congestion of the Lima Metropolitan Area. An added benefit is that the homes can be built right on the beach since there is no regulation barring them from doing so, no pre-existing use for the land, and no geographical barriers like the CV’s cliffs.

Lima expanded tremendously during the latter half of the twentieth century, as a result of increased rural to urban migration driven by economic crises in the countryside and later the war with Sendero Luminoso². The population of metropolitan Lima grew from 577,437 in 1940 to 7,665,222 in 2007 (INEI, 2008) By the 1950’s and 60’s Lima’s population had already outgrown its infrastructure. A rise in vehicular travel resulted in serious traffic congestion in the metro area’s established low-volume thoroughfares.

Historically, Lima was an inland city with little association with the sea aside from being upstream (Rio Rímac) from the Port of Callao, which it depended on for imports and exports. A relevant American analogue can be Los Angeles, since it too was an inland city until its sprawling suburbs connected it seamlessly with the coast. When the connection to the sea was complete, both in the case of Los Angeles and Lima, the cities assumed coastal identities. Indeed, their proximity to the sea, without being originally on the coast, incentivized focused investment and development on the cities’ peripheries in order to reach the coast, resulting in the immense geographical footprint of these two cities mentioned. As the space between inland Lima and the coast filled in with population, the coastal shelf became a space of priority for investment due to its ever nearing proximity to urban space.

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² Founded in the late 1960’s, Sendero Luminoso or “Shining Path” is a Communist militia group that engaged in acts of terrorism primarily in the Andean Highlands.
Ernesto Aramburu Menchaca, was a prominent architect and later Mayor of Miraflores (1970-1976), assisted the metropolitan area by designing bridges and freeways to better connect Central Lima and its suburbs. Menchaca is credited with being the “father of the Costa Verde” since he initiated large scale development in the region starting with the Costa Verde Circuit of Beaches (road system and eventual highway), hereon “CVCB,” along the shore, followed by numerous bridges, green space, and beach construction. As Menchaca put it, he sought to, “give Lima back to the sea.” by this he meant Lima must take advantage of its metropolitan location amidst a scenic bay and make the coast (the Costa Verde) a new center or face of the metropolitan area and would assist in remedying Lima’s infrastructural shortcomings with much of the population traveling to and from the city’s center for work and leisure. (APCV, Accessed 10/2015) By creating a new nucleus of daily interaction the metropolitan area as a whole benefitted from new outlets for desirable real estate, tourism, and population distribution.

Prior to the CVCB being built, the region was already referred to as the Costa Verde for the veins of green near the barren cliff edges. These small green spaces were canals and small rivers from farmland and towns carrying freshwater waste to the coast, cascading over the cliff-face. I interviewed a local ecologist and academic (hereon Ecologist) and avid surfer and participant in this study told me that as a young man he and fellow surfers would stand under these cascades to shower off after a day in the sea surfing. These cascades ceased as the city above grew, and the beach was drawn further away from the cliff face (Ecologist with the author, March 11, 2016). Prior to Menchaca’s development there was not much space below the cliff face for beaches or buildings. With the construction of the CVCB and subsequent developments, the
landscape has changed considerably. Reclamation projects have built up seaside land for buildings and the highway, which is currently being considered for a one lane expansion. Constructing piers and jetties provided protection for the constructed beaches along the CV. All of these changes have transformed the CV into the multi-purpose space it is today.

Roads on the CV, particularly in the case of the CVCB, possess a self-perpetuating expansion. Penny Harvey and Hannah spell out how infrastructures come into being through their transformative potential to citizen users, and the uneven experience of state presence. (Harvey and Knox, 2015: 25) I set out to do the same with this project. Often when it is decided to build a road, the purpose is to provide access to resources. Just as is the case in the Peruvian Andes and Amazon with the Iquitos-Nauta and Interoceanic Highway, the CVCB portrays another case where a road is introduced and creates/grows the region along its route. Once this relationship between the region and the road are established, the result is a cycle where the populated areas along the road route grow, necessitating expansion/improvement of the road, which in turn provokes further growth, thus a cycle.

The CVCB surrounds the Lima Metropolitan Area by way of the coastal shelf. The coastal shelf was a natural choice for the interstate since it had no pre-existing structures that would need to be removed for its construction. Having the highway below the cliff face made for a cleaner line of sight from the top of the cliffs, where many upper class residents live. The lower coastal shelf then must contribute a considerable amount of space to the highway system. As Lima’s vehicular traffic has grown along with the city’s population, the CVCB has felt the growing pains. As one participant told me, the
current problem with the CVCB is not the capacity of the current road, but rather the bottlenecks at entrance and exit ramps from the highway. When the highway was built it took advantage of the natural geography of the region. Generally, the coastal shelf is isolated from the city above by the cliff-face; the only natural access is provided by canyon-like valleys that descend from the alluvial plain above to the sea below.

There are only a handful of these canyons along the Costa Verde. Thousands of years ago the bay of Lima was an alluvial plain drained by several rivers among them the Rimac, Lurin, and Chorrin. When these rivers would flood out of their banks in correspondence with spring snowmelt upstream in the Andes, the floodwaters would fan over the plain, eventually reaching the edge of the continental shelf at the cliffs. Here the water would concentrate in pre-existing low areas, flow over the cliffs into the sea, eventually eroding large gullies where this process frequented; the resulting scars are the canyons now used as ramps on the CVCB. At the time the highway was built and these natural features were designated as the de-facto on-off ramps, it made sense since it avoided having to sculpt the cliff-face at a grade conducive to automobiles. Automobiles and roads as we will see, have become a priority for developing the CV coastal shelf.

Most Limeños I visited with, whether they sat for an interview with me, or were daily drivers on the CVCB, complained that the lane expansion currently underway on the highway will likely not make a big difference in congestion since it does not solve the issue of getting on and off the highway. Most agreed that it is an issue of access; once one is driving down the CVCB, the traffic flows at an acceptable rate. The problem now faced by municipal and highway planners is that there is no way to add more access ramps to the CVCB. In the time since the canyons were utilized as access points, the land
between them was developed, sealing the fate for any future need to add ramps. So the CVCB is stuck with the number of existing ramps, but still plans to expand the width of the highway on the lower coastal shelf. Since the municipalities are proceeding with the lane expansion, despite its questionable effectiveness, all other users of the coastal shelf will be affected adversely, particularly those hoping to use the seaside as a recreational space, such as surfing. While there are talks of further expansions to the coastal shelf as a whole, the space remains for now, finite. Of the participants interviewed for my study, only architects working for the APCV talked seriously of the whole coastal shelf being expanded; I will discuss these talks in greater detail later. Prior to this, it is important to gain an understanding of the governing structure and capabilities of the APCV, which is the topic of the next section.

**Governing the CV**

My first interview with an APCV official was an architect during my second visit to Lima. During this visit I wanted to get a sense of how they view the CV, and what their role is in governing this space. The architect that I interviewed was very helpful, and she addressed all my questions and concerns. She began describing the legal description of the CV and the APCV’s jurisdiction. She told me that the APCV is in place to encourage investment along the coast, foster its use as a recreational space, and preserve its natural beauty [APCV in discussion with the author, March 15, 2016]. Depending on the context, these sorts of goals can be contradicting since preservation of a region’s natural state is challenging when faced with a infrastructure and amenity expansions in a fixed space.
The bureaucracy that governs the Costa Verde is a product of decentralization from Alberto Fujimori’s Presidency (1990 to 2000), which followed Peru’s period of authoritarian military rule that lasted from 1968 to 1980. To bring forth this change, the 1993 Constitution of Fujimori’s government re-centralized authority, formerly held by the Lima Metropolitan government to the Peruvian national government, and decentralized other authorities to individual municipalities; this resulted in a weak Lima Municipal Government (Dosh, 2010: 38-51). During the Fujimori Presidency, rural terrorism and the implementation of COFOPRI in 1996, brought new landowners into the metropolitan area, by enticement of easy acquisition of property titles (Dosh, 2010: 45-46). As population moved in around the coastal shelf, it was expanded to handle new demands and new uses beyond what was feasible for the former small beach, because the coastal shelf had become the central thoroughfare and recreational hub for Lima.

Aligned with this new thoroughfare, the CV cliff-top came to be developed for tourism via projects like Larcomar, and real estate speculation via massive apartment buildings going up. Both of these sorts of development foci rely on wealthy residents and tourists since rents/leases on the CV, along with Larcomar’s brands and pricing, restrict

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3 Following authoritarian rule ending in 1980, neoliberal economic policies started to be implemented in Peru, most relevant for this project: decentralization. Decentralization had already taken shape by time Fujimori took office and delegated authority from the Lima Municipal Government to local municipal governments, but he expanded it significantly in Metropolitan Lima by “re-centralizing” authority from the Lima Municipal Government, to the national government. This drain of authority from two directions made Lima’s city government weak. With established (then 20 year old) and effective democratic governments at the municipal level, municipalities reasserted their authority between 2000-2002 following Fujimori’s removal, sealing the fate of power at the municipal level, and the lack thereof for the Municipality of Lima (Dosh, 2010:36-50).

4 Particularly, Shining Path, and their massacres on highland towns.

5 COFOPRI (1996) a national program aimed at securing property titles for informal squatters, was largely the brainchild of Peruvian economist Hernando de Soto. The program was originally tasked with the goal of granting 2 million new titles; following the 1999 Law of Prescriptions (which eased restrictions on land invasions), the program had succeeded in granting 1 million titles by 2002. Do Soto and others hoped this program would bring “sleeping capital” from informal houses into the formal economy through the granting of titles, so that these new assets could be used as collateral to borrow against, therefore stimulating the economy (Dosh, 2010: 45-47).
these spaces to only those who can afford it. The expensive housing and shopping brings forward the global dynamic of the CV and greater Lima, since along with wealthy Peruvians, the space is designed for wealthy tourists and expatriates. This is an important dynamic to lay bare since the cliff-top development is much different than the development of the coastal shelf below in that the coastal shelf’s spaces are some of the only public areas in the region, and yet they are not really accessible to the public above. The urban poor are the primary users of these spaces, and access to the shelf necessitates passing through the cliff-top. The CV coastal shelf is constantly shaped by human and non-human endeavors that result in natural phenomenon I refer to as environmental disturbances. I will discuss them in subsequent chapters, but for now it is sufficient to note that they are intertwined with socio-economic pressures in shaping how the coast is developed. Interestingly, the public spaces of the coastal shelf face several environmental issues, are inaccessible to segments of population that use the space for recreation, and developments like highways further reduce the size of this space for the poor of greater Lima.

While the Costa Verde is technically a part of the Municipality of Greater Metropolitan Lima, there is a governing board (the APCV) made up of 8 representatives, all appointed by the Mayor of Lima. This decentralized system has no oversight from the Lima Municipal Government, save for the one member that sits on the board. While this can be seen as an effective democratic system since board members are largely democratically elected mayors from the CV municipalities, it lacks a central unifying

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6 Of the eight seats on the APCV Governing Board are six Municipal Mayors (one from each municipality), one member appointed at large, and one appointed representative from the Municipality of Metropolitan Lima. [http://www.apcvperu.gob.pe/](http://www.apcvperu.gob.pe/)
authority to ensure uniform development across municipal borders. The state owns the coastal waters up to where the individual municipalities assume ownership at 50 meters inland from the high-tide mark and extends up the cliff face onto the continental shelf; from there, municipalities can develop their waterfront as they see fit. A central authority would homogenize the CV region so the waterfront has even investment and development across municipal borders; under the current decentralized system, municipal borders mark vast differences in the municipalities’ ability to develop based on investment and their respective histories.

The APCV was created in 1995 by Law No. 26306, and charged is with “encouraging private investment, promoting public works governed by law, its regulations, the master of the Costa Verde Development, Framework Law for the promotion of Decentralized investment and ordinance…” Furthermore, the main objective of the APCV is to “approve, evaluate, modify, and implement the Master Development of the Costa Verde Plan.” (APCV², Accessed: 1/03/16) Basically this means that the APCV is constantly conducting studies and drawing up plans for a Costa Verde Master Plan, which contains various development projects for the entire stretch of the Costa Verde. When a Master Plan is established, the APCV works to get municipalities to follow what the plan outlines, and when there is not a Master Plan they are working to create one. Due to the nature of their plans, they have many architects hired in-house, and contract outside experts to conduct various studies on things as diverse as water quality to environmental impact studies. I was fortunate to have had the opportunity to visit with both architects inside and experts outside consulted by the APCV for this project.
I asked her if the APCV conducts their own studies when determining whether to build a project or not, and if studies ever contradict each other. She replied that they do not conduct their own studies, but instead contract consultants, she further stated that “Everything is debatable” in terms of the studies’ results and their influence on determining the fate of potential projects. This lends some credence toward the notion that some projects move forward and are constructed, despite their visible influence the region’s usability for recreation, and studies’ results can be disregarded if they yield a dissenting position. It is conceivable then, that projects are proposed via the APCV’s Master Plan so that private sector developers have an approved guideline for a possible pre-approved development project. Since the APCV is decentralized, it has no regulatory authority over how municipalities manage projects on their stretch of the CV. By hiring private consultants, there is no way to ensure they are not influenced by special interests lobbying for the CV to be developed a certain way. Similarly, there is no obligation on the part of the APCV to utilize the studies’ results if they do not fit their needs. The APCV’s design bars it from possessing any real regulative authority over how municipalities carry out their own visions for their CV. This allows the landscape of the CV coastal shelf to be shaped by differences among municipal governments and the resources they have their disposal to develop the landscape; these differences and their appearance in the landscape are at the core of this thesis and its arguments.

**Literature Review**

This thesis explores the production of ecological space in a decentralized, neoliberal-governed environment by employing existing environmental anthropology
frameworks and multi-sited analysis. Literature discussing the modern global city, its transformations, geographically and socio-politically, are especially relevant to this project because they show the effects intangible economic policies have on the physical landscape. Lima, like many world cities has gained membership in the class of “global cities” due to it’s hosting of multinational companies and their web of interconnectivity to other sites and cities (Sassen, 2005). Multinationals have existed in Lima for many decades, but it wasn’t until neoliberal economic policies were implemented in Peru in the 1990’s, and deregulatory measures were implemented to create a “business-friendly” environment, that they obtained their current influence to shape geography. As multinationals prosper in the accommodating business climate of Lima, they require new outlets for investment, for if they don’t invest, someone else will. This financial success creates cash surpluses, which brings spaces of investment/development into focus, since there are specific locations more likely to provide a return on investment: mainly tourism and commercial areas, despite the social, political, or environmental consequences. (Harvey, 2012: xvi).

Neoliberal economic policies aim to relieve the free market from regulatory hindrances and create a “good business or investment climate” with the goal of allowing individuals and companies to be most efficient in providing their good or service. An unintended consequence of this school of thought is the restoration of class power: specifically of the wealthy classes. Deregulation and decentralization are hallmarks of neoliberal economic policies (Harvey, 2005: 70-71). To deregulate or decentralize something can only mean there was a centralized regulatory authority in place prior. These are normally created to level the playing field so lower classes can compete and
participate in the market and lessen the likelihood of monopolies; when these measures are removed, the wealthy and powerful classes resume control. These decentralization reforms were implemented in Peru during the early 1990’s by then-President Fujimori. During that period, many formerly centralized authorities were decentralized to local levels with little regulatory power; the Autoridad del Proyecto Costa Verde (APCV) is one such authority born from this period, and is responsible for the “oversight” of the CV and its coastal shelf.

Deregulation restores socio-economic classes by removing regulation on the wealthy that provides a more-level playing field for disadvantaged participants in the economic system, and allows wealth individuals and companies to expand in increase their influence in society. In addition, when wealthy investors develop advantageous locations, they often displace poorer classes through gentrification (Smith, 1996:189-209). In this way, space and how space is allocated, “‘is an active moment’ in the overall circulation and accumulation of capital;” this stresses the importance maps play in understand this (Smith, 2008). Much of this thesis pivots around my maps, which paint the geographic discourse of the various institutions and special interests developing the CV coastal shelf. Mapping is important for a project such as this, because it assists us in better understanding dialectical relationships between geographical/ecological space and socio-economic development (Harvey, 2001:208). The investment of capital is not always the singular driver behind geography, as cultural characteristics histories of places play a role as well. These cultural anomalies like surfing have histories associated with certain locations and are responsible for how those spaces appear and are developed, based on the cultural anchors tying an activity to a location. Rather than being just one or
the other, cultural and capital inputs shape how spaces are created and developed, and
together, create rationality within large metropolitan areas, with their own regions prone
to investment and cultural activities (Soja, 2015).

This thesis also connects with recent works in environmental anthropology that
parallel with aspects of my project such as the mentally constructed nature/culture
classifications that accompany spaces, traversed by roads and other features connecting
one classified space to another. Since the CV coastal shelf is a delicate region subject to
tectonic activity and coastal erosion, and burdened with being a prime location for
traditional recreational activities as well as new development, it contributes to existing
conversations on recreational spaces amidst urban centers. Understanding ecological and
developmental change can often be done with mapping, but ethnographic work brings the
social and cultural roles these spaces possess to the forefront, so patterns in discourse can
be better recorded (Bolin, 2009; Rademacher, 2011). The CV coastal shelf bridges a
created space: the city above the cliffs, and a natural space: the sea. Though the coastal
shelf is itself a created space, it hosts activities associated with the created space of the
city: highways for driving, and activities associated with the natural space of the sea:
surfing. In being a literal lap-land between the two types of spaces, the coastal shelf is by
default an area of entanglement (Ogden, 2011; Scott 1998). Spanning spaces of
entanglement are various features, like roads, that can facilitate development, and provide
strength to both its use as a natural space, and as a created space (Harvey and Knox,
2015). On the CV coastal shelf, the main highway, the Costa Verde Circuit of Beaches
(CVCB) is itself an ongoing development project, but serves those using the space to
access the beach and those bypassing traffic congestion above the cliffs.
In summary, these cited works examine pre-existing spaces like old central city-cores as places of investment priority and its effects via gentrification and other actors; they also examine sprawl and focus on cities’ peripheries, discuss their causes, and how socio-economics play into their creation. Unlike these spaces, the CV is not a contemporary urban frontier for affluent sprawl or poor shantytowns, and is not an established urban core. My study approaches the CV’s geography as a large space with an unique ability to be transformed and expanded through unbridled investment, that is not geographically situated like most afore mentioned sprawl or shanties. What this approach provides that others don’t, is a case where an understanding of the interconnectivity between policy, social inequalities, and environmental disregard, is applied to an unorthodox space in one of the world’s largest cities.

Methodology

I conducted my fieldwork over the course of one year’s time, during which I made three separate trips to Lima. My first trip was in June 2015 (one month), the second in March 2016 (ten days), and the last in May 2016 (two weeks). Prior to each trip I tried to set up as many informal interviews as possible. My adviser, who has conducted prior research on artisan fishermen in Chorrillos, recommended some of the contacts to me. APCV employees were sought out by simply emailing the point of contact on the APCV website. Surfers were simply approached on the beach and asked if they wanted to participate in my research. Most of my interviews were conducted in the participant’s place of work so they were comfortable and were not sacrificing free time. When I wasn’t conducting interviews, I was busy walking up and down the CV to get a sense of how the
space is being used. I would later use this information to create my maps. Due to Lima’s notorious overcast skies and online satellite imagery being outdated, I have to walk the coast from the cliff tops and take video so I could correctly map how the space is used. Similarly, I would walk the coastal shelf and try to access all spaces and parcels to ensure they were indeed accessible privately or publicly prior to creating my maps.

This project examines coastal development and spatial allocation by utilizing multi-cited and multidirectional approaches (Nader, 1972; Marcus, 1995). It is multidirectional because I am not examining only one socio-economic group, like surfers. Rather, I am looking at what surfers have to say about development projects the APCV is currently working to approve, and what the APCV says about the impact of the projects. By conducting this study with multiple sites I am making connections and analogues to better understand the extended, and otherwise unseen impact of happenings on the CV. Multi-sitedness also implies multiple mediums of information; for this project I have utilized census records, GIS mapping, online Peruvian newspaper sources, and informal interviews to gain the best understanding of how the region’s development is received by those who use the space.

For the mapping portion of this project, I used ESRI ArcMap to create my maps at the Iowa State University GIS Facility. I created all “use” maps from the video and photos I took from the coastal shelf. Dr. Marwan Ghandour provided me with the 1908 Bay of Lima map I used to draw the coastal shelf growth in the last century. Geo-referencing the historic map with the current imagery was remarkably smooth thanks to Lima’s historic landmarks and unique geography acting as anchors. It was challenging at

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8 Geo-referencing is a process performed using GIS software where an image/map without spatial reference or coordinates is attached to a map containing coordinates by attaching points that exist in both maps.
first to visualize how the coast would have looked prior to the coastal shelf, and sometimes found myself second-guessing my maps’ results. Thankfully, the APCV website contained many historic images of the coastline. Using these photos alongside my own it became clear that the maps were accurate.

**Thesis Organization**

This thesis utilizes ethnographic interviews, GIS mapping, and existing anthropological literature to argue the CV coastal shelf contributes greatly to our understanding of how neoliberal economic policies and cultural recreation uses shape development in a global, coastal, modern city; Indeed, Lima’s CV coastal shelf stands as a unique case because it is completely created for the purpose of investment and development. Following this Introduction, this thesis is organized into three chapters: Chapter 1: Mapping Coastal Change; Chapter 2: Coastal Disturbances; Chapter 3: Surfing: A Class Sport, ending with my Conclusion. David Harvey has written extensively on spaces of capital in investment and maintains that in order to understand a critical geography (in this thesis, the CV coastal shelf) and its development, the socio-economic and geographic knowledge of that space must be understood (Harvey, 2001: 208-209). The succeeding chapters examine just that.

Chapter 1, I present my maps of the CV coastal shelf and elaborate on what they tell us about the region’s development. In Chapter 2, I introduce some prominent human and environmental factors that are impacting the CV. These issues are important because they highlight the disregard for the environment and vulnerable socio-economic groups possessed by those aiming to invest the CV coastal shelf in a certain way. Chapter 3
describes the some of the challenges faced by those (often members of the groups introduced in Chapter 2) who use the CV coastal shelf. I focus on surfing as a recreational activity that exists on the coastal shelf despite the capital investment directing the region’s use elsewhere, so I elaborate on some of the challenges facing the sport, and share surfers’ impressions of how the space should be developed. I end this thesis with what patterns and analogues I found, where the CV’s coastal shelf may be headed, and how this contributes to existing conversations in the field of anthropology and related disciplines.

The following chapters provide socio-economic context, maps, and testimonies to describe how unbridled development is changing the CV’s physical environment as well as socio-economically. These chapters coalesce to argue that the CV coastal shelf is the emerging, primary place for investment, development, and tourism within the Lima metropolitan area due to its geographic plasticity and lack of regulatory authority. By creating maps of the coastal shelf and examining surfing’s importance due to its historic association with wealthy clientele, I assert that current development trends are reflective of municipality-specific socio-economic inequalities of access and allocation of space, and contradict its originally intended use as a common recreational space for all.
CHAPTER 1

MAPPING COASTAL CHANGE

Creating a “use map” of the CV is an effective way of understanding what is happening spatially with regard to the distribution of inequalities across a landscape. Using GIS\(^9\) I created maps that would illustrate for me what exactly the CV is. I was seeking answers to: how much has the Costa Verde’s coastal shelf been expanded over the past century. Once this space was conceptualized, I then answered the question: How is this space being allocated? What is the most prevalent use? And do dominate uses change across municipal borders? My maps will someday be inaccurate since I am mapping a moment in history, what the CV looks like now reflects its history, and acts as a record of a space for a specific point in time; as such, maps are merely a “contemporary manifestation” of socio-economic actors, but are very useful in telling the story of how a space of altered according to the power constructs present at the time of the map’s creation (Harvey, 2001: 220).

For purposes of this thesis project, the CV is divided into two regions: the cliff-top, and the coastal shelf. Whether these terms are correctly assigned geologically, they are the best way to differentiate the geography in my discussion of the region. Trees, parks, gardens populate the cliff-top; all of which are irrigated. Stretching along the cliff edge are paths for walking and biking. The buildings of the cliff tops are primarily large high-rise apartments and condos; some stand far enough from the cliff edge to allow space for the before mentioned parks, others stand dangerously close to the edge considering the tectonic history of Lima. Between the cliff-top and coastal shelf is the

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\(^9\) GIS stands for Geographic Information Systems. For this project, I have employed ESRI ArcMap 10.3. The projected coordinate system I used is WGS-1984-Spherical.
cliff-face, which is nearly straight down drop to the interstate (the Costa Verde Circuit of Beaches, or CVCB) below and comprised of loose gravel and sand, making it nearly impossible to traverse. Below this cliff-face is the coastal shelf, the spatial allocation of which will be the focus of this chapter. The coastal shelf is a human creation, isolated on all sides from easy access, and without the use of a private automobile and securing a very rare parking spot, is accessible only on foot via access bridges from the cliff-top. The coastal shelf was created with the intent of it being a public space for recreation. However, the decentralized governing body, the APCV, creates a vacuum of authority on how the region should be developed across the six municipalities that comprise the CV.

Since the municipalities have no centralized authority to ensure development of the CV region is homogenous across municipalities, the result is the region being developed very differently depending on the municipality due to municipalities’ differences in wealth, and therefore priorities. For example, wealthiest three municipalities: San Isidro, Miraflores, and Barranco cater their coastal shelf’s space and access to it, much differently than do the poorest three municipalities: San Miguel, Magdalena Del Mar, and Chorrillos, who have much to gain from having such a public space since it generates revenue and provides a space for recreation. In this chapter I map how each municipality allocates their space. Which is indicative of inequalities present. All maps were generated from my own research, and cross-referenced with my ethnographic interviews, census data, and historic maps.

In this chapter I present cartographic evidence that expands upon and contributes to existing conversations regarding the mapping of capital investment. To frame the results my maps yield, I will rely on literature by David Harvey and Neil Smith
concerning the creation and gentrification of space, and its mapping. These capital investments benefit certain socio-economic classes over others, strengthening inequalities present in the CV’s six municipalities (Harvey, 2001: 208-233). The results of neoliberal economic policies, and the unregulated oversight of coastal development are drawn on the landscape of the coastal shelf. My thesis argument is that municipalities possess the land allocation proportions they do, because they are products of their own histories, and are part of a regionalist phenomenon transpiring in many of the world’s global cities (Soja, 2015). This chapter shows the geography in ways that illustrate various uses and features specific to socio-economic classes. With the history embedded and class division written in the economic landscape of housing costs, utilities, and proximity to class specific jobs, these historical themes of land-use and class dominance reproduce over time, particularly in a neoliberal economic environment with few measures in place to level the playing field. Neoliberal economy policies and decentralization measures taken in the 1990’s have left the region of the CV under the management of the APCV, which is a decentralized government authority, with little real authority, since municipalities have individual autonomy to develop their stretch of the coastline as they see fit.

**Creation of Maps**

Early on in this project I wanted to create a map that would show how the landscape of the coastal shelf has changed since the CV was created. I originally thought this would be a singular map that would show a highlighted area where growth has occurred. Once I started creating this first map, other possibilities came to mind such as mapping how the coastal shelf is organized in terms of its usage, and access points down
to the coastal shelf from the cliff-tops. This afterthought of providing a map has evolved into the heart of this project as I believe it enhances my, and any readers’, understanding of how this space has evolved as a result of the interaction between urban development and natural forces. My hope is that this project will work to answer a call for more maps in ethnographic works since aside from conversing, knowing a landscape is paramount to understanding a culture (Brennan-Horley, C; Luckman, S; Gibson, C; Willoughby-Smith, J: 2010). Other anthropologists have found mapping to be useful because it illustrates resources, buildings, and land cover associated with a particular group or people. The opportunities are boundless, take Ben Orlove’s work on Peru’s Lake Titicaca for example: he analyzes maps from two different parties in a conflict to determine political bias’ role in producing misinformation (Orlove, 1991). While a project on mapping bias in and of itself speaks volumes about the intentions of the mapmakers, I too am conscious of biases that can manifest in my maps due to my aim of spotting land-use differences between municipalities. Biases I am most concerned with in my maps occur in situations where a land use is not clearly defined based on the parameters I have set, and I “assume” that land must belong in a particular category due to the municipality it exists in. However, I have taken great lengths to minimalize that risk by tracking the particular area over time through my multiple trips (if the area is under construction), or documenting justification (based on structures present, land cover, or items present) for its categorization.

The more municipalities I mapped, the more I was able to compare what participants have told me, quite literally drawing my own conclusions regarding municipal autonomy and its effects on how space is used. As I mapped more beginning in
the middle with Miraflores and working outside to the north and south, it became clear that the healthy mixture of different uses Miraflores possesses ceased as the coastal shelf became dominated by fewer and fewer uses. I found it to be a useful way to tell a story about how inequality is presently situated in the CV’s municipalities based on the allocation of coastal shelf space and access points. Its useful in story telling because it leaves less to the imagination in visualizing how space is used in one municipality or another. Generally, the municipalities of the CV are socio-economically stratified based on class and income. San Isidro is at the top as the new home for Lima’s financial sector, home to numerous embassies and bank headquarters. Barranco and Miraflores follow with Miraflores’ high-end shops and clubs and Barranco’s yacht club. Next is Magdalena Del Mar with its pleasant neighborhoods and popular markets. Finally comes Chorrillos with its fishing wharf and San Miguel and its uncomfortable proximity to “bad neighborhoods” in Callao and next to no seaside attractions. This list is based merely on discussions I have had with locals who recite the municipalities in this order of affluence nearly every time. The qualities I list are also often those sited by locals who use them as a sort of proof for why the whole municipality is ranked where it is. With such an ordering based on particular sites, it’s clear that power is not allocated to the same classes in all municipalities, indicating there are major inequalities between and within municipalities. The aim of this chapter is to highlight where certain classes possess the most power based on sites associated with particular classes, and the proportion of the coastal shelf allocated to public or private access. This chapter is organized around the presentation of my maps, so I begin here with their creation, and what they yielded for information. I then interpret this information by bringing my ethnographic work into
play, allowing them to work off one another for a fuller understanding of how these maps depict real inequalities.

The geo-referencing, tide-line drawing, and polygonal construction stages of this study were done in the absence of municipal and Costa Verde boundary lines being present; rather, the entire Bay of Lima was mapped and drawn with the intent of eliminating bias with expectations associated with growth in certain areas or municipalities. The municipal boundary lines were added after the growth areas had been drawn to find if there was a correlation between municipal boundaries of those included in the Costa Verde and where growth occurs along the coastal shelf. A major challenge of mapping the coastline of the Bay of Lima was matching reference points in the city, and stretching the historic map to the same scale of the current map to see where coastal shelf growth and loss had occurred. While my historic map was very detailed, the scale of certain cliff features would be different from the current map at times. To remedy this, I resorted to the tedious undertaking of counting ridges on the undulating cliff-face to ensure I had points matched properly. In doing this process, I discovered that despite the coastal shelf growth, the cliffs have remained largely unchanged save for some settling here and there (due to earthquakes shaking loose material) and areas that were altered for the CVCB and its ramps, which is significant since most ramps are located in natural canyons and were easy reference points since the position has remained the same.

To understand the growth of the shelf over the past one hundred years, a map of the Bay of Lima from 1908 is overlain a 2015 map. Both maps are geo-coordinated to a base map, and spatially joined so the map features existing on the 1908 map are concurrent with the same features on the 2015 map. Once features, and most importantly
the coastline, are lined up, the coastline at the tidemark was drawn on each map. On the 2015 map it was drawn where the tide appears to be lapping against the beach; on the 1908 map, the tide was drawn at the edge of the cliff-face, this is justified based on historic photographs showing the tide lapping against a very narrow beach at the foot of the cliffs. Both 2015 and 1908 tide lines are drawn, overlain, and then filled with polygons. Based on whether the line order indicated a growth or loss of land, the polygons between them were colored accordingly (Map 1).

(Map 1) Percentage of current municipal land resulting from coastal shelf expansions.
When the 1908 line is to the inside (continent-side) of the 2015 line indicates a growth in the shelf because the tideline has been extended out into the bay (colored green); Whereas, when the 1908 line on the outside (sea-side) of the 2015 line, this indicates a loss of coastal shelf since the tide is now further inland than it once was in 1908 (colored red).

While there has been an overall growth in area of the CV’s lower shelf, the amount of growth has varied from one municipality to the next. The percentage change is recorded in Table 1.

(Table 1) Municipal percent growth and percent change from coastal shelf expansions.

<table>
<thead>
<tr>
<th>Municipality:</th>
<th>% Area Growth</th>
<th>CV Area Change</th>
<th>Municipal Area Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Miguel</td>
<td>4.20%</td>
<td>453306</td>
<td>10720000</td>
</tr>
<tr>
<td>Magdalena Del Mar</td>
<td>8.90%</td>
<td>321674</td>
<td>36100</td>
</tr>
<tr>
<td>San Isidro</td>
<td>0.70%</td>
<td>73977</td>
<td>11100000</td>
</tr>
<tr>
<td>Miraflores</td>
<td>3.70%</td>
<td>355749</td>
<td>96200</td>
</tr>
<tr>
<td>Barranco</td>
<td>7.40%</td>
<td>246565</td>
<td>33300</td>
</tr>
<tr>
<td>Chorrillos</td>
<td>0.60%</td>
<td>250048</td>
<td>389400</td>
</tr>
</tbody>
</table>

The first column shows the percentage of the total current area of each CV municipality resulting from coastal shelf expansion since 1908. The third column indicates in square meters, the total area of each municipality, and the second column shows the amount in square meters, that column one shows as a percent. In short, the first column is the percentage that second column comprises of the third.
San Miguel and Magdalena Del Mar are the two northernmost municipalities and possess two of the three highest ratios. San Isidro possesses the second smallest growth ratio, slightly behind Chorrillos. Chorrillos has the least amount due to its population density and size. Chorrillos is the largest of the municipalities that comprise the Costa Verde, with an area of nearly 11 million square meters. It sits on the southern edge of the Bay of Lima with a large, convex, peninsular feature in its midsection. It is the only municipality of the Costa Verde whose coast is not entirely a part of the CV. Due to the prominent Humboldt current, it is not feasible to expand the coastal shelf on the stretch of coast south of the convex feature in the center of Chorrillos because it would be exposed to harsh erosion from the current. Due to this geography, the CV is confined to its present boundaries. If Chorrillos is considered an exception, the next outlier is San Isidro, with its meager .7%. Another correlation to note is that municipalities with the smallest area also appear to have the highest percent of land owed to coastal shelf growth. The best explanation for this is that due to their small size, limited ability to grow because of densely populated adjacent municipalities, and prime location on the Bay of Lima, the sensible course of action is to expand seaward.

To create Map 1 and Table 1, the area of each municipality had to be found. While this information is readily available in multiple Peruvian sources, I calculated the area in meters squared by drawing the municipal boundaries into my own map based on borders shown on an ESRI map on the APCV website. My numbers are slightly different than those officially listed by the municipalities. I used my own findings because all maps have errors, and since my coastal growth/loss may possess a mapping error, it is
logical to have accompanying data reflect the same error so that proportions are kept as accurate as possible.

While it is helpful to see that the coastal shelf has been expanded as Lima grew, it was important to have a map showing land use so that patterns in use could be revealed between municipalities. Land allocation was calculated using the same base map as before, only with color-coded polygons to depict the use of the specific area on the coastline. With the municipal boundaries in place, I used my own pictures and video footage of the coastline taken during my fieldwork. This extra effort was necessary due to the CV’s ongoing construction and Lima’s notorious overcast making satellite imagery accessible on the Internet outdated and inaccurate. As with the previous section, ArcMap automatically figures area in meters squared for each polygon.

Since the CV coastal shelf has many different present uses, I organized various use classifications first into public or private, then more specifically into types of public and private spaces. In Table 2, municipalities are broken down into these seven use categories. The first three of the categories are specifically private use, the next three are public use, and the seventh is vacant land that is really neither since technically it can be accessed by anyone, despite whether it is privately owned or will eventually not be public space; making it a public space in these maps. When I speak of public and private use, I am referring to access not ownership. Places that are private businesses require admission fee or membership, or obligatory patronization and are considered private spaces. Places that can be accessed and/or used freely by anyone are public spaces. These specified uses into consolidated percentages in the final column. The “% Private Space” column shows
the amount of private areas held by each of the municipalities. One correlation that can be made is that the percent of “private access use” increases as one works south.

Table 3 depicts the findings of Appendix B1 in more concise terms, showing only the percentages of the total coastal shelf area, and the amount of that space that is greenspace and roads as percentages. If one refers to Table 2, greenspace and traffic areas are the two largest use areas in every municipality. While they are both considered public spaces, they do cater to specific demographics, those being people who own vehicles.

(Table 2) Proportion of shelf growth allocated to greenspace or roads.

<table>
<thead>
<tr>
<th>Municipality:</th>
<th>% Roads/Traffic Space</th>
<th>Coastal Shelf Area/Municipality</th>
<th>% Greenspace</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Miguel</td>
<td>17%</td>
<td>898064.2</td>
<td>54%</td>
</tr>
<tr>
<td>Magdalena Del Mar</td>
<td>32%</td>
<td>576747.8</td>
<td>84%</td>
</tr>
<tr>
<td>San Isidro</td>
<td>*</td>
<td>126697.3</td>
<td>71%</td>
</tr>
<tr>
<td>Miraflores</td>
<td>51%</td>
<td>427984.7</td>
<td>32%</td>
</tr>
<tr>
<td>Barranco</td>
<td>*</td>
<td>195613.5</td>
<td>8%</td>
</tr>
<tr>
<td>Chorrillos</td>
<td>34%</td>
<td>375540.3</td>
<td>20%</td>
</tr>
</tbody>
</table>

Mapping the Coastal Shelf

Mapping the CV coastal shelf brings the space to life, as an ever-changing organism. Map 1 shows the birth and growth of this place through the decades. Looking at aerial photography or satellite imagery is insufficient in capturing the complexity of the space. When the coastal shelf is categorized and mapped accordingly, one’s perspective is completely changed as a space that once looked homogenous, is now very
detailed showing many different factions. These factions in themselves may merely be my arbitrarily assigned classifications for how the space is used, but it goes further than that. Once the shelf was dissected, borders within the municipal borders appeared. These are not political borders, but economic, cultural, and class borders. Every one of the use classifications I assigned to the shelf has a population that uses the space, and equally certain, a population that does not use it. Aside from the poor, non-surfers likely do not use the beaches, because frankly they are bad beaches for anything other than accessing the waves. This is due to the fact that the cobbled stones that comprise the beaches are difficult to walk on, uncomfortable to sit or lay on, and are dangerous should waves cause one to fall on them. Most surfers do no use the CVCB because they are poor, and use the access bridges to get to the beach. Most people who drive on the CVCB do not use the beach, because there is no parking. All of this is impossible to comprehend in the absence of an appropriate map.

When I originally set out to distinguish the various uses of the coastal shelf, I started with the use classifications listed in Appendix A1, which describes in-detail, the specific private and public uses. While they are very important to the overall discussion regarding private-public allocation of space, I thought them to be too specific since the main information I want to present for subsequent discussion is about the broader allocation of whether a space is public or private. They were an important part of my process in determining overall public/private allocations. I first surveyed the CV and came up with a listing of the most popular uses, and came up with an equal number of private and public uses, with another use being neither, in order to be fair. I then surveyed the CV again to determine how much space belonged in each use category; I made
sketches and took film footage to reference when I created my maps. Fortunately my use
categories are broad enough so no part of the coastal shelf has an unassigned use, yet
specific enough so I can make conclusions. Distinctions between private and public space
is often at the heart of discussions of urban revitalization, and public space can be in the
form of “infrastructure, everyday spaces, and destinations” that breath new life into an
area via attraction. Attractions can be specific like pedestrian/bike paths, or simply an
open green space, with the desired result of those spaces “to facilitate activity rather than
dictate particular uses.” (Grodach & Ehrenfeucht, 2016: 171-183). My table in Appendix
A1 shows these dictated uses, and notes which are public and which are private.

**Interpretation of Use Maps**

Through each of the municipalities is a ribbon of gray denoting the CVCB. This is
one of the very few uses that span all municipalities. In most other cases, parcels
designated to a particular use often end right at municipal boundary. Examining the
amount of public and private space a municipality has speaks to what the constituents
demand in each respective municipality. Perhaps more realistically, it is telling of what
constituents in power want. Of course, it can also be said that municipalities in a loosely
regulated economy and with little governmental oversight, cater to wealthy interests over
those of the majority of the population. While most of the users of the coastal shelf, for
recreational purposes, are poor, the majority of the land is currently used for uses that do
not benefit poorer classes. Even though the APCV has very little actual authority on the
development, there is one feature spanning the CV coastal shelf, that being the interstate
highway (CVCB). The reason for this is that the highway has been a fixture on the shelf
since the 1950’s, and over time has become one of the most heavily used roads in the Lima Metropolitan Area. Aside from this, municipalities have uses defined by their location.

When one examines San Miguel and Magdalena’s use maps, and reference Appendix A1, private spaces are nearly nonexistent. These maps and corresponding reference tables are results of my own coastal surveys of the CV; additional maps of all municipalities can be found in Appendix B. Much of these two northern municipalities are under final construction phases at the time of this thesis being written, but based on what is present on the shelf and local feedback, the space will primarily be a large greenspace. In terms of private space as a percent of the whole, San Miguel has the least. Historically, San Miguel and Magdalena are poorer than their southern neighbors. When this is taken into consideration along with the high rate of coastal shelf expansion in these two for greenspace rather than to moor yachts or restaurants, it becomes clear that San Miguel and Magdalena have different demographics prioritized than other municipalities. Since there is little regulatory authority from higher levels of government, the municipalities develop the space so it is conducive to, and in many ways reflective of, local population. It would be nonsensical to develop the area with expensive venues when many of the locals cannot afford them; rather, the area is a free, open, greenspace where people can enjoy without any fee.

In contrast to the two northern municipalities is San Isidro, which is the next municipality south of Magdalena, and the wealthiest of the six. The youngest of the six CV municipalities, San Isidro was founded in 1931 and so does not appear on the 1908 map of Lima. My use-map shows that San Isidro’s coastal shelf is under utilized and has
been left vacant, as if it is not a priority to have it match or rival its neighbors in beauty, utility, or attractions. Not only does it not have its space classifiable for a particular use, but also it has an average percentage (6%) contributed to private space. So what does this say about San Isidro? It means that unlike its less affluent neighbors to the north (and far-south), it does not have to develop it in a way to attract investment or tourism because it doesn’t have to. To reaffirm this point, San Isidro has the smallest coastal shelf of the six municipalities, and only 6% is private space; if the municipality were trying to make its small portion coastline really count, a much higher percent would be earning revenue. Since San Isidro is wealthy, its citizens likely use beachfront elsewhere (weekend homes), and handsomely support the municipal government via property taxes and spending on recreation further inland like golf courses. By examining what Map 2 depicts below, it is clear that the land uses between San Isidro and its southern neighbor Miraflores are a sharp contrast. This highlights the importance decentralization plays in allowing municipalities to differentiate the use of their space according to their particular culture. San Isidro’s border shows the sharp contrast between its vacant land, left aside for future use, and Miraflores’ handsome greenscape for recreation.
Its original development, settlement, and incorporation as a municipality resulted from it becoming the prime locale for businesses and financial companies relocation outside of central Lima in modern office buildings and campuses. Today it is considered Lima’s financial quarter, containing 38 Embassies, 21 bank headquarters, and 50
governmental and non-governmental agencies. Because of this concentration of
government and private-sector activity, its spatial relationship inland, toward central-
Lima and the rest of the metropolitan area, is much more of a priority than seaward and
the CV. This is because the Peruvian Central Bank, Peruvian Congress, and Peruvian
Presidential Palace, and major business and financial branches are all still located in
central Lima. This means the CV is a very low priority for San Isidro because it was
founded as a business and governmental center, outside of Lima’s center, whereas other
municipalities have a stronger connection with the sea because the municipal origins lie
in an original seaside settlement.

The two poorer districts to San Isidro’s north and inland to the east have also
influenced its use of its coastal shelf. From San Isidro’s perspective [San Isidro is not
sentient and therefore does not have a perspective — how about “from the perspective of
developers and businesses in San Isidro”], there is little [motivation to develop] the
coastal shelf to be an easily accessible recreational space since most of its residents are
wealthy enough to have their own beach homes elsewhere. Having such a space can have
bad connotations since its isolation makes the coastal shelf an attractive locale for drug
users and thieves.
Unlike San Isidro’s dissociation with the coast and the CV, Miraflores and Barranco, shown above in Map 3, are rooted in their seaside origins and are mosaics of
public and private space. Their integration of these two general uses for the coastal shelf is likely due to their histories as coastal settlements, both having historic town-centers a short walking distance from the CV. These two municipalities also have more variety in income levels than San Isidro. Generally, in Miraflores and Barranco real estate is more affordable the further one gets from the CV; in San Isidro the prices are exclusive to low income residents regardless. Recreation activities like surfing have their origins on the beaches of Miraflores, so associated businesses like spas and clubs have an established presence there. Miraflores, Barranco, and Chorrillos were large settlements and significant populations, prior to their incorporation into Metropolitan Lima as municipalities. These three municipalities in particular, were considered worthy locations for capital investment before all others. This is an easy explanation for why the southern three municipalities have higher proportion of private space, whereas the northern three contain far less and currently are working to create attractive spaces for investment.

**Autoridad del Proyecto Costa Verde (APCV)**

My maps clearly show that certain municipalities tended to favor certain land uses at this moment in time based on the tables showing land allocation proportions and maps depicting municipal boundaries as borders for land-use, and it is important to remember that the demographics of these municipalities change, making the desired uses for space change accordingly. Understanding these changes is important because it shows what socio-economic classes have power at a particular point in time. When place is produced for purposes associated with a specific demographic, we can decipher what that space offers that that class desires, and better understand social demarcation. After I found out
what existed on the CV in terms of land use, I checked back with the APCV and ask them about their future plans for the CV, keeping in mind what my maps indicated and what some surfers had already told me at that point. My first interview with the APCV was very informational, but it did not address what their future visions for the CV are. Having a strong understanding of the region’s history, and maps showing what is currently there, this was a natural step in progress.

My second interview with the APCV was with an architect just as the first; only the second interview had much more focus on the allocation of the coastal shelf and future plans for development/expansion. Going in, I wanted to address coastal shelf spatial growth and losses at the hands of man and nature, dominant uses for the coastal shelf and how others will be accommodated, and the possibility for expanding the jurisdiction of the APCV and/or extension of the CV by expanding borders northward to southward. The latter question was an assured “no,” as she said the APCV has more than enough to do with the current size and scope of the CV [APCV in discussion with the author, May 20, 2016]. I asked her about the protests and demonstrations being held on the CVCB against the lane expansion and if future development plans for the CV coastal shelf provide a multi-use strategy or if it is geared toward a couple specific uses. Historically, master plans for the CV have been set for 5-10 years durations; many other plans were unable to reach their goals with many of the projects, so the architect told me the current Master Plan is set for 20 years. At first I thought this surely should be plenty of time to fulfill whatever it calls for; that is, until I realized the enormous size of their propositions.
To begin we discussed some of the current shortcomings of the CV coastal shelf. One of concerns I raised was the lack of access points from the top of the cliffs to the coastal shelf. The architect acknowledged this, and she explained that the new plan for the coastal shelf is to extend it 90 meters seaward. In some parts of the coastal shelf; this extension is a greater distance than the current width; her illustrations can be found in Appendixes B8 and B9. She acknowledged that there has been much protest recently toward the CVCB lane expansion: particularly from surfers. In order to handle the new space’s population capacity, she stated that there would be 25 new access bridges in addition to the current 9 that service the area; existing bridges will be widened to handle more pedestrian traffic. Of these 25 bridges, 3 are in the planning stages, one of which is situated in San Isidro, the CV’s most affluent municipality and only one without an access bridge. While this proposition with access points in each municipality uniformly following the coastline is great, it remains up to the individual municipalities to whether they wish to actually build the bridges or not.

As for the 90-meter extension of the coastal shelf, depicted in Maps 4 and 5, this has been received with mixed feelings. The main opponents to the extension are the surfers, since any expansion will undoubtedly remove their presence from the beaches during the construction phases, and alter the waves themselves since they will now be 90 meters further from where they used to be. The architect assured me that while the surfers are rightfully upset about the short-term sacrifices, the long-term payoff would be worthwhile since a full 50 meters will be contributed to recreation and beaches. Essentially what the APCV wants to is extend the entire coastal shelf 90 meters into the sea. The first 40 meters will encompass extensions to the CVCB (currently, the expansion
is one lane, but in the future it could be more) and a lane made especially for public transportation. The next 50 meters will be open park space and beaches. So far, only Miraflores and Barranco (also the best surf spots) are the only ones to receive the full 90 meters, the remaining four municipalities will receive only the first 40 meters, with no 50 meters of public space on the seaside. A combination retaining wall and cobbled beach will likely be the transition zone from the new area and the sea.

With these enormous expansions I was curious if climate change has been taken into consideration since coastal erosion is already a serious issue along the CV. She assured me that climate change is something the APCV is definitely aware of, as well as coastal erosion. She stated that Miraflores and Barranco currently experience the most erosion because the convex point of Chorrillos protects the southern end of the CV, and the northern end is protected by Isla San Lorenzo a few miles from the mainland. It might seem peculiar that the two municipalities facing the most coastal erosion also happen to be the two that are to be extended the furthest. The reason for this is not a disregard for the erosion, nor a proactive strategy to counteract the erosion, but rather simply economic: Miraflores and Barranco are in the center of the CV, and are currently the most popular municipalities for beachgoers and others who use the amenities of the CV and possess the majority of the coastal shelf’s bars, restaurants, yacht and surf clubs, and shopping outlets.

Maintaining the coastal shelf at its current size requires constant attention to weak points in seawalls and jetties, to protect it against the elements if it were extended 90 meters would entail a great deal more. The in addition to the 25 new access points, the new plan calls for major extensions to the 18 current jetties on the CV; many of them
need to be extended to the length of 300 meters. She went on to explain that the extreme length of these jetties would be not only for the coastal shelf, but also any construction in the northern third of the CV. If the 90-meter extension were to come to fruition, be successfully protected by the new jetties, and serviced by the additional access bridges and public transport lane, the southern half of the CV shelf would be a recreational wonderland. However, the northern half of the shelf remains plastic; since recreation would be prevalent in the south, the north would be dedicated to multiple small ports, likely mooring points for private vessels. She said this is a natural division of uses since the south is better suited for recreation due to the natural and artificially protected shelf and calmer tide; whereas the north, with its deeper water and rougher seas is better suited for small ports for personal watercraft.

The APCV’s new master plan for the CV is certainly ambitious, and would drastically change the entire Bay of Lima. Its large shelf expansion is an effort to preserve the many uses that are currently present and vying for space on the shelf. There are undoubtedly a multitude of environmental and jurisdictional concerns that need to be addressed before proceeding, but based on the information the APCV provided me with and how the space will be shaped in the future shows that the region is moving from an organically organized space, with regard to allocation of use, to a more planned and regionalized space. Moving forward, the alterations made will have profound impacts on the neighborhoods up-cliff from the shelf. Should ports for watercraft be kept in the northern municipalities of San Miguel and Magdalena Del Mar, the predominant blue collar population that characterized the coastal neighborhoods will likely be displaced by gentrification resulting from the ascension of watercraft owners wanting to live near their
vessels. Similarly, the prime surfing spots Miraflores and Barranco could disappear due to the shelf and jetty changes, and poor fishing wharfs in Chorrillos could be seen as an insufficient use of prime real estate should a public transportation lane make the region more accessible to tourists.

**Conclusion**

Through ethnographic work I discovered that the wealthy in Metropolitan Lima leave the city on weekends to stay at their second weekend homes, meaning they have little priority for having a recreationally developed coastline nearby. My maps reveal this very accurately by depicting San Isidro coastal shelf having very little recreational space; Miraflores and Barranco having a mixture of private and public space; while Chorrillos, Magdalena, and San Miguel have more public space on the coastal shelf, reflective of their poorer inhabitants. As an analytical tool mapping public/private spaces and population demographics, a use map can show where socio-economic changes have happened. If there are more soccer fields present in one municipality than another that tells us that soccer is a priority use of space for some, or simply getting the funds to build one. Each municipality currently has a at least one major coastal feature that defines its current priorities and its history: San Miguel and Magdalena share a large greenspace; San Isidro has largely vacant land with no access points; Miraflores has the exclusive Club Waikiki (surf club); Barranco has its Regatta Club (yacht club); Chorrillos has its artisan fishing wharf. All of these features are unique to their home municipality; all are exclusive, and no duplicates. There are no artisan fishermen in San Miguel, no yacht club in Chorrillos, and no public greenspace in San Isidro. There are certainly features like the
CVCB than spans all six municipalities, but the features I list exist where they do for a purpose, and that is the municipality’s decision makers, despite their influence, deem those features the best use of that space. Mapping the CV region in the way I have provides a prospective that really could not be attained by other means.

My maps not only show the region from strictly six CV municipality scale, but details proportions of various uses. These proportions are telling of how much regard is given to other uses for the space besides the dominant features I listed earlier. These proportions show that the municipal coasts are centered on a dominant use, reflective of demographics present, and the remainder of the space is not accommodating to many different uses for many different classes. My maps illustrate not only the inequalities within municipalities, based on their spatial allocation of their coastal shelves, but also the inequalities present between municipalities, evidenced by the contrasts between municipal coastal shelf uses.

On a final note, perhaps one of the most profound takeaways from this mapping component has been the realization that municipal boundaries are apparent, even when the borders are absent from the map. This is especially telling of the level and kind of investment of each municipality. The ways in which a section of the coastal shelf is developed for specific uses, indicates the investment capabilities of that particular municipality; therefore making these maps representations of capital investment. These “zones” or regions prone to investment echo conversations on regionalism within large metropolitan areas (Soja, 2015). Soja maintains regionalism is occurring everywhere in the world, and that the manner in which it manifests is reliant on local histories and geographies. Reasons for why municipalities with poor residents and high coastal shelf
investment can neighbor wealthy municipalities with little coastal shelf investment, is
tthanks to their individual histories. After all, these municipalities have not been part of
the same seamless metropolitan area very long and when subjected to decentralized and
deregulated governance, their socio-economic differences and priorities can be reinstated
end strengthened.

To unpack this a little further, the class of people who live there dictates
investment and development on the CV. Chorrillos’ fishing wharf, Miraflores shopping
and surfing, and Barranco’s yacht club are all examples of historical places that are
embedded into the local culture and history. All of these required initial investment to
build, and based on the class associations for whatever the particular site is, reciprocates a
class’s presence in an area. Fishermen likely built the Chorrillos wharf because it had
geographic advantages among other reasons. By being there and having fishermen
support it, the site (the wharf) and the surrounding area become associated with
fishermen and those of similar socio-economic class. The same goes on in Barranco due
to the yacht club, or in Miraflores due to the exclusive Larco Mar shopping mall and surf
clubs, only these sites attract affluence rather than the poor. Using maps to find sites that
are the epicenters for a municipality’s development is largely what my maps accomplish,
and contribute to a longstanding tradition in anthropology of using maps to understand a
landscape and its peoples.
CHAPTER 2

COASTAL DISTURBANCES

This chapter demonstrates how the changing physical nature of the CV’s coastal shelf reflects existing socio-economic and political inequalities and, in turn, reproduces them. The CV coastal shelf is comprised of different recreational spaces that vary by municipality and each municipality varies according to its overall socio-economic demographic. Some, such as San Isidro, are populated by wealthy residents who merely live in the city during the week and resort to second homes on weekends, while others such as Chorrillos are low-wage individuals who cannot afford to leave the city. The coastal shelf is not a space only “naturally” created or human-made; rather, it is a product of natural and cultural transformation. Municipalities develop areas to accommodate specific recreational activities, which reflect the demographics of the municipality. Additionally, the CV’s physical geography is constantly being reworked by changing sand deposits, tidal flows and other “natural” forces that interact with, respond to, and undermine changes in municipal recreation development of the area. Thus, the CV’s coastal shelf is the product of intertwined human and nonhuman forces and, therefore, problematizes the notion of a “nature-culture” divide. I refer to these entanglements as disturbances. These disturbances present problems that the whole CV is subjected to, but through decentralized governance, municipalities must react in their own capacities. If a central authority existed to address issues like coastal erosion or sand-disappearance

10 According to the National Wildlife Federation, a Natural Disturbance is: “any event that causes a disruption to the state of an ecosystem. Disturbances can be localized… The results of a disturbance can be short-lived or long-term. Sometimes it takes a few months for an ecosystem to bounce back and other times it can take decades. Natural disturbances are caused by forces of nature, including weather, geology, and biological fluctuations” (https://www.nwf.org/Wildlife/Wildlife-Conservation/Disturbance.aspx). For my purpose, the disturbances discussed are pollution, climate change, marine sand pulses, and sea currants.
on a regional scale, the CV would be a more uniformly developed space. This is not the case however, and an “every municipality for itself” strategy persists in addressing disturbances. In this chapter, I will argue that coastal disturbances are primary impetuses for coastal development that is indicative of socio-economic inequalities.

How municipalities react to disturbances is largely due to their economic capacity to afford changes, resulting in the mosaic geography presented in the previous chapter. The mosaic geography is more than a physical map of the coastal shelf, because it shows the economic differences between municipalities by expressing shelf allocation for recreational space. Recreational space, and recreational activities that take place in them are profoundly important in expressing the affluence of a municipality, since certain activities are associated with economic classes. In this chapter I present two prominent coastal disturbances (pollution and climate change) and argue that they provide incentive for development projects to take place. By this I mean, pollution and climate change present challenges for municipalities to overcome. Since the APCV is a decentralized authority, municipalities may react in any way they see fit or however they are capable. In doing so, their visions are illustrated in the geography of the CV coastal shelf. As explained earlier, these disturbances cannot be simplified to merely natural or human-made, but nonetheless are major drivers behind historic and planned changes on the coastal shelf. I will argue that these disturbances and municipalities’ ability to cope with them are representative of the inequalities within municipalities, based on who benefits from the courses of action municipalities take, and developments they carry out. By

11 I want to emphasize that by “natural” spaces, I am talking about spaces that are co-productions of human and nonhuman interactions; they are inherently social and political and therefore reflect and reinforce particular political economies.
connecting disturbances, neoliberal governance, and the expression of wealth inequalities via recreation on the coastal shelf, this chapter’s contribution to my central argument is that environmental disturbances prompt municipalities to orient coastal development around certain socio-economic classes, representative of the social inequalities between municipalities. Social Inequalities present here are mainly wealthy disparity between populations within CV municipalities and average wealth disparity between whole municipalities.

In this chapter I discuss two primary disturbances on the CV: pollution and coastal erosion. To start I will present some literature for framing and some history about jetties and eddy effect present on the CV for context. Since jetties and eddies are at the foundation of my discussion on pollution since they cyclically displace, replace, and deposit water, acting as metaphors for the entanglement of human/non-human interaction shaping the CV. My second environmental disturbance is coastal erosion, and more specifically: the disappearance of sanded beaches. I begin this chapter with an examination of sand’s role in providing the literal, but also socio-economic foundation of the CV coastal shelf. From there my discussion broadens to sand and its cycle’s importance in illustrating climate change’s effects on the CV. Global climate change is discussed next to bring the global phenomenon’s effects into focus on the CV. Since Chorrillos will be singled out in the latter half of this chapter as a municipality with the most to lose from pollution and coastal erosion, I will discuss an attempt the municipality made to integrate its southern coast into the circuit of beaches, which backfired, resulting in Chorrillos’ current recreational limitations. This chapter’s content will contribute to problematizing nature and culture divides, the far-reaching influence of climate change’s
effects, and an understanding of how intertwined human and non-human forces are in our world today; thus reinforcing the near impossibility of discerning a cause and effect for phenomena.

**Literature**

Existing anthropological literature problematizes the idea that nature is distinct from and external to culture. In particular, recent work on climate change and environmental degradation demonstrates how these phenomena are both “natural” and also “socioeconomic” in their causes and impacts, even in spaces often assumed to be devoid of human (Ogden, 2011; Grandia, 2012). For example, forests give the illusion of being pristine pockets devoid of human order, when in reality many are spaces of systematic timber production, where trees have been planted in an orientation most conducive to growth and harvest, comprised of species quick growth and disease resistance in order to increase investment promise (Scott, 1998; McElwee, 2016). Ben Orlove examined farmers and fishers on the shores of Peru’s remote Lake Titicaca, to understand the effects new fish species, natural resource management, and formal economic integration have had on a previously marginal geography (Orlove, 2002). He lends perspective toward the nature/culture divide since, the fishing practices of the lakeshore inhabitants are so ingrained within the ecosystem, eliminating their practices for a “natural” preserve would jeopardize the contemporary natural balance by making it a new region of focus for economic investment for tourism.

The CV coastal shelf is seemingly a place of natural origins, no human inhabitants, subject only to nature; when in reality, the coastal shelf owes its present state
entirely to the efforts of humans to create a desirable place by the sea. While no humans are allowed to build residences there, its location as one of Lima’s busiest roads (the CVCB), various clubs and restaurants makes it more or less inhabited around the clock even though its residents are not sedentary. The CV’s green cliffs give the illusion of something not manicured by people. Nothing could be further from the truth since Lima’s population growth has lowered the natural water table below sea level, so the gorgeous green cliffs of the “green coast” are a result of an extensive irrigation grid and landscape nets to hold the unstable cliffs in place, to protect the highway below.

The CV is seen as a resource (of space) that must be used to its fullest potential; others see it as a natural place that must be preserved for various reasons. Problems exist on both sides of this argument due to the long history of human inhabitation in the region. Artisan fishers in Chorrillos, much like the farmers and fishers of Lake Titicaca, have had a presence on the coast long enough to be considered a heritage worth preserving. Much like planned forests the CV cliffs appear to be in an unplanned form, shaped only by geological forces over time. But in fact they have been reshaped numerous times for highways and boardwalks, are irrigated to remain green, and covered in netting to prevent landslides. The beaches of the CV are created by a system of jetties used to capture sand. While the deposition of sand behind the jetties is not manipulated by humans, the construction of the jetties certainly is, which results in the beaches being a coproduction of human endeavors and non-human cycles.
Chorrillos’ Lost Beach

Historically, the Costa Verde has been an important site for recreation, first by Lima’s wealthy citizens and since the mid-twentieth century, by the city’s growing poor. Recently, Lima’s municipal government has sought to redevelop the CV with the aim of making it more amenable to domestic and international tourism and designate it a site for real estate speculation and investment. These goals have not, however, proceeded seamlessly.

There have been numerous projects that have resulted in failure. For example, historically there has been a Master Plan for the Costa Verde that presents the benchmarks the APCV hopes to accomplish with a designated timeframe. The current mayor of Lima (Luis Casteñeda Lossio) has scrapped the most recent Master Plan in order to draw contrast between his administration and the previous (Susana Villarán), which was criticized for abandoning projects, such as a seawall in Villa El Salvador after its destruction in a storm. To compensate for Villarán’s neglect, Casteñeda has dumped rock along new land on the coastal shelf to slow sea reclamations, and built a boardwalk in Miraflores that runs parallel with the beach originally intended for pedestrians and bikers. The boardwalk and Lossio have been roundly criticized by residents since the structure is not wide enough for high volume pedestrian traffic, bikers, and obstructs views of the sea since it is elevated. Critics, mostly citizens who use the CV space, say this inadequacy for such a large and expensive project highlights the disconnect between decision makers and the region’s needs to be a central tourism hub, and are merely political propaganda.
The largest, most populous\textsuperscript{12}, and southernmost municipality of the CV is Chorrillos. The green-belt region of the CV accounts for approximately one-third of Chorrillos’s northern coastline, ending in the south at La Herradura; the rest is largely vacant scrubland south of this point. Chorrillos possesses unique topographical features. It northern coastline working south, is similar the rest of the CV municipalities, consisting of cliffs comprised of loose gravel and silt, until approximately Playa Pescadores, from there south the coastline cliffs consist of solid rock with a very narrow or no shelf below. None of this is suitable for construction since building sites cannot be prepared by manipulating the solid rock cliffs. Similarly, there can be no coastal shelf expansion due to the lack of suitable gravel/soil matrix and exposure to the Peruvian Current. The Peruvian (Humboldt) Current flows northward along the Peruvian coast. The peninsular nature of Chorrillos’s midsection forms the southern limit of the Bay of Lima, and subjects the coastline south of this peninsular extension to the current’s erosive forces. This makes building very problematic.

There have been attempts to tame the coast of Chorrillos, back in 1981 then Mayor of Chorrillos Pablo Gutiérrez Weselby attempted to build a highway around the southern cliffs of Chorrillos to reach Playa Villa via La Herradura. In order to do this the cliffs required demolition to make a seaside shelf on which to build the road. Not only did the mayor run out of money to finish the project, he was voted out of office. This road to nowhere would be a harmless attempt anywhere else, but even its partial construction had consequences. Until the attempt at building the road to Playa Villa, the seaside resort

\textsuperscript{12} In the 2008 Peruvian National Censes, the population of Chorrillos was 300, 417; Barranco: 34,711; Miraflores*: 87,767; San Isidro*: 59,735; Magdalena Del Mar: 54,026; San Miguel: 134,526.
* San Isidro and Miraflores are the only CV municipalities that lost population between the census’s of 1993 and 2008: San Isidro falling from 66,006 to 59,735; Miraflores falling from 91,268 to 87,767 (INEI, 2010: 27).
of La Herradura was a haven for Limeños to surf and sunbathe. Protected in a small inlet and isolated on all sides by cliffs, La Herradura gave the illusion that it was further from the city than it was, despite being a convenient twenty-minute drive from downtown Chorrillos. The Ecologist told me that the beach used to be broad and naturally sanded, with waves perfect for surfing. A hotel was built near the tideline so visitors could walk right onto the beach. When the cliffs immediately south of La Herradura were dynamited to build the road, the rubble was disposed of by dumping it into the sea. This rubble changed the way the tide breaks on its way into the inlet. Rather than the tide breaking further out and exhausting its intensity by the time it reaches the beach, the waves are now much more violent and maintaining their erosive energy all the way to the beach.

The southern boundary of what is considered the Costa Verde ends at La Herradura. Despite its isolation and inability to have its coastal shelf expanded for various uses like the rest of the Costa Verde to the north, this manipulation of the rocky cliffs is similar to the development of the CVCB to the north: in order to make way for a highway, the utility of the space for recreation was sacrificed in the name of interconnectedness and political acclaim. Many speculate why the road has not been continued since it has already destroyed La Herradura as a recreation destination. Some cite the obvious lack of funds. By extending a project beyond the boundaries of the CV, funding normally allocated to municipalities for CV projects would not be available. Some speculate that because the project died with Pablo Gutiérrez Weselby’s tenure as Mayor of Chorrillos, the project was merely a political stunt to ensure re-election to see a long-term project to completion.
While this is only one example, these sorts of promises are often aligned with special interests that helped a politician, in this case Mayor Pablo Gutiérrez Weselby, get elected. This phenomenon is universal, and not unique to Peru. When an official like Weselby is defeated in an election, projects are abandoned since the special interest group or individual is no longer represented or owed anything. Examples such as this reaffirm the CV as a place for priority investment, for if this wasn’t the case, elected officials owing favors to certain affluent constituents would focus attention on a different part of the municipality, rather than the coastal shelf.

Aside from Miraflores’ acclaim as a premier CV surf spot, La Herradura gave it a run for its money back in the 1950’s. I recall taking a trip to La Herradura to gather water samples and being amazing at the ferocity of the waves. I got soaked trying to fill my beaker with seawater. My driver Walter recommended the ceviche in a nearby restaurant, so we went in and got a seat on the second floor overlooking the beach. On the far wall was an large photograph of the beach back in the 1950’s (based on the vehicles) from a similar perspective from where we were sitting. The beach was sanded, there were hotels, surfboards jammed in the sand, and people everywhere. I looked off the balcony at what that same space is today: vacant, breeze blowing a newspaper across the street, and dark waves slamming the narrow, cobbled beach, with one going the extra couple of feet to strike the seawall every so often. It amazing to think this space was a recreation mecca a mere thirty years ago. While it is unclear whether the true intentions behind the road from Chorrillos (proper) to La Herradura and La Chira was political grandstanding or economic foresight to include new areas into the circuit of beaches, it is ironic Chorrillos ruined its best beach by trying to make it accessible.
Finally, there is a correlation that can be gleaned from this on good (sanded) beaches being inaccessible. The beaches along the CV in the Bay of Lima slowly became cobbled as the CVCB was build and expanded. La Herradura made an attempt to integrate it into this circuit of beaches, and ruined it. La Chira technically lies outside the political boundary of the CV, and still has no major road leading to it, and sure enough, is a broad sandy beach yet today. Further south beyond the political boundaries of Chorrillos are private sandy beaches where wealthy metropolitan Lima residents, many of whom live on or near the CV, have built their weekend homes. Chorrillos being the poorest municipality of the six is the biggest loser since its only assets to attract recreationalists and tourists are dependent on the cooperation of the sea. La Herradura is ruined and Playa Pescadores is polluted beyond safe levels for bathing. Pollution continues to adversely affect Chorrillos’ beaches and fishing because fishermen are poor and have little political clout in the community. Having their livelihoods marginalized due to their socio-economic status reaffirms that a municipality’s reaction to coastal disturbances is representative of the socio-economic inequalities present. One of these inequalities present between municipalities is access to clean, sanded beaches and water. Lima’s wealthy residents’ can acquire this elsewhere, and those poor residents that are confined to public spaces on the CV have only the polluted cobbled beaches since no authoritative action to remedy the situation has been taken by local governments. Since the wealthy residents are mobile, they can continue to find access to sanded beaches and clean water; much like the CV, if the current weekend homes become polluted or sanded they can move on to another location.
Pollution

Marine pollution is a problem experienced by many coastal cities of comparable size to Lima, due to their population exceeding their ability to provide adequate infrastructure. Since the CV is on the ocean I wanted to find out if the water is safe for people to enjoy recreationally, and if not, why not. Table 1 below shows the results of the two water tests taken in 2015 and 2016. Their importance in relation to this project is that they have confirmed inadequate handling facilities for sewage and contradicting efforts by the authorities of metropolitan Lima to maintain the CV as a place of investment priority for, among other things: recreation. When I first began this project I wanted to get a handle on how the pollution might be affecting the CV, so I took water samples: once in June 2015, and again in June 2016 so see if there was any change. Though they were a year apart, the tests yielded identical results. Depending on the time of year, if one walks along the beaches of the CV there are signs posted warning beachgoers of poor water quality, and advising to stay out of the water.

(Table 1) Results from water tests.

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<th>Date</th>
<th>Location</th>
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<th>PH</th>
<th>DO PPM</th>
<th>Temp (C)</th>
<th>BOD</th>
<th>Nitrate (PPM)</th>
<th>Phos.</th>
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<td>8</td>
<td>5</td>
<td>1</td>
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<tr>
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<td>Playa Pescadores</td>
<td>positive</td>
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<td>8</td>
<td>24</td>
<td>8</td>
<td>5</td>
<td>1</td>
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<td>8</td>
<td>25</td>
<td></td>
<td>5</td>
<td>1</td>
</tr>
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</tbody>
</table>
I made some predictions based on my own observations and research. The water near the beaches along the CV is generally brown. This coupled with the posted signs along the beaches and on billboards, I determined the source of the discoloration must be something harmful and probably does not originate in the sea. I wanted to figure out what the discoloration was a result from, so I tested the water. I chose four sites along the CV and tested for coliform at one northern location and one southern location; this was due merely to the limited number of tests in my kit. All locations I tested for coliform bacteria yielded positive results. With this information, I visited with an Economist (hereon “the Economist”) from Oceana\textsuperscript{13} in Lima. The Economist drew the CV and its currants on his whiteboard, and explained that jetties have been installed along the CV beaches to prevent beach erosion. He also said that the coastal shelf was expanded multiple times when large high-rises and roads were built on the cliff-tops; the fill dirt was then brought down seaside to expand the shelf. Since this new area exceeded the previous coastline, the new beaches were at high risk of erosion. To prevent this, municipalities and the Peruvian Navy installed jetties perpendicular to the coast to lessen the currants eroding the beaches. Aside from sea-wall destruction and undermining, the main impetus behind these jetties was the disappearance of the sanded beaches along the CV. The Economist also mentioned the jetties tend to trap water behind themselves, disrupting the normal circulation of water through the bay. It was possible, then, that the discolored water behind the jetties was undermined fill-dirt trapped in the void behind the jetties.

One of Lima’s two major sewage facilities, La Chira, is just south of the CV’s southern boundary. Since the general direction of the Peruvian current is Northward, I

\textsuperscript{13} Oceana is an international non-profit working to restore marine environments from overfishing and pollution (among other issues), through political activism and scientific reporting. http://oceana.org/our-campaigns
figured much of the brown water might be due to pollution coming via currants from La Chira, which is up-current. The Economist explained to me that La Chira is likely to blame for the positive coliform tests since it simply discharges right into the Ocean; a plume of brown color can be seen using Google Earth. He drew me maps to illustrate how the currents could be carrying the pollution northward along the CV. Another culprit is Rio Surco. Rio Surco likely originated as one of the many irrigation/diversion channels dug by ancient inhabitants to move water from the Rio Rímac in the north to fields in the southern part of the wide alluvial plain which encompasses the Bay of Lima. La Chira’s discharge is at the mouth of this small river. Today the Rio Surco is barely visible. I hired a driver to follow its course and found that it is mostly under streets until its exit into the ocean. It acts mostly as a drainage/sewage channel, making it an additional point source for the coliform levels. [Economist with Author, 6/11/15]

An oddity I found with my water-test results was that the southernmost test site was at Playa Villa, well south of the southern boundary of the CV at La Herradura as well as the sewage and Rio Surco discharges at la Chira. How could a site up current from the supposed “point source” for the coliform still tested positive? And why the brown color at the shoreline? Surely if the sewage content was high enough to discolor the water, there would be no marine life and would be unfit for any kind of human use. Much to the contrary, there is much recreation activity on the CV beaches; I asked surf instructors who make their living in the water, and one stated, “that was just the natural color.” I considered this to be a typical response since his livelihood relies on people being comfortable getting into the sea. Nevertheless, I sought further counsel from a Ecologist the Economist recommended.
Further interviews with my participant Ecologist informed me that the coliform levels up-currant from the CV is not surprising since the areas south of Lima are growing exponentially due to individuals taking second homes there. He confirmed that these are mostly affluent residents. The Ecologist explained precisely what the discoloration is. The Peruvian coast sits along what is called an up-swell, which is where the strong Humboldt Currant brings cold, deep, plankton rich water from the Arctic and deep Pacific near the Peruvian coastline. This plankton rich water is so close to the coast it comes into the shallows on the beaches; much of the plankton is red or brown in color, which discolors the water; so in fact, the disagreeable color is actually characteristic of a positive, rather than a negative, attribute of the CV’s waters.

There are obviously contradictions of the metropolitan area’s lack of concern for sanitation and pollution that compromises the coastal shelf being a premier recreation area within the metropolitan area. It is counter-intuitive to have a large sewage discharge up current from a stretch of coastline distinguished for its scenery and recreation. Although the discolored water is not a result of pollution, the fact remains that the coliform tests I took along the CV are positive and must result from some point source up current. Both the Economist and Ecologist suggested it might be a result of explosive development of beach properties to the south of Lima; they both mentioned that the Lima Metropolitan government has recognized the hazard of La Chira and are currently in the works of adding a four mile “tube” to discharge the waste further out to sea and away from the coast. Perhaps the most important contribution of this section to this project is its confirmation development south of the Lima metropolitan area where affluent citizens reside during the weekends.
The sewage polluting the waters of the CV is serious, but historically it was a lot worse. In the past each individual municipality would have had its own discharge into the sea. Due to population growth, there is far more sewage being discharged into the sea via few large point sources now, than in the past with many smaller discharge points in each municipality. The main different is that no one sees the discharge of the sewage since it is hidden away from the affluent stretches of the CV. This is important because the current system is worse in terms of total discharge into the ocean than the old one, but the only people who feel this worsened state are those who have direct contact with the water, particularly those who rely on its water quality/safety for their livelihoods: like surf instructors and fishermen. The lack of proper sewage handling reaffirms my argument that the CV municipalities’ handling of disturbances like pollution are representative of the inequalities within. The development of sewage handling proves yet again that little consideration is given to the poor who use the sea for income or recreation; rather, the only thing that matters is that the excretion of feces is out of their municipality so they do not have to see or smell it, and it down currant from their weekend homes.

**Jetties And Eddies**

Both the land of the CV coastal shelf, and the sand of the CV beaches were deposited from elsewhere: the land by humans, and the sand by sea currants. But the sea is constantly trying to reclaim the space currently occupied by the coastal shelf, because, it is not a natural feature built to withstand natural erosive forces; at least, not without protection and maintenance. Protection of the CV has historically, and is presently, delegated to a system of jetties running along the CV and oriented perpendicular to the
tide. According to the Ecologist, the first jetties were built in the 1940’s in Barranco and southern Miraflores, and they filled up very quickly with sand creating pleasant beaches. In the 1960’s they again built a series of jetties all the way to Miraflores’ northern boundary, but these beaches filled much more slowly with sand. In a way, the jetties were responsible for creating the first beaches. Once these beaches became established and it was noted that the sand could be held behind the jetties, further shelf expansions were realized; in particular building a highway there.

Today the jetties are iconic features of the CV. Having spent a fair amount of time walking on them myself, I can attest to their popularity with fishermen, swimmers, and tourists. Some are even large enough to support buildings, such as the La Rosa Náutica Restaurant on Playa Makaha in Miraflores. Just like the beaches, they have become important spaces of recreation on the coastal shelf. The jetties started out small in stature to capture sand, and just as the coastal shelf was expanded, they too were extended out into the sea to protect the sanded beaches. According to the Economist the jetties were constructed by the Navy to protect the new and vulnerable coastal shelf that was created, but there have been unintended consequences of these jetties. He said the jetties were installed to protect the coastal shelf from currants approaching from the southwest. Based on their location and orientation, they are adequately placed to do so. But, according to the Economist, the jetties created an Eddy Effect, meaning a giant whirlpool motion moving in a clockwise direction. This Eddy Effect now has the currant approaching the coast from the northwest, 90 degrees different from what the jetties were built to protect against, meaning that the jetties are now useless to protect the beaches (and the greater
coastal shelf) from the erosive currant. Also, because of the clockwise motion of the Eddy, the whirlpool loses momentum after the currant has made contact with the shore.

This loss of momentum results in the currant dropping/depositing any debris it may be carrying. Due to Peru’s plankton rich waters, and the CV’s questionable sewage handling up-currant, the Eddy Effect deposits large amounts of pollution and plankton within the CV jetties (an area where this is extremely prevalent is Playa Pescadores in Chorrillos, due to its concave location). This overconcentration of plankton and pollution can make the water dangerous for humans and sea life, and unsightly due to discoloration from decomposing plankton and pollutants. This deposition of polluted water in Chorrillos’ Playa Pescadores is especially unfortunate since it is the only beach on the entire CV that is sanded by the sea. Chorrillos is also a poor municipality. Next to Playa Pescadores to the south is a fishing wharf, which employs many of the inhabitants of the nearby neighborhoods. Because the inhabitants of Chorrillos are largely poor, surfing is not a recreational activity that takes place; rather, swimming is the most popular activity. If we step back and examine Chorrillos, we can see some interesting characteristics coming together: it has the only sanded beaches currently on the CV, some of the poorest inhabitants, swimming is the primary recreational activity, and there is little the municipality can do to better their poor water quality due to their geography.

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14 Pollution deposition at Playa Pescadores is transported by water. These include: an over abundance of/decomposing plankton, seaweed; light trash (like plastic containers, aluminum cans, bags, and fishing nets); heavy trash (like rubber tires, driftwood, and twisted steel pieces). The water itself contains coliform (based on my own water tests) from the sewage plant at La Chira, petroleum waste (from the nearby fishing wharf and up-currant refinery port near Pachacamac. Since Peru’s rivers that drain the western face of the Andes are at a steep grade down to the Pacific, runoff from the regions rich mining deposits end up in the Pacific, and trapped in Playa Pescadores.
Shifting Sands

Disappearing beaches are a coastal disturbance occurring in many places around the world. Southern California’s famous Malibu beach is disappearing too, causing local and state lawmakers to take measures to protect them, as best they can (http://www.latimes.com/local/la-me-beach31-2008dec31-story.html). All of the world’s sand follows the same basic life cycle. This life cycle is called a “sandshed” (used in the same sense as a watershed), and its origins are normally in mountains, where wind, gravity, and precipitation transform rock into small particles. These particles are transported to the coastline via rivers and enter at an area called a littoral cell, and are carried by currants until they reach the end of the cycle in a deep submarine canyon where neither currants nor humans can access it. There are numerous opportunities along this journey for sand to be pulled from completing the cycle. Upland regions where mountains (future sand) exist can have reduced precipitation that washes particles to rivers; damming on rivers not only captures sand being carried, but eliminates seasonal flooding whereby sand can be reclaimed from riparian zones; finally, coastal armoring like seawalls, jetties, and breakwaters along coast lines disrupt sand’s travel. It important to remember that no matter where sand is along its journey, its status is always temporary as seasonal shifts alter sanded beaches even in environments far from human inhabitation and manipulation. Sand is normally assumed to be something too small, mineral, and geological, to bear any human trace. Rather, sands movement and deposition is reliant on human actions.

Peru has disappearing glaciers due to climate change, dams on many rivers since most of the country’s population lives along the desert coast, and coastal armoring.
Indeed, the CV is possesses a heavy concentration of jetties, seawalls, and breakwaters as mentioned earlier in this chapter. According to the Economist and Ecologist, the CV’s sand comes from the Andes. The sand is created there by geological forces, often by glaciers crushing and crumbling boulders to stone, and stones to sand. The Ecologist explained to me that the pulses of sand followed earthquakes, as this shakes loose the sand so it can enter Peru’s rivers, which then carry it to the coast, where it is carried via currants. With the exception of Playa Pescadores, there are no sanded beaches on the CV, and it provokes one to consider the current lack of sand with the absence of recent earthquakes. While this is certainly a strong possibility, I couldn’t help but think of recent work regarding disappearing glaciers in the Peruvian Andes; Peru’s Andes having 70 percent of the world’s tropical glaciers, which are melting at alarming rates (Rasmussen, 2015; Bolin, 2009). While his work focuses mainly on the Andean cultural implications these disappearances entail, there very well may be a correlation with the lack of sand reaching the ocean.

With the spring snowmelt in the Andes, rivers flood with higher than normal water levels, laden with silt, sand, and gravel. This cycle is largely universal; what isn’t is that a majority of the Andean spring water that end up in these streams and rivers is from glaciers, rather than yearly precipitation accumulation. As these glaciers disappear, one must take into consideration the amount of water that moves though the channels. Earthquakes may occur, but if there is an insufficient amount of water to carry the sand and gravel to the ocean, then there is no sand for the CV beaches. While both the glaciers and the earthquakes are important natural factors in replenishing the CV beaches with

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15 Playa Pescadores is in a unique position within the Bay of Lima as it lies in a natural concave “bay-within-a-bay feature” that protects it from northerly ocean currants that would otherwise erode its sand away.
sand, one is “renewable/reoccurring” while the other is disappearing for good. So while Bolin’s work examines the disappearing glaciers’ cultural implications in the Andes with herders and peasants, a similar cultural impact is taking place on the CV. Earlier the Ecologist and Economist mentioned that the municipalities and the state installed a series of jetties to prevent coastal erosion, and that these jetties have altered the currants in the Bay of Lima. [Economist with the author, March 16, 2016] The jetties were put in place in the 1990’s, according to the Ecologist, to protect from coastal erosion, namely: sanded beaches. The Ecologist grew up surfing on the CV and told me that during the period of his youth, the beaches were sanded.

“The peak of sand was in the 1990’s…Then it started going back. So when I started surfing in 1978 it was a cobble beach like right here. And in 1985 it was all sand. A really wide sand beach. 1995 it was already cobble stone beach again. I am not sure what caused the fluctuation. Right now what we know is that 6 years ago they built a marina, and that gave.. there were a couple beaches like Barranquito.. that still had sand still. Some beaches still had sand up to 2010. Started in the 1990s, but when they built the marina all of the sand disappeared. In Barranquito its not usable anymore. Up until 5 years ago you would have hundreds of people, now no more. In that case, the final retreat of the sand is thanks to that. Some say that it is the Club de Regattas, that they catch the sand before it gets to the beaches.”
Lima’s beaches are cobbled, much like they were when the Ecologist started surfing in 1978. There are many different explanations to why the sand has come and gone. There is little record of the beach composition from when Spaniards founded the city of Lima until the 1940’s when the Bay of Lima first started being heavily populated due to interconnectivity between Central Lima and the periphery towns along the coast. The Ecologist told me that the first jetties in the southern portion of the CV were built in the 1940’s, and that they filled up with sand relatively quickly thereafter. Later, in the 1960’s the City of Lima and the Navy built jetties extending up to the Northern boundary of Miraflores; these jetties captured sand, but at a much slower rate.

When asked about ecological impact of development along the CV, he stated that there was little impact because there is little there to hurt; it is a desert in a long-time inhabited area. Due to Lima’s stable climate and minimal seasonal variation in rainfall and temperature, global climate change’s effects are less visible than in other locations. Multiple participants have told me that, with the exception of El Niño, Peru’s coast has experienced neither raised sea levels nor warmer waters. It was acknowledged that eventually change will come, and may make up for lost time. When it does, as far as the municipalities are concerned, there is nothing of value (other than the space itself) on the coastal shelf, so losses will be on the owners not the municipalities. Sand carried in the sea currants certainly has a use value. As mentioned above, the beaches of the CV have fluctuated between being sanded and cobbled since Europeans began keeping written records the region in the early 1500’s. The cobblestones that currently make up the CV’s beaches are large (4-10 inches in diameter) and smooth, making them slick and difficult
to walk on even with shoes. Whether a beach is sanded or cobbled greatly affects its use as a place for public use.

It is important to restate the entangled nature of the coastal shelf and its associated problems of sand fluctuation since the ongoing disturbances on the CV are not solely the fault of one socio-economic class, political party, or nationality. As the Ecologist mentioned, some beach-goers single out the yacht club’s construction in Barranco as the cause for these fluctuations. Others, including the yacht club members maintain it is a natural cycle and their club’s marina has changed nothing. This chapter’s goal isn’t to solve the mystery of who is or isn’t to blame for bare beaches, but rather to show how disturbances like cessation of sand shapes recreation in the municipalities. Each municipality can have its recreational activity summed up by features on their coastal shelves, and these features, when considered alongside the demographics, can highlight some inequalities present. Consider the following:

(Table 2) Municipalities with sanded beaches.

<table>
<thead>
<tr>
<th>Orientation</th>
<th>Municipality</th>
<th>Sanded Beach</th>
<th>Chief use of shelf</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>San Miguel</td>
<td>No</td>
<td>Green Space</td>
</tr>
<tr>
<td></td>
<td>Magdalena</td>
<td>No</td>
<td>Green Space</td>
</tr>
<tr>
<td></td>
<td>San Isidro</td>
<td>No</td>
<td>Vacant Space</td>
</tr>
<tr>
<td></td>
<td>Miraflores</td>
<td>No</td>
<td>Surfing</td>
</tr>
<tr>
<td></td>
<td>Barranco</td>
<td>No</td>
<td>Yacht Club</td>
</tr>
<tr>
<td>South</td>
<td>Chorrillos</td>
<td>Yes</td>
<td>Beach/Wharf</td>
</tr>
</tbody>
</table>

San Miguel, Magdalena, and Chorrillos are the least affluent of the six, while the middle three: San Isidro, Miraflores, and Barranco are the most affluent. In the northern part of the Bay, the currants pound against the shore so violently, that water recreation really isn’t possible, no matter the time of year. The great extension made to the coastal shelf
there is for green space. In affluent municipalities in the CV midsection, there is little
there to suggest water recreation is a dominant use and focus for development. In San
Isidro we see mostly vacant space because many of the municipality’s power brokers
have second homes on the sea elsewhere, so there is little incentive to develop the shelf
for purposes of contact with the sea. Miraflores, like all other municipalities except
Chorrillos, has cobbled beaches and few to no swimmers. Aside from being the epicenter
for surfing, which I will discuss in detail in the next chapter, the disconnect between the
population and the sea continues. Barranco too has no amenities for recreation other than
the yacht club, which is reserved for the elite few. Yachting does not require anyone to
get into the water, since they’re on their vessels. Yet again, continuing the disconnect.
Once across the border into Chorrillos, there is a sanded beach. Here the people
physically get into the water for recreation at Playa Pescadores, which lies in the concave
at the southern tip of the Bay of Lima.

It is here, in the concave geography of Playa Pescadores, that the Eddy Effect
keeps sand in place, but also deposits garbage and polluted water for citizens to wade
into. Foreign tourists do not visit Chorrillos’ beach due to its lack of upscale restaurants,
shopping, and lodging. South of Playa Pescadores is Chorrillos’ fishing wharf, where the
connection to the sea is taken one step further in that people rely on the polluted waters
for their livelihoods. To connect this with the water pollution, we can now gain a clearer
view of who is really affected by disturbances like pollution and sand disappearance.
Because of the livelihoods dependent on the fishing wharf and the perennially sanded
Playa Pescadores, Chorrillos pays the biggest price from coastal disturbances. It may
have the only artisan fishing outlet and sanded beach in the Bay of Lima, but both are
more affected by poor water quality than other municipalities because they depend on humans being in the water for recreation. Other municipalities, thanks to their economic capabilities and geographic luck of the draw, were able to forfeit recreation like swimming, fishing, and surfing because inhabitants could afford to go elsewhere for their seaside experiences. There was a time, however, when Chorrillos attempted to expand its seaside recreation to new locations. One of these locations was La Herradura, an isolated sandy beach in southern Chorrillos that was once attempted to incorporate into the rest of the bay’s circuit of beaches by way of road.

**Conclusion**

Reconnecting this conversation on sandedness of beaches and pollution to my argument in this chapter how the fluctuation of sand and pollution, has prompted municipalities to develop the coastline in a way that suits the needs of the affluent in the municipalities. These two disturbances also give a geographical sense of where poorer classes live. With the lack of sand and abundance of dirty water, people who can afford to leave the city for recreation, do. Poorer classes do not have this option. Granted not all of those who use the beaches in the six municipalities are locals, many are tourists from other municipalities or foreigners. While this reaffirms my cartographic findings in the previous chapter, this provides a different dynamic by examining disturbances dictating the usefulness of the prime recreational space: the beaches. Another result of these disturbances is the existence of the second homes outside the city for the wealthy. Finally, these disturbances create a situation where there are winners and losers. Sand on the origins and cyclical nature of sand, there are steps that could be taken to eliminate
hindrances on it reaching the coast, but no such discussions are taking place. Why does pollution and sand deprivation continue? The answer is because it does not bother wealthy residents who can go elsewhere for seaside recreation.

An extended discharge for sewage at La Chira may release waste further out to sea, but it doesn’t fix the problem, it merely pushes it out of sight. At four miles out to sea, the waste is still within the five nautical mile mark for Chorrillos’ artisan fishermen, and will still find its way to the CV beaches. Chorrillos as a specific municipality, and poor residents in general are the biggest losers from the consequences of the coastal disturbances I’ve outlined. Chorrillos once had ambitions of connecting its bay coastline with La Herradura but the project proved too costly long-term and had to be abandoned. The demolition work that had been done altered the currants, resulting in yet another cobbled beach. The only beach on the CV with natural sand deposits from the sea is Chorrillos’ Playa Pescadores, which rather than lacking sand, suffers from trapped pollution from the bay’s eddy. This chapter has shown the climate, geology, and environmental forces at work changing the geography of the CV, prompting development for recreation in some areas while prohibiting it in others based on amenities like clean, safe water and sanded beaches.

This chapter is, in many ways, an extension of existing work in the Peruvian Andes discussing effects of climate change via the disappearance of glaciers and rivers, and these effects on rural peasants and farmers who depend on the traditional cycles of precipitation (Rasmussen, 2015). What has not been studied is the next logical step in this system: effects further down the watershed on the coastline. Certainly mining pollution finds its way into rivers and eventually the sea; but the dynamic of sand connects our
municipalities and their inequalities to the Andes. Dams, draining rivers for irrigation, and coastal armoring all disrupt the flow of this overlooked resource, for without it beaches are rendered nearly useless. In many ways this thesis tells a story of people working to acquire access to pleasant beaches. Sand and clean water are the McGuffins that drives this plot. Wherever these two exist, wealthy individuals flock to build homes. The CV is an example of a space not sought after by affluentweekenders, but is a dissected collection of beachfronts threaded together by the CVCB for utility uses by municipalities. During the week, people jog, walk their pets, and stroll their children, all of which are done on the upper cliff shelf of the CV. The lower coastal shelf is left for lower classes to use for recreation. If fact, nearly all upper-class recreational activities requiring direct contact with the water has disappeared, with the exception of surfing, which will be discussed next.
CHAPTER 3

SURFING: A CLASS SPORT

Anthropologists have emphasized the importance of sports activities for thinking about broader cultural understandings and social inequalities. From Clifford Geertz’s (1973) Balinese cockfight to Orin Starn’s (2011) assessment of class and golf, the quest to understand class and status through recreational activities is at the center of anthropological understandings of play (Viatori, 2008). At the present on the CV, the only activities that involve direct contact with the water are bathing and surfing. A far greater number of people use the CV for swimming than surfing, which is practiced at most by only a few hundred people. In this chapter, I analyze surfing as a way of viewing the broader spatial inequalities that I have map out in the previous chapters from the perspective of a small, mostly affluent group who have advocated to protect prime surfing spots on the CV. While only small group practices surfing, the individuals who comprise this group are elite and wealthy and thus have been able to exert more influence on the development (or protection) of parts of the CV than the mostly poor individuals who use the area for swimming. In this chapter, I argue that surfing is an example that demonstrates how wealthy residents have been able to influence the coastal shelf’s space by developing or not developing it in a way that poor residents have not been able to, and hinders poor users’ their ability to enjoy it with equal access. Surfing illustrates that the needs of poor residents who use the CV as their primary location for recreation and leisure have not been taken into account in the development of much of the CV coastal shelf.
Furthermore, I analyze the different and unequal access that wealthy surfers and poor residents have to the CV’s beaches. Access, poverty, mobility, and surfing are all interconnected through the affluent clientele that surf. The rich who use the CV almost exclusively for surfing also have the means to be mobile and have weekend homes on sandy beaches outside the metropolitan area. Since their mobility allows them to have less polluted sandy beaches elsewhere for bathing, they are concerned only with the protection of particular surf spots on the CV. Indeed, many beaches in Miraflores are protected from coastal shelf expansions due to laws instituted to protect the waves, laws for which surfers advocated. Meanwhile, those poor who utilize the CV coastal shelf as their only recreational space deal with polluted waters, an insufficient number of access bridges making going to the beach an inconvenience, and diminishing beach space as highways are expanded. Wealthy surfers on the other hand have managed to protect their parts of the bay (those with waves prime for surfing) due to their wealthy and influence in a decentralized political setting. The decentralization of the administration of the CV paralleled the passage of laws protect beaches important to surfing. In Miraflores and Barranco, where surfing has its strongest presence, pedestrian bridges are most abundant so surfers can easily access the beach from their high-rise apartments at cliffs’ edge. This chapter brings surfing in as a final confirmation that the CV is the only seaside recreation space for poor residents, yet the poor have very little say in how it is developed, limited access to it, and poor environmental quality when they do use the space.
Origins of Surfing on the Costa Verde

Surfing has a long history in Lima. Similar to other coastlines with rich fishing waters, Pre-Columbian pottery gives depictions of humans standing on logs or shallow boats traversing waves. While that origin is debatable, modern surfing was brought to the shores of Peru from Hawaii by Carlo Dogny, who is referred to by many as the “father of Peruvian surfing.” Dogny was wealthy; he was the son of a French Colonel and Peruvian sugarcane heiress. He traveled to Honolulu in 1938 with a French polo team, and it was there and then that he met with surf legend Duke Kahanamoku, who gave him instruction and a board. Dogny returned to Lima and invited his wealthy friends to take turns trying the new sport on the beach at Miraflores (which was then on the outskirts of Lima). These wealthy men founded Club Waikiki in 1942 on the Miraflores coast, which was Lima’s first aristocratic recreation organization on what would become the Costa Verde. Club Waikiki is still in existence, though the building location has changed, it remains a landmark to surfing on the CV. Waikiki Beach in Miraflores is named in its honor.

Surfing began as an elitist sport in the Bay of Lima, reserved only for those with access to the beach via homes of the cliffs tops, spare time to travel to the beach and practice, and sufficient funds to purchase equipment and memberships to clubs. Carlo Dogny was very wealthy, and when he brought surfing to Lima, he shared this new activity with his wealthy friends. The cost of equipment (the surf board) would have been very expensive, as they would have to have been custom made. Dogny and his friends went on to start the Club Waikiki which was a very exclusive and expensive club to belong to, and was not affordable to everyone and perspective members must be

16 Peru has since produced many world champion surfers and has hosted tournaments on the beaches of the Costa Verde. [http://encyclopediaofsurfing.com/entries/dogny-carlos](http://encyclopediaofsurfing.com/entries/dogny-carlos)
recommended by existing ones; in fact, today the fee still hovers around $5,000 (current
USD) and restricted to men, though wives and daughter of members are automatically
welcome to use facilities (New York Times: Accessed 10/2016). To provide context, the
GDP per capita in Peru in 1960 around when the club was founded was $255.62 (current
USD); today, the GDP per capita is $6,000 USD (World Bank Group: Accessed
11/2016). Today’s manufactured fiberglass surfboards are priced between $300-500; the
handcrafted wooden boards of the 1960’s were likely comparably priced for their time, or
even more expensive. Not only is surfing expensive in terms of money, but also time, as
it takes a great deal of time to master the sport and free time for practice is not something
working class individuals have had historically.

In the early 1900’s when central Lima was separated from the shore by miles of
desert scrub and farm fields, the wealthy had shacks built down near the tide, on the cliff-
side. These first users of the area were wealthy citizens who may have come from Lima,
one of the small towns that later became municipalities within greater Lima, or nearby
haciendas. Access at this time was restricted to those wealthy individuals who could
afford to spend time away from work and at the shore, transportation to the coast, and to
build structures below the cliff face for the sole purpose of enjoyment. Similarly, when
the sport of surfing was first brought to Peru by Dogny, there were few who could afford
the time to surf and the equipment costs, and the access to the shore was largely restricted
due to its separation via open land from Central Lima, and isolation from settlements
nearby by the inaccessible cliffs. Through the decades following the installment of jetties
and primitive paths and flights of stairs scaling the cliffs, more people discovered the
space below as one of recreation. Here a connection can be made between Teresa
Caldeira’s work in Brazil, because if one suspends considerations of development for a moment, and view this comparison only as a space with limited access, the CV is a fortified enclave on the periphery of the city; now there is ample access and the space of the CV coastal shelf and it has become a new centroid, which the new periphery around it, becoming the new space for enclaves by the wealthy (Caldeira, 1996). So Lima like many other cities, has an alternation between the periphery and core and which is in vogue that depends on the decade. And where fortification occurs, and how (albeit non-human geographical or human-made barriers) depends on the groups occupying the particular area.

By the time of the first large expansions in the 1960’s with the construction of the Paseo de Republica running from the coast, north-east to Central Lima. The area of the coastal shelf was expanded greatly by the fill-dirt from this sunken highway, increasing its capacity for crowds on the shore. The shelf was created as a space containing public areas as well as a highway system (CBCV). The CVCB connected directly to the Paseo de Republica making it an instant and popular choice for drivers circumnavigating the congested city above the cliffs. Due to the greater visibility of the CV via the CVCB, the beaches received greater public exposure which subsequently led to in increase in beach sports, one in particular: surfing. In recent years, surfing on the CV has also undergone changes that have made it more accessible to middle- and working-class individuals, if not physically accessible, at least economically. This has been mostly through surf lessons offered by instructors (many of whom are poor individuals themselves). The instructors charge around S/.12 (~$4.00) for 30 minutes of surf lessons that are affordable to many people who cannot afford to outright purchase a surfboard. Even still, S/.12 is
still enough of a fee to restrict people from participating due to the fee itself, and the justification of attempting to learn a sport that will take many thirty-minute sessions to master. And while the surf instructors, many of them come from poor backgrounds, are daily participants in surfing, they must still pay their instructing license fee, tent site rent, equipment upkeep, parking, and other expenses from whatever they make. So in the end, while surfing is more visible and seemingly accessible to a broader socio-economic class than it has been in the past, it still remains a sport dominated by the wealthy.

By this point it should be clear that while surfing is not an expensive sport by U.S. standards, it is very expensive in Peru when one takes into account the cost of the sport compared to the average wages of most Peruvians. This makes surfing very exclusive by cost of equipment, but also expensive in terms of time invested and costs of living near enough to the CV to practice regularly. With Lima’s traffic congestion and costly real estate along much of the CV, it would not be feasible for anyone to actively pursue surfing since one pretty much needs to live on the CV to hit the waves during the week. All of this is to say that surfing is a sport of rich men who have been effective at getting a portion of the CV protected for their use, which helps to show how this “public” area is being developed largely for private use. And below I demonstrate how they protected their waves by pushing the issue to the highest level of government and got legislative protection for it.

**Wave Dynamics and Protection**

Recreational activities on the CV can and are practiced daily by the public. Typically, the cliff-top’s small parks and paths are used by residents living in the ritzy
apartments and condos. Nannies exercise children and push strollers. After work hours, local residents take their surfboards down the cliff-face via access bridges and hit the water. Others still, perhaps even more wealthy individuals that do not have day-jobs, taxi their yachts around the bay. Unlike these other activities that wealthy residents can undertake, surfing requires very specific conditions in order to be considered a prime location, and it completely reliant on the submarine geography. Yachting, walking, or running can be established via a built environment. For examples, an artificial harbor (present in Barranco) can be built to moor yachts, and sidewalks are common almost everywhere.

Waves begin their lives out in the open sea, where wind creates large ripples and eddies that grow into swells that radiate out, eventually making landfall. Out in the open sea, the depth of the water is so great that the energy of the moving swell has no interaction with the bottom of the sea. Barring any obstructions, swells eventually approach land. Generally coastal shelves follow a gentle gradient into the ocean, finally dropping off further out to sea. As swells approach the gentle gradient the sea floor gets closer to the water further, as the water becomes shallower. As this happens drag occurs on the underside of the wave slowing the circulation of water through the wave cycle; this drag increased as the water becomes shallower and the waves nears the shore. Once the water becomes shallow enough, and the velocity difference between the top and bottom of the wave reaches an appropriate point, the wave collapses over itself resulting in the “tubular” action that most people associate with waves and surfers.

Peru possesses ideal geography for these processes since its coast is close to deep water (Humboldt Trench) for swells to form, and the right transition distance from deep-
water depths, to shallow depths for wave creation. There are many other factors that can adversely or positively affect wave creation, like weather, man-made obstructions, dredging, etc. Once the submarine geography has been altered, it is extremely difficult to restore. Whether by design or by luck, Club Waikiki was established in Miraflores, circumstantially amidst some of the best surf spots in all Metropolitan Lima. With the establishment of the club, the surrounding beaches subsequently became popular surf spots. Reasons for this include it having the before mentioned characteristics, and that other municipalities have forces adversely effecting wave creation. A brief look at a map shows that municipalities north of Miraflores (San Isidro, Magdalena Del Mar, & San Miguel) occupy a section of the Bay of Lima oriented at a near-45-degree angle to latitudinal lines, and therefore to the Humboldt Currant. The result of this orientation is increased coastal erosion, meaning little to no sanded beaches historically, and very harsh swells slamming the cobbled coastline. These harsh swells (due to its orientation facing the northerly currants and their accompanying winds) breaking close to shore make surfing very dangerous and nearly non-existent.

Similarly, the municipalities south of Miraflores have very little surfing taking place. Most of Barranco’s coastline is heavily armored with seawalls, and contains a large yacht club, which occupies a long stretch of coast. Chorrillos has by far the most coastline of the six that comprise the CV. Playa Pescadores. The northernmost (the only sanded beach of the CV) beach in Chorrillos sits in a concave arc at the bottom of the Bay of Lima. This position shields the beach from incoming swells, would-be waves, and contains poor water quality for human activity. Immediately south of Playa Pescadores is Chorrillos’ artisan fishing wharf. From there to the south, the geography transitions
drastically in that the cliffs’ composition changes from silt, sand, and stones, to solid rock. These rocky cliffs drop directly into the sea, with the Pacific’s waves crashing below. The only beach left on Chorillos’ south coast left in what is formally the CV, is La Herradura.

La Herradura once had the proper submarine geography for prime surf conditions. However, as discussed in greater detail earlier, this geography was altered back in the 1980’s when attempts to build a highway through the region meant dynamiting the cliffs, and the disposal of rubble offshore. This rubble greatly altered the wave dynamics, and is nearly impossible to fix. Currently, the waves roll in to La Herradura with a great deal of energy, breaking at unpredictable points, and striking the cobbled beach with a great deal of force. Almost no one surfs here due to these conditions. Whether by luck of geography or by human intervention, Miraflores remains the sole location for surfing on the CV, but its existence runs deeper than simple circumstantial waves qualities. To preserve a sport amidst an intensely manipulated landscape requires more than wave quality, it relies on history and social status of participants. Surfing has historically been enjoyed by Lima’s elite, those who established Club Waikiki in Miraflores. The club’s historical presence in Miraflores certainly supplies a sense of nostalgia for the sport in the area, but more than nostalgia is needed in this situation; rather, legal intervention is necessary to ensure surfing is not supplanted by a successive use.

President Alberto Fujimori took office in 1990, in 1995 the APCV was created, and in 2000 the Peruvian National Congress passed Law Number 27280 (Appendix C1). It’s clear that step by step the affluent began to take advantage of the decentralized political system, once established. Since a decentralized authority governs the CV, the
APCV, it is uncommon to have a law dictating how the region can be developed. Examining the language of this law, it is immediately apparent that the language is ambiguous in describing how the law will be enforced. It states the Peruvian Sports Institute will determine where the best waves for surfing occur from “Tumbes to Tacna.” Since Tumbes is near the border with Ecuador, and Tacna is near the border with Chile, this refers to pretty much the entire coastline. Much of Peru’s coastline outside of Lima is undeveloped desert. There are many spots along the vast stretches of beach that are popular, prime locations for surfing. While some surf shacks, hostels, and parking lots spring up in these areas, it is very unlikely that the waves face any sort of serious endangerment. Within the Lima Metropolitan Area, Miraflores has the only “protected” waves. On the 2nd of September 2016 the Peruvian Congress passed Law No 194, declaring the coastal erosion on Peru’s beaches an issue of national importance (Appendix C2). The law goes on to state “with the purpose of recovering, preserving, and maintaining the beaches of the Peruvian coast. So that they are constituted in spaces of public recreation available to all, be instruments of local and regional economic development, generating productive employment based on internal and external tourism; And as a safeguard of the life and health of the people, and the buildings of the villages bordering the sea.”

The law is very short, and so much like other short and vague documents like the U.S. Constitution, allows it to be interpreted according to governmental sentiment at a particular time; a problem with Law No 194 is that there is definite clarity regarding initiation and enforcement of the law. The U.S. State of California has also taken legal
action to protect certain stretches of coastline and access to it.\textsuperscript{17} Despite Law No. 194’s inadequacies I do consider this law a step forward in Peruvian governments acknowledging the delicate nature of their natural resources. While it’s a good move to

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\textsuperscript{17} Drafting legislation is to protect certain stretches of coastline is not unique to Peru. This thesis’ discussion of coastal protection for the wealthy mirrors a conversation occurring on the Southern California Coast. As early as 1972, California’s Proposition 20 was charged specifically with protecting and preserving California’s 1,100 miles of coastline; the 1976 California Coastal Act was passed by the State Legislature to essentially make Proposition 20 permanent for posterity (https://www.kcet.org/departures-columns/why-californias-beaches-are-open-to-everyone). The Coastal Act is essentially a public trust doctrine that maintains that all beaches in California are public below the mean tide line. This equates to all damp sand, on any given beach, is public land; any point above the mean tide line (dry sand) can (as is often the case) be privately owned. The Coastal Commission, which carries out enforcing access issues is an unelected appointed board, much like the APCV. The Coastal Commission, like the APCV, has been roundly criticized for being ineffective since its mission of guaranteeing access to beaches via private property is a legal gray area. Often California beachgoers must trespass on private beaches in order to get to public areas, or enter miles away at a designated access point and walk long distances. Security guards, gates, and fences have been installed in many cases making the beaches inaccessible. Here we have a solid analogue of Lima’s CV, with regard to class and access. This is significant because it shows that the class struggles for access on the CV are not an isolated phenomenon. Historically California’s Coastal Commission had no real regulatory power aside from litigation. Since many of the suits were against wealthy beach property owners, suits were normally strung out over many years. In 2014, California’s Governor Brown signed legislation that gave the Coastal Commission the authority to fine property owners obstructing public beach access (http://www.sandiegouniontribune.com/opinion/commentary/sdut-public-right-beach-access-coastal-commission-2015feb05-story.html). Often times obstructions consist of signs denoting “No Trespassing” or “No Parking,” but also go as extreme as razor wire and gates. Beachgoers rarely challenge these obstructions or question their legitimacy. The Coastal Commission is now charged with determining whether they are considered obstructions, and how to remedy wrongdoing. The authority behind the Commission’s ability to demand the removal of an obstruction via private property to public property is rooted in the idea of a public common. The Coastal Commission and the State of California guarantee rights of access to public areas in what are called: Prescriptive Rights of Access. Under these rights, trails, informal parking areas, and associated beaches that have been used historically, are public easements regardless of whether they are privately owned or not; this is essentially an easement without the consent of the owner (https://www.coastal.ca.gov/access/prc-access.html). This plays host of many associated problems, but to compare this easement with the CV we see that the CV not only has private property along the cliff tops barring new access points, but municipally owned property that is indirectly controlled by wealthy interests, also barring new access points.\textsuperscript{17}

While the Coastal Commission and APCV share common origins, it is obvious that a specified budget allocation and legal authority must be given to the APCV if it is to become as effective as the Coastal Commission in ensuring access. Much as the Coastal Commission used to be, the APCV remains unable to enforce public access impediments to those who use the coastal shelf space, those typically of poor classes. Despite the promise of Laws like No. 194 and No. 27280 that protect prime areas for surfing and acknowledge the need to protect against erosion, these laws are ambiguous and difficult to install and enforce in a decentralized government structure. As far as the CV is concerned, without increased access to the coastal shelf, these laws benefit only those who surf in Miraflores (protected under No. 27280) and owners of sanded beach property outside the city limits (protected under No. 194). It remains to be seen if the six municipalities of the CV will be able to implement a law similar to California’s Proposition 20 to combat limited access to public areas. Classes are fluid through geography over time, and what is sought after real estate now, will likely change in the future, opening up opportunity for poorer classes. Regardless of these uncertainties, this chapter has provided current snapshot of the CV’s inequalities through the lens of surfing.
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have this proclamation of urgency, it remains to be seen if the law will be carried out
protect areas of recreation for all. Law No. 194 seems almost as a reminder of the
forgotten Law No. 27280 that simply called for the protection of sites along Peru’s coast
that are prime surf spots; all that Law No. 27280 did was proclaim that certain agencies
and institutions can protect sites from alterations if they will jeopardize surfing. Law No.
194 calls for unspecified measures to be taken to protect the coastline via preservation
and reclamation; the latter has already been implemented in various places on the CV and
has intensified the environmental disturbances present.

Mobility and Access

Lima’s lower-income residents far outnumber surfers on an average summer day
on the Costa Verde’s beaches.\(^\text{18}\) This has not always been the case—into the mid-
twentieth century the city’s wealthy residents frequented the beaches in Chorrillos and
Barranco. However, in the 1960’s the urban sprawl of the Lima Metropolitan Area
consumed the entirety of the six municipalities along the Bay of Lima, and incorporated
the once geographically independent towns into a seamless urban area ringed by
shantytowns settled by land invasions of poor migrants. Poor families, many of them
newly arrived from other parts of Peru, created the new areas in close proximity to the
bay. Prior to this, upper class residents used the coast because of its exclusivity and
isolation from the urban core. Chorrillos and Barranco are several kilometers outside

\(^{\text{18}}\) Surfing and bathing are referenced here because they are the only recreational activities practiced
in mass on the CV requiring direct contact with the water, unlike yachting or fishing. By “direct
contact with water,” I mean that individuals expect to be, or run a very high risk of having seawater
come into contact with their skin. Naturally, activities like swimming, fishing, wakeboarding, surfing,
etcetera are all activities that fit this description. Examples of activities on the CV that do not
necessarily fit this description are boating, biking, ball sports, parasailing, etcetera.
central, historic Lima and were not connected by rail until the turn of the twentieth century. However, with the construction of the Costa Verde Highway beginning in 1967 and Lima’s ever-expanding population, the exclusivity evaporated and, with the exception of the Yacht Club in Chorrillos, elites sought more pristine beaches outside the city’s limits.

Locations such as Ancón, Pucusana, and Asia are desirable because they are situated on the coast, are removed from the congestion of the Lima Metropolitan Area, and can be built right on the beach since there is no regulation barring them from doing so, and no pre-existing use for the land. In recent decades, gated compounds for the wealthy have sprung up next to tiny fishing villages north and south of Lima. Another benefit of building outside the metropolitan area is that beaches that homes are built on are often sanded as opposed to the cobbled beaches of the CV and are located far from major point sources of pollution. This evidences a clear connection between wealth and mobility and social capital. Wealthy residents have the financial means to own a car to travel outside Lima, purchase a seaside home, and the spare time to enjoy these investments. In contrast, Lima’s poor and working-class residents are confined to the city, have limited (if any) financial means to purchase a car or public transportation for long distances, and often work hours that permit little free time.

Poor residents are not purposefully restricted from accessing the CV, after all the CV consists of the cliff tops as well as the coastal shelf below. The cliff top is mostly comprised of whose activities are not unique to the CV as they can be practiced in nearly any other park in Lima. The space that is unique to the CV is the coastal shelf, and the activities that are possible there are unique to its location on the sea. As I have already
stated there is a correlation between wealth and mobility; similarly there is a correlation between wealth and access to CV beaches. Recreational activities for users of this space include surfing, parasailing, swimming, bicycling, skating, jogging, and walking pets. All of these activities require specific infrastructure, for example: broad paved sidewalks for pedestrians and skaters/runners alike. For surfing, sufficient parking and beachfront are necessary, as well as access bridges from the upper continental shelf to the coastal shelf. Without these qualities the space of the coastal shelf ceases to be one for public use, and without proper access the space is not accessible to the public, making its qualities useless. Unlike places like California that has public beaches accessible only through private property, the CV is technically unrestricted to anyone who wishes to go there, however the issue is that the level of accessibility is very low for those who do not own vehicles or live on the CV near an access bridge, i.e. poor residents.

The cliffs that isolate the coastal shelf from the continental shelf are approximately 80 meters in height, very steep, and very unstable due to their composition of loose stones, sand, and alluvium with no ground moisture to provide cohesiveness. At the foot of the cliffs are a 4-6 lane interstate and various buildings creating a sort-of moat between the green space atop the cliffs and the seaside below. There is currently no public transportation to the coastal shelf, making the public reliant on using one of the limited pedestrian access points or taxi’s to traverse the cliffs. There are intentions of extending public transportation to the coastal shelf, but that would require yet another lane expansion on the Costa Verde highway for the slower buses making frequent stops. Rather, the solution is seen to be building more pedestrian bridges. Currently, there are nine access bridges in place. The construction of these bridges is telling of the autonomy
of each of the municipalities, and their demographics. According to my interviews with the Ecologist, who has worked as a consultant on multiple occasions for the APCV, the bridges represent the competition between municipalities vying for public usage of the space. When asked about the case of San Isidro, he said that San Isidro is affluent and does not want people not from the municipality going through their neighborhoods to get to the beach.

While much of the coastal shelf has been developed for purposes other than recreational, highways encroach on the already eroded beaches, and access points are few and far between, surfing remains on the CV seemingly as healthy as ever. This thesis’ central argument centers on explaining why surfing is so popular despite the coastal shelf’s development focusing on uses other than recreation due in large part to its wealthy clientele and their political clout. Not to mention the only development in favor of recreation is for those activities practiced by the rich: surfing, yachting, etc. The wealthy have influenced development to where municipalities have rid most of the CV of recreational space by not address issues like sandless beaches while protecting key surf spots. Poor classes’ use for the CV is confined to bathing/swimming since they cannot afford other activities; wealthy classes’ use is confined mainly to surfing since the CV contains prime spots any bathing they might do would take place elsewhere in cleaner water and sanded beaches, probably at their second weekend homes. This poses the differences in how the CV beaches are perceived between classes: the poor as a place for relaxing and bathing; the rich as a place to surf. By protecting coveted surf spots with legal protection and letting all other beaches remain subject to however municipalities and their influential residents wish to change them, reproduces class inequalities since
wealthy class’s use of the coast is guaranteed while the poor who largely swim/bathe must deal with the many adversities that plague their uses of the region (i.e. polluted water, sandless and trash infested beaches, limited free and public access).

Conclusion

Due to its unique history and affluent clientele surfing has been able to remain on the CV as an exclusive recreational activity. In this chapter I have pointed out some of the environmental and historical reasons surfing exists on the CV, and why it has remained thanks to its power dynamic. Miraflores is the setting for most all surfing on the CV due to it being the historic location for the exclusive Club Waikiki. Miraflores also benefits from the natural roll of the dice by having the prime tide breaks within its geographical borders, and a law put in place to maintain quality surf waves. The fact that Miraflores surfers have legal protection is telling of their power, but to highlight just how important this protection is, it was issued by the Peruvian National Congress, a body that supersedes the next governing body: the Lima Municipal Government. Surfers going beyond the Miraflores Municipal Government, bypassing the Lima Metropolitan Government altogether, and gaining support from the Peruvian National Government highlights the fact that the decentralized nature of the CV provides a setting wherein wealthy and influential residents can get special protections and favors for their desired development plans. By looking at the geography of the CV, its obvious that favoritism is given to activities practiced by the rich. Barranco and Miraflores are wealthier municipalities than their neighbors, and not surprisingly are home to protected beaches.
for surfing and a yacht club. Most of the few access bridges are situated right by luxury apartments so wealthy surfers can hit the waves after work with ease.

San Isidro is a wealthy municipality too, yet it has no access bridges. This exceptional case I emphasize the municipal autonomy of the decentralized CV allowing for municipalities to develop as they please. San Isidro has different priorities than its two neighbors to the south, and focuses its infrastructure inland toward its golf courses, embassies, casinos, and business district. Miraflores and Barranco have more storied coastal identities and therefore make a more conscious effort to, literally, bridge the living space above the cliffs with the recreational space below. This chapter has shown that this recreational space below is geared primarily for activities of the wealthy. Sure, there are bathers but there is little directed effort to improve/protect the quality of swimming when compared with the legislation and money spent on protecting surfing.

Surfers make up a very small percentage of the population yet enjoy legal protections that supersede those of any other activity. The surf instructors I interviewed are rare cases of those involved with surfing that are not affluent. Whatever they make from lessons, is largely reclaimed by licenses, fees, and living expenses. Despite the long history of surfing on the CV it remains an exclusive sport for the affluent, and in being so serves as another identifier for where power lies in the coastal shelf’s development.
CONCLUSION

SIGNIFICANT TAKEAWAYS

The physical geography of the CV is also a political geography largely due to its decentralized governing authority: the APCV. The coastal shelf of the CV is the geographical focus of this project and has been created almost entirely by human efforts through dredging and reclamation. The CV is a mosaic of unequal development because a decentralized decision making and the need for individual municipalities to fund the development of their portions of the CV means that less affluent municipalities have had fewer political and economic resources to dedicate to their coastlines. If an effective centralized authority were in place, the space would be more equitably developed according to a regional vision.

A prime example of this unequal development is the preservation of Miraflores’ beaches for surfing, a favorite sport for many wealthy residents. The reason for this is the sport’s socio-economic exclusivity in its necessary proximity to the sea, time investment, and equipment cost. On the contrary, much of the rest of the CV’s waterfront is barricaded with sea walls, jetties, and cobbled beaches to protect its integrity at the expense of its utility for recreation (sanded beaches) not to mention the overall lack of access (pedestrian bridges) for poorer residents. While the jetties have calmed the waters behind them, an advantage for boat owners, they also reduced the circulation of water that keeps polluted water trapped where bathers and surfers enter. In the Bay of Lima as a whole the resulting Eddy Effect created by the jetties erodes the coastline from a different angle than that which the jetties were built to anticipate, meaning stretches of coast with few armoring structures, like Sam Miguel and Magdalena experience serious coastal
erosion. Having a law in place to protect Miraflores’ prime surf spots, while raw sewage continues to be pumped into the water a few miles south tells us that power and priorities in the CV municipal governments lays at the feet of wealthy residents and their desires.

Residents with greater capital (social, political, economic) have profoundly unequal influence in how the area is developed. In many ways, then, this “public” space has been transformed to meet many of the “private” recreational needs of a few citizens, while poor bathers get to swim in toxic waters.

Since Lima’s rapid growth has exceeded its ability to handle its waste, pollution has long plagued the CV’s beaches causing infections and piles of washed up garbage, which have led to warning signs about entering the water and periodic beach closures. The Rio Surco and La Chira are located just south of Chorrillos and are major sewage discharges into the Pacific, up-currant from the CV, meaning much of the intensely polluted water leaves its point source only to drift immediately toward the CV’s beaches. To escape this pollution wealthy residents have second homes they frequent on the weekends on sanded beaches to the south of the Lima Metropolitan Area. Poor residents do not have this option and are therefore subject to whatever the condition the beaches and water are in, often brown water trapped behind the jetties laden with plankton, sewage pollution, and trash.

Upper shelf of the CV is a desirable place to live and be seen above the cliffs, with its many amenities and high-rise apartments offering splendid ocean views. However, in wealthy municipalities such as in San Isidro, some municipalities want very little to do with the lower shelf: the beaches, and the types of citizens free beaches attract, so they restrict access by limiting parking, no public transportation, and few access
bridges; San Isidro being the most affluent of the six, has no access bridges. In contrast, citizens of poorer periphery municipalities like San Miguel, Magdalena, and Chorrillos use their coastal shelf as public space despite the questionable water quality, recall my water samples yielding coliform levels unsafe for humans.

In the end, the poor lose the most from how the CV continues to be structured: the cliffs tops are priced exclusively for wealthy residents and utilize the space primarily for its views and amenities; whereas the coastal shelf is utilized primarily by poor residents who use the beaches for bathing. However, this is not the development focus of the coastal shelf since the space is geared more towards the small population of wealthy surfers and yachters. For poor bathers, the beaches little development or betterment insofar as they remain polluted, trash infested, and unprotected as highway expansions threaten to eat up more beach and sand is lost each year to coastal erosion.

Understanding the movement of sand is key to conceptualizing the inequalities present in the CV municipalities. For the past decade the CV has been neglected of natural sand for its beaches because the current that fuels its replenishment has been disrupted by a lack of tectonic activity, dams on major rivers, disappearing glaciers, and inadequate Andean precipitation levels. While all of these can be considered “entangled” processes of human and non-human endeavors, the latter two are of particular importance. Climate change has led to decreased precipitation levels and expedited glacial melt in the Andes, which has resulted in less river water to carry pulses of sand to the sea for deposition on the CV. From Waikiki Beach (Miraflores) to La Herradura (Chorrillos) all beaches that were once artificially expanded to create leisure beaches are now sandless; which standing in stark contrast to those just beyond the metropolitan area
fully sanded. This confirms for many that the coastal armoring intended to protect coastal shelf expansion has resulted in the sandlessness. Often we think of sand as being a completely natural material just laying around in abundance, but in reality it is transported by a delicate system carrying it from its origins to its final resting place, inaccessible to humans; our exposure to sand appears to be at its destination but is actually only a pit-stop along its way. Those that use the CV’s beaches are generally poor and do not own cars, so they have no alternative for public recreational space. Yet the CV beaches’ sandlessness is largely thanks to greenhouse gas emissions from the vehicles of affluent citizens, not only of Peru but also throughout the world. This provides some global scope and some irony since the abundance of vehicles in certain socio-economic classes is depriving the CV of sand while simultaneously allowing others to bypass this reality to enjoy sanded beaches elsewhere. This is doubly telling of the role of wealth disparity’s role in shaping the CV geography, and how these inequalities reciprocate.

With the general acceptance of human involvement in global climate change there are many ongoing discussions of the effects of our actions on the environment. Normally the more affluent a population is, the more they contribute to our planet’s degradation. Wealthy citizens can evade these effects because they have the means to escape, rebuild, and reinvent. On the other hand, the poor are often stuck to deal with the aftermath. We see this exact paradox of wealth and mobility on the CV. Development is normally designed to better the living standard of whomever the development is directed toward (Scott, 1998). The CV has competing goals of being both a place of capital investment and a public recreational space. Capital investments like Barranco’s yacht club or Club Waikiki certainly attract investment, but render portions of the shelf unusable to those
who cannot pay. Neoliberalism encourages the capitalization of all aspects of life, and on
the CV exclusive clubs and restaurants have displaced former free and public spaces, and
free public access via pedestrian bridges can hardly be considered adequate. The
exclusive yacht or surf clubs exist only because of the political geography of the CV:
neoliberal tenets like deregulation and decentralization allow the municipalities to
develop as they pleased based on parties with the greatest influence. With few
exceptions, such as surfing or yachting, wealthy individuals use the area only as a
backdrop, not as a space for common recreational use. The lack of access bridges for the
poor accessing the CV beaches on foot is alarming since Lima will someday receive its
long overdue earthquake/tsunami. The fact that beachgoers trapped on the shelf below
with no way to scale the cliffs to escape, is a grave illustration of how little wealthy
municipalities like San Isidro value its coastal shelf, beaches, and those who use them.

Looking Forward

This project has focused on the lower coastal shelf below the cliff-face of the CV.
As I mention throughout, there were many reasons for this focus such as its status as a
coastal space created by solely by humans. There are many similar created spaces in
coastal regions throughout the world worthy of anthropological study like the “world”
islands of Dubai or the Back Bay and North End neighborhoods of Boston, both of which
were dredged from the sea. Land has always been one the most important resources for
societies and the notion of creating new land is relatively recent. So there are many
opportunities for this project to lend perspective when studying another site of similar
history. In the future, this project could be expanded from its current focus to include the
cliff-tops which would provide a researcher with an opportunity to see how the social inequalities I have revealed in this thesis have been produced in a different space with different physical geography and socio-political considerations.

Since the cliff-tops are where residents live, it would be a logical space to look for distinguishing class characteristics such as parks, types of housing, distance from cliff-face, access to public transportation, and types of businesses present, just to name a few. Another class distinguishing factor could be the presence of gated neighborhoods. The process for this survey can be relatively simple if Google Maps Street View has already surveyed a region. All one needs to do is hover the viewing icon over an area and all streets accessible to the Google van are covered with a blue line, and all that are inaccessible have no line. This is a quick and easy way to find where gated communities are. Unfortunately at the time of this project Google Maps has not completely surveyed the CV municipalities. Knowing where private neighborhoods are located would potentially support demographic assumptions about municipalities who develop their coastal shelf in a similar fashion. Based on my own surveys of the CV municipalities, gated neighborhoods are particularly prevalent in San Isidro, Miraflores, and Barranco; their documentation would provide another layer to class distribution along the CV. This layer could provide an understanding of the spatial relationship of the gated neighborhoods to access bridges, to determine whether neighborhoods tend to be far away from access bridges as might be the preference in San Isidro, or are close to them for quick access to surf.

Bringing maps into a conversation on social and spatial inequality is useful for seeing the divisions “on the ground,” but I have provided many other materials such as
water samples, ethnographic data, geological and climactic data, and historical accounts to paint a rich picture of the complex space known as the CV. Every one of these materials can be expanded upon in the future to address new questions as they unfold with the unequal development of this space. Maps will be needed to chart future developments. New ethnographic interviews will be needed to ask how people see such changes and why they advocate for or challenge them. We learn more about climactic processes every year as we strive to better our world’s health. Histories change as new accounts are uncovered and brought into mainstream, and much remains to happen. Should there be an earthquake, tsunami, or political/economic reforms, the region of the CV will look very different. As developments occur with extending a sewage discharge further out to see, it will be interesting to see if coliform rates on the CV beaches remain where they are. This too will provide confirmation as to whether lower classes that use the beaches of Chorrillos are gaining access to clean beaches or are subjected to the same pollution levels.

Finally, future research should prioritize the creation of more temporal data to depict how the different stages of coastal armoring and shelf expansions unfolded over the twentieth century and how they transformed the lower shelf and the surrounding areas. Had I had such information available I could have made time lapse maps showing how the shelf changed in shorter time increments, say every couple years, and cross reference those changes with social, economic, and political changes taking place in Lima at those times. I believe my GIS work on this project opens the door to future anthropological research anywhere in the world to map inequalities in a landscape using an arbitrary category like recreational use, as I have. It is an undertaking that geographers
have been doing for some time, but has a rich contribution to social anthropology since it takes what is being said via ethnographic work, and illustrates it. As a researcher in a discipline dedicated to understanding people and cultures, I feel the approach I have led in getting to know a landscape has provided me a deep understanding of the Peruvian population that call the CV home, but also past and future populations thanks to my understanding of the geography, where it's been, and where it is headed. I hope others find as much value in this approach as I have, and continue its application to other regions of our planet.
REFERENCES

Interviews Cited

Economist with the author, June 11, 2015.
Playa Makaha Surfers in discussion with author, June, 2015.
APCV in discussion with the author, March 15, 2016.
Ecologist with the author, March 11, 2016.
Economist with the author, March 16, 2016.
APCV in discussion with the author, May 20, 2016.

Works Cited


**APPENDIX A**

**TABLES**

(Table 1) Specific uses of coastal shelf by municipality

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Private Parking</th>
<th>Private Beaches</th>
<th>Private Buildings</th>
<th>Public Beaches</th>
<th>Public Greenspace</th>
<th>Public/ Traffic</th>
<th>Const./Other/Vacant (Public)</th>
<th>Total Private Area</th>
<th>Private Space</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Miguel</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>323790.9</td>
<td>482617.1</td>
<td>149978.9</td>
<td>432639.4</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Magdalena Del Mar</td>
<td>0</td>
<td>0</td>
<td>34534.4</td>
<td>341746.6</td>
<td>482617.1</td>
<td>184769.5</td>
<td>99696.6</td>
<td>34534.4</td>
<td>6%</td>
</tr>
<tr>
<td>San Isidro</td>
<td>0</td>
<td>0</td>
<td>7480.7</td>
<td>398170.1</td>
<td>89441.1</td>
<td>302422.2</td>
<td>105972.8</td>
<td>7480.7</td>
<td>6%</td>
</tr>
<tr>
<td>Miraflores</td>
<td>0</td>
<td>0</td>
<td>25930</td>
<td>160553.8</td>
<td>136272.2</td>
<td>218446.3</td>
<td>28650.7</td>
<td>25930</td>
<td>6.10%</td>
</tr>
<tr>
<td>Barranco</td>
<td>4846.9</td>
<td>0</td>
<td>49690.5</td>
<td>182501.5</td>
<td>16014.9</td>
<td>217909.2</td>
<td>21397.9</td>
<td>54537.4</td>
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</tr>
<tr>
<td>Chorrillos</td>
<td>33717.3</td>
<td>19615.9</td>
<td>53436.3</td>
<td>105501.7</td>
<td>76937.6</td>
<td>128271.3</td>
<td>30397.4</td>
<td>106769.5</td>
<td>29%</td>
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</table>

(Table 2) Water sample results

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<tr>
<th>Date</th>
<th>Location</th>
<th>Coliform</th>
<th>PH</th>
<th>DO (PPM)</th>
<th>Temp (C)</th>
<th>BOD</th>
<th>Nitrate (PPM)</th>
<th>Phosphate</th>
<th>Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/22/15</td>
<td>Playa Makaha</td>
<td>positive</td>
<td>7</td>
<td>8</td>
<td>22</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>5/25/15</td>
<td>Playa Pescadores</td>
<td>positive</td>
<td>7</td>
<td>8</td>
<td>24</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>6/7/15</td>
<td>La Herradura</td>
<td>7</td>
<td>8</td>
<td>25</td>
<td></td>
<td>5</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>6/7/15</td>
<td>Playa Villa</td>
<td>7</td>
<td>8</td>
<td>25</td>
<td></td>
<td>5</td>
<td>1</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>6/5/16</td>
<td>Playa Makaha</td>
<td>positive</td>
<td>7</td>
<td>8</td>
<td>22</td>
<td>8</td>
<td>5</td>
<td>1</td>
<td>40</td>
</tr>
<tr>
<td>6/5/16</td>
<td>Playa Pescadores</td>
<td>positive</td>
<td>7</td>
<td>8</td>
<td>24</td>
<td>8</td>
<td>5</td>
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<td>40</td>
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<tr>
<td>6/5/16</td>
<td>La Herradura</td>
<td>7</td>
<td>8</td>
<td>25</td>
<td></td>
<td>5</td>
<td>1</td>
<td>100</td>
<td>100</td>
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<tr>
<td>6/5/16</td>
<td>Playa Villa</td>
<td>7</td>
<td>8</td>
<td>25</td>
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<td>5</td>
<td>1</td>
<td>100</td>
<td>100</td>
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</tbody>
</table>
APPENDIX B

MAPS

1. Miraflores (North half)

2. Miraflores (South half)
3. Chorrillos
4. Barranco
6. Magdalena Del Mar
7. APCV

8. APCV
APPENDIX C

LAWS

(1)

Ley No. 27280

LAW OF PRESERVATION OF BREAKS SUITABLE FOR SPORTS PRACTICE

Article 1:
Object of the law: This law aims to preserve breakers suitable for the practice of surfing waves.

Article 2:
Property and dominion: The breakers of the Peruvian coast of Tumbes to Tacna are of property of the State and its dominion is inalienable and imprescriptible.

Article 3:
Protection: The protection of the breakers is in charge of the Peruvian Navy, through the General Direction of Captaincies and Coast Guard. Those who deliberately cause activities that affect breakers or breakwater areas will be criminally denounced for committing a crime against ecology, in accordance with current legislation.

Article 4:
Assessment and registration: The Peruvian Sports Institute, in coordination with the Peruvian Federation of Table, will evaluate and elaborate the relationship of the surfers suitable for the sport of surfing waves, located from Tumbes to Tacna, including the corresponding location plans, and will forward this information to the General Direction of Captaincies and Coast Guard of the Navy of Peru, which will proceed to its inscription in the National Registry of Breakers.

Article 5:
Registration: Create the National Record of Breakers in charge of the General Direction of Captaincies and Coast Guard of the War Margin of Peru.

Article 6:
Exception: Exceptionally, for reasons of national interest expressly declared by ministerial resolution of the Ministry of Defense, works may be carried out that affect the breakers.

Final provisions:
First- The Executive Power shall issue the regulatory rules that are required for compliance with this Law.
Second- The Regulation will specify the form and the deadlines for the implementation of the Register, as well as for the inscription of the breaks suitable for the practice of table sport.

Annexed
Glossary of Definitions
1. Wave: Wave of energy that moves on the water surface.
2. Breaking or Breaking Zone: Zone where the wave forms its curvature and falls.
3. Wave surfing: Any sport in which the main force that moves the practitioner and his nautical slider is a wave. The Anglo-Saxon term "surf", with wide international diffusion, is known in Peru as "to run waves" (to be understood in Hawaiian Table), misnamed "to run tabla."

4. Table (Hawaiian): nautical slider with keel that is required for the practice of surfing waves.

(2)

Ley N-194

The undersigned congressman, Daniel Salaverry Villa, through the parliamentary group Fuerza Popular, in the exercise of the powers of legislative initiative, established in articles 22, paragraph c, 64 (...) regulation of the congress of the republic, proposes the following:

Law that declares of national interest the problem of the coastal erosion in the beaches of the Peruvian coast.

State of national interest the problem of coastal erosion in the Peruvian coast, with the purpose of recovering, preserving, and maintaining the beaches of the Peruvian coast. So that they are constituted in spaces of public recreation available to all, be instruments of local and regional economic development, generating productive employment based on winter and external tourism; And as a safeguard of the life and health of the people and the furniture of the populations near the sea.

Congress of the Republic
Lima, September 12, 2016
According to the consultation carried out in accordance with article 77 of the regulation of the congress of the republic: pass Proposition N 194 for its study and opinion, to the commission is: decentralization, regionalization, local governments and modernization of state management; Andean, Amazonian and Afro Peruvian peoples, environment and ecologis